

# CATALOG

# 2022-2023

## **A Member of Minnesota State**

Hennepin Technical College is an affirmative action, equal opportunity educator and employer. Hennepin Technical College is accredited by the Higher Learning Commission.

This document is available in alternative formats to individuals with disabilities, consumers with hearing or speech disabilities may contact us via their preferred Telecommunications Relay Service.

Students are responsible for understanding the information contained in this catalog. Due to changes in conditions beyond the control of Hennepin Technical College, it may be necessary to modify, amend, and/or delete statements appearing in this document without notice. Hennepin Technical College reserves the right to modify any statement herein in accordance with current conditions. Fees, charges, and policies are as of the publication date and are subject to change.

Catalog publication date: 6/7/22

# Welcome

Hennepin Technical College is a special place!

As Minnesota's largest stand-alone technical college, we are proud of our 50-year history providing credit and non-credit, hands-on workforce training. Hennepin Tech is unique because of our:

- Small class sizes
- Dedicated faculty with vast industry experience and connections
- Large labs with industry-standard equipment
- Diverse student body
- Programs ranging from five weeks to two years
- Skilled training in high-demand, high-paying fields (including Business, Building, Public Service, Health, Manufacturing, Media, and Transportation)
- Two metro locations, offering day, evening, and online programs

Because your success is our success, we are committed to helping you reach your goals. If you want a new job, change your career field, or move up to that next position, Hennepin Tech is here to support you! Our students are busy working, raising families, and growing their communities. We understand your commitments, that is why we offer students a variety of day, evening, and online options, as well as career counseling and mental health services, paid internships, and on-campus events and activities.

Every day our students change Minnesota's workforce and keep our communities strong. We invite you to build with us by becoming one of the 70,000 proud graduates and alumni of HTC.

Whatever your background or goals, you are welcome here. The Hennepin Tech community is ready to work alongside you to achieve success. We sincerely look forward to meeting you. You have come to the right place!

Joy Bodin  
Interim President  
Hennepin Technical College

# Student Handbook

## 2022-23 Academic Calendar

### Fall Term 2022

Fall term tuition due

Fall term begins

Fall Welcome Week Activities

Last day for 5-day add/drop period (100% Refund)

Federal Pell Grant Census Date

Labor Day Holiday (College Closed)

No Classes (Education Minnesota Days)

Spring Advising Month

No Classes

Thanksgiving Holiday Break (College Closed)

Fall 2023 and Spring 2024 schedules go online

Fall 2023 and Spring 2024 registration begins

Spring term tuition due

Fall term ends

College Closed

Term Break (No Classes)

### Spring Term 2023

College Closed

Spring term begins

Spring Welcome Week Activities

Last day for 5-day add/drop period (100% Refund)

Federal Pell Grant Census Date

Martin Luther King Jr. Day Holiday (College Closed)

### August 22 - December 16

August 1

August 22

August 22-26

August 26

August 26

September 5

October 19-22

November 1-30

November 22-23

November 24-26

December 1\*

December 1\*

December 9

December 16

December 26-27

December 17-January 8

### January 9 - May 16

January 2

January 9

January 9-13

January 13

January 13

January 16

No Classes	February 8
President's Day Holiday (College Closed)	February 20
No Classes	March 7
Spring Break (No Classes)	March 13-18
Summer/Fall Advising Month	April 1-20
No Classes	April 6
Summer term tuition due	May 8*
Spring term ends	May 16
Commencement (No Classes)	May 17
Term Break (No Classes)	May 18-June 4
Memorial Day Holiday, College Closed	May 29
<b>Summer Term 2023</b>	<b>June 5 - July 28</b>
Summer term begins	June 5
Last day for 5-day add/drop period (100% Refund)	June 9
Federal Pell Grant Census Date	June 9
Independence Day Holiday Observed (College Closed)	July 4
Summer term ends	July 28

\*Dates subject to change

# Contact Information

<b>Department</b>	<b>Brooklyn Park</b>	<b>Eden Prairie</b>
Access Services/Student Accommodations	(763) 488-2477	(952) 995-1544
Affirmative Action Officer/Human Resources	(763) 488-2633	
Agency Funding	(763) 488-2517	
Basic Needs	(763) 488-2441	
Campus Store	(763) 488-2665	(952) 995-1529
Career Development Experiences/Internships	(763) 488-2533	
Clubs	(952) 995-1377	
Health Programming/Insurance Questions	(952) 995-1377 slcd@hennepintech.edu	
Instructor	See your syllabus or D2L for instructor contact information	
Library	(763) 488-2929	(952) 995-1650
Office of Equity and Inclusion	(763) 488-2633	
One Stop Center Student Success Advisors Appointments Counseling Appointments	(952) 995-1300 OneStop@hennepintech.edu	
Public Safety	(952) 995-1525	
Public Safety Desk	(763) 488-2655	(952) 995-1433
Student Computer Lab	(763) 488-2429	(952) 995-1528
Student Life Center	(763) 488-2656	(952) 995-1358
Student Senate Office	(763) 488-2556	(952) 995-1416
Student Senate Advisors	(952) 995-1377	(952) 995-1556
Transfer Center	(763) 488-2835	(952) 995-1475
TRIO Student Support Services	trio@hennepintech.edu	
TRIO Upward Bound	(763) 488-2614	
Tuition Office	(763) 488-2424	
Tutoring Centers		
Learning Resource Center	(763) 488-2451	(952) 995-1548
Math Center	(763) 488-2592	(952) 995-1357

Writing Center	(763) 488-2467	(952) 995-1495
Veterans Certifying Official	(763) 488-2930	(952) 995-1474
Veterans Resource Center	(763) 488-2529	(952) 995-1509

## About HTC

### Mission

To provide excellence in career and technical education for employment and advancement in an ever-changing global environment.

### Our Vision

To be the leader of innovative career and technical education that leads to success for all students.

### Our Values

- Excellence: We pursue the highest standards in academic achievement and organization performance.
- Innovation: We value creativity and ingenuity to remain at the forefront of technical education excellence.
- Inclusion: We value an atmosphere of respect, dignity, and acceptance.

### Purpose

Hennepin Technical College (HTC) seeks to implement its mission by providing:

- A safe, accessible, and effective teaching and learning environment that supports sensitivity to diverse individuals and groups.
- Individual courses and course sequences which lead to A.S., A.A.S. degrees, diplomas, and certificates, which provide learners the opportunity to maximize their potential through the lifelong learning process.
- Developmental, general education, and technical career education curricula designed to prepare learners for employment in an ever-changing workplace.
- A comprehensive array of student support services and financial assistance.
- Opportunities for students to develop leadership skills through participation in student and professional organizations.
- Positive working relationships with business, industry, and other agencies to ensure that programs and equipment are relevant to emerging technology and occupational innovation.
- Flexible and responsive Customized Training Services to meet the specific needs and expectations of business, industry, and the community.
- Leadership roles that foster professional growth and promotion for a diverse, qualified staff.
- Intercollegiate relationships and cooperative agreements which increase opportunities and maximize resources.
- Organizational structures, which support communication, shared decision making, and quality programs and services.

– *The Staff of Hennepin Technical College, an Institution of Higher Education*

### Learner Outcomes

All HTC students at the time of graduation will demonstrate proficiency in:

- Oral Communication
- Written Communication
- Critical Thinking and Problem Solving
- Technological Literacy
- Mathematical Reasoning
- Scientific Reasoning

### Learner Values

While students are at HTC they will develop:

- Professionalism

- Cultural and Global Awareness
- Safety and Environmental Responsibility
- Leadership and Self-Direction
- Creativity and Innovation
- Ethical and Social Responsibility

## Accreditation

Hennepin Technical College is accredited by the Higher Learning Commission ([hlcommission.org](http://hlcommission.org)), a regional accreditation agency recognized by the U.S. Department of Education.

HLC's website is: [hlcommission.org](http://hlcommission.org) HLC may be reached at 1-800-621-7440, x100.

Program specific documents describing the accreditations and licensures held by HTC are available upon request from the College Registrar.

## Accessibility

Hennepin Technical College complies with the Americans with Disabilities Act, the Rehabilitation Act, and the Minnesota Human Rights Act, which provide for accommodations for students with disabilities. HTC students needing accommodations should contact Access Services/Student Accommodations.

### Brooklyn Park Campus

Toua Thao  
Associate Director of Academic Support Programs  
(763) 488-2477

### Eden Prairie Campus

Michelle Obergfell  
Director of Academic Support Programs  
(952) 995-1544

MN Relay 711

Upon request, this information will be made available in an alternate format by contacting Access Services.

## Diversity

Hennepin Technical College recognizes, respects, and honors diversity existing in society due to an individual's age, ethnicity, national origin, race, color, gender, sexual orientation, gender identity, gender expression, disability, marital status, familial status, religion, creed, or socioeconomic status. The college is committed to creating a curriculum and learning environment that empowers students to become contributing members of an increasingly multicultural and diverse society. Students are encouraged to explore and to be exposed to diverse cultures and perspectives as an important aspect of their learning experience.

## Equal Opportunity and Nondiscrimination in Employment and Education

Hennepin Technical College is committed to a policy of nondiscrimination in education and employment opportunity. No person shall be discriminated against in the terms and conditions of employment, personnel practices, or access to and participation in programs, services, and activities. Harassment of an individual or group on the basis of race, sex, color, creed, religion, age, national origin, disability, marital status, status with regard to public assistance, sexual orientation, gender identity, gender expression, familial status, or membership or activity in a local commission has no place in a learning or work environment and is prohibited.

This policy is directed at verbal and physical conduct that constitutes discrimination/harassment under state and federal law and is not directed at the content of speech. Cases in which verbal statements and other forms of expression are involved, HTC will give due consideration to an individual's constitutionally protected right to free speech and academic freedom. Please refer to policy 1B.1 Equal Opportunity and Nondiscrimination in Employment and Education at: [hennepintech.edu/policy](http://hennepintech.edu/policy)

HTC's designated officer for students is Jessica Lauritsen, Vice President of Student Affairs, contact information: [jessica.lauritsen@hennepintech.edu](mailto:jessica.lauritsen@hennepintech.edu) or (763) 488-2605. Her office is located at the Brooklyn Park campus, room C115 and Eden Prairie campus, room F151.

## Report/Complaint of Discrimination/Harassment Investigation and Resolution

This procedure is designed to further implement Minnesota State policies relating to nondiscrimination by providing a process through which individuals alleging violation of system non-discrimination policies may pursue a complaint. This includes allegations of discrimination or harassment based on sex, race, age, disability, color, creed, national origin, religion, sexual orientation, gender identity, gender expression, familial status, status with regard to public assistance or membership or activity

in a local commission. This procedure is not applicable to allegations of sexual violence, which should be handled under appropriate system and college or university policies and procedures.

This procedure shall apply to all individuals affiliated with Minnesota State, including its students, employees, and applicants for employment, and is intended to protect the rights and privacy of both the complainant and respondent and other involved individuals, as well as to prevent retaliation/reprisal. Individuals who violate this procedure shall be subject to disciplinary or other corrective action.

Not every act that may be offensive to an individual or group constitutes discrimination or harassment. In determining whether discrimination or harassment has occurred, the totality of the circumstances surrounding the incident must be carefully reviewed and due consideration must be given to the protection of individual rights, freedom of speech, academic freedom, and advocacy.

Minnesota State shall maintain and encourage full freedom, within the law, of expression, inquiry, teaching, and research. Academic freedom comes with a responsibility that all members of our education community benefit from it without intimidation, exploitation, or coercion. Discrimination and harassment are not within the protections of academic freedom.

To file a complaint, please refer to the “Concern/Complaint/Grievance Form”.

Student complaints are overseen by Jessica Lauritsen, Vice President of Student Affairs, contact information: [jessica.lauritsen@hennepintech.edu](mailto:jessica.lauritsen@hennepintech.edu) or (763) 488-2605. Office is located on the Brooklyn Park campus, room C115 and Eden Prairie campus, room F151.

## Academic Advising

A primary goal of Hennepin Technical College is to assist students in making progress toward their educational, career, and personal goals. In order to assist students to be successful, the following staff and faculty are available to meet with students:

### Counselors

Professional counselors serve the college community by providing academic, career, crisis, and personal counseling to students in a confidential setting. Counselors assist students on academic warning, suspension, and probation by formulating plans to help them accomplish their academic, career, and personal goals. Counselors also connect with students of concern to provide resources to help them improve their attendance and academic performance. In addition, counselors serve as the faculty advisors for all Individualized Studies and Health Science (Broad Field) major students at Hennepin Tech.

### Student Success Advisors

Student Success advisors provide assistance with academic planning, scheduling, and post-test advising. They are available by appointment and on a walk-in basis to help students with the admissions, registration, and financial aid processes. Student Success advisors help prospective students explore the programs offered by HTC and help current students stay on track with their academic plan.

### Faculty Advisors

Faculty advisors provide assistance in planning a program of study consistent with the students' educational and employment objectives. All students with a declared major are encouraged to meet with their faculty advisor during Advising month, which is held each semester prior to registration.

## Academic Support

### Tutoring Centers:

Our tutoring staff offers free tutoring to registered students. Tutors are available to meet with students virtually via Zoom or in person in our Tutoring Centers.

**Virtual Zoom Hours:** Monday-Friday from 8am - 4:30pm.

**On-campus Tutor Schedule:** Monday-Thursday from 9am - 5:30pm; Fridays from 8:30am - 4pm.

Please visit our website for up-to-date information.

## TRIO Student Support Services (SSS) and TRIO Student Support Services-ESL (SSS-ESL)

The TRIO SSS and TRIO SSS-ESL programs help students be academically successful, and acquire the skills, knowledge, values, and attitudes that will enable them to lead creative, productive, and self-fulfilling lives. Eligible participants are first-generation college students, of moderate income, or participants with a disability. The TRIO SSS-ESL program provides additional support to students in ESOL classes at Hennepin Technical College. This free service includes academic advising, tutoring, mentoring, career counseling, financial assistance information, workshops, and cultural events. For more information and to receive an application, contact TRIO Student Support Services.

# Student Life and Career Development

## Career Preparation Services

Career Services provides assistance to students in all areas of the job search process including:

- Resume and cover letter development or review
- Interviewing skills and practice interviews
- Networking with employers
- Mentoring and internship resources
- Workshops and informational sessions

## Career Fairs

Career Fairs, held virtually or in person, host employers that recruit students and alumni for jobs and internships. Even if you are not ready to apply now, you can prepare by networking with recruiters and learn about upcoming opportunities and requirements.

## Handshake

Visit Handshake to:

- Check the virtual job board (updated almost daily)
- Use your profile to apply for jobs
- Check upcoming virtual and physical career events (virtual fairs, interviews, etc.)
- Connect with employers
- Get consistent updated career-related information
- Use your resume to build your virtual profile
- Use Handshake Help Center for any other questions

## Student Life and Career Center

The Student Life and Career Center is located in room F120 on each campus and offers students a place to relax, socialize, grab coffee, or study between classes. In the Student Life and Career Center, you will find Student Experience Team members as a resource, as well as, the Student Senate office.

## Student Activities and Student Experience Team

Student Life offers many student activities that are designed for you to come when you can and leave when you need! The Student Life staff organizes these activities along with the Student Experience Team. The Student Experience Team is a group

of student leaders who are dedicated to positively representing Hennepin Technical College as peer mentors and assist in the planning and execution of campus activities and events. The Student Experience Team puts on small weekly events throughout each semester. Staff organize larger events such as Free Yoga, Mindful Meditation, Disc Golf, What's Poppin'?, Welcome Week, Be Healthy HTC, Grad Fest, and many more!

## Student Senate and Clubs

Student Senate is the official representation of students at Hennepin Technical College. All students are encouraged to participate in Student Senate meetings. Student Senate meetings are open to every HTC student and are held alternately on Wednesdays at noon (except during breaks and in the summer). The Student Senate Office is located in F121 (inside the Student Life and Career Center) on each campus. Hennepin Technical College also has a number of clubs for students to join. Check out the list at Student Clubs and Organizations

## Leadership Series

Leadership is one of the top skills employers are looking for. Gain leadership skills at Hennepin Tech through the Keys to Success, a Leadership for Life Series which are offered several times each semester on important topics that will help you be successful in your career.

## Fitness Centers

Fitness Centers are located on each campus for student use. Each fitness center has a mixture of cardio and strength equipment designed for ease of use. Fitness Trainers are available free of charge to help you achieve your goals, no matter what fitness level you are at. The Fitness Centers are located in G115 at Brooklyn Park and F125 in Eden Prairie and are open according to Building Hours. Learn more at: Health and Well-Being

## Disc Golf Courses

Each campus has a unique disc golf course available for student and public use. Maps and rules are available on our webpage. Hennepin Tech students are able to check discs out from the library. Tag your photos on social media with #HennepinTechFrolf!

## Workshops and Events

Visit our webpage for a list of current workshops and events at: Student Life and Career Development

## Contact Student Life and Career Development

Online at:

- [hennepintech.edu/studentlife](http://hennepintech.edu/studentlife)
- [facebook.com/hennepintechSLCD/](https://facebook.com/hennepintechSLCD/)

By email at:

- [SLCD@hennepintech.edu](mailto:SLCD@hennepintech.edu)

# Student Resources

Everyone needs help at some point, and those who ask for the help they need are often the most successful. So don't hesitate. Reach out. There are services to keep you on course to success.

## Bus Stops and Passes

Bus stops are located at the main entrances to each campus. Metro Transit serves the Brooklyn Park campus and Southwest Transit serves the Eden Prairie campus. A limited amount of bus passes are sold at a reduced rate at the Campus Store a few weeks prior to the start of the semester. They can be purchased by cash, debit card, financial aid, or credit card by currently enrolled students with a current Student ID and HTC school schedule.

## Campus Store

The Campus Store is a retail service facility operated to meet the needs of students, faculty, and staff. Textbooks; course-related

and reference materials; educational tools, kits, clothing, and supplies; may be purchased at the Campus Store at each campus or online.

## Career Exploration

Hennepin Technical College provides services to help students make the right career choice. Whether students are making a career change, returning to the workforce, undergoing a transition, or entering college for the first time, there are options available to help make informed, well-planned decisions, including career assessments. To receive more information about career development services at HTC or to make an appointment with a Career Counselor contact (952) 995-1300.

## Access Services

If you are an individual with a disability, the first step in seeking accommodations at Hennepin Technical College is to contact Access Services. You may be asked to provide documentation of your disability to assist in the discussion of possible accommodations in cases where your disability or need for accommodations is not evident. Please visit the Access Services website to schedule an appointment.

MN Relay 711

## English Speakers of Other Languages (ESOL)

Hennepin Technical College offers courses for English Speakers of Other Languages (ESOL). The Student Success Advisors offer assistance to English language learners with services such as financial aid, admissions, course placement, and career advising. They also help in locating services for social and academic support.

## Library

The Hennepin Technical College Library provides access to a variety of materials that support the curriculum of the college, including research databases, online and print materials, laptops, research help, and more. Many current course textbooks are also available to students for 4 hours (in-building use only). Our online content can be accessed off-campus, 24/7 through the Library website.

Please visit the Library website for more information about resources and services.

## On Campus Food

Food is available for purchase at the Campus Store on days classes are in session during Fall and Spring semesters. Hours vary by campus. Vending machines are also available around campus.

## Testing Centers

The Testing Centers serve students by providing the College Board Placement Test (ACCUPLACER) for appropriate course placement. The Testing Centers also offer makeup test services for Hennepin Technical College students. This service is only available to those students who, due to unforeseeable circumstances, cannot be present to attend the original exam date. Makeup testing is reserved on an individual basis for students who have prior approval from their course instructor.

The Testing Centers also provides HESI, NOCTI, and Pearson VUE exams for eligible and approved HTC students.

For more information, please visit Testing Services.

# Veterans Resources

## Veterans Resource Center

The Veterans Resource Center (VRC) is for veterans, current or former military personnel, family members or significant others. You can get information on veteran's benefits, relax between classes, go online, study, or just get together and talk.

The VRC is staffed by veteran work study students who can provide information on veteran's benefits. VRC hours will be posted on the door.

## Veterans Certifying Official

Any questions regarding VA benefits can be directed to the Veterans Certifying Official at [veteransco@hennepintech.edu](mailto:veteransco@hennepintech.edu)

## Beyond the Yellow Ribbon

We are a Beyond the Yellow Ribbon company creating awareness and connecting service members and their families with community support, training, services, and resources.

# Students' Rights and Responsibilities

Overviews of highly pertinent policies and procedures are located throughout this catalog. A full listing of the most current and complete official policies and procedures, are available at Policies and Procedures.

## Attendance

Instructors may enter a Last Date of Attendance (LDA) (partial attendance or no show) if you are not attending courses:

- Students with a LDA are locked out of their D2L account.
- Students marked with a LDA are unable to drop/withdraw online from their eServices account.
- Students may lose or have to pay back a portion of their financial aid for any LDA courses.

View Policy 3HTC.13 Last Date of Attendance at Policies and Procedures.

### Dropping A Class

From time of registration through the 5th business day of the semester (or day after class starts for late start classes)

Processed online through eServices account

Does not appear on transcript

No financial responsibility for course

Does not impact satisfactory academic progress

### Withdrawing From A Class

After 5th day of semester (free add/drop period)

- Through 80% of semester, for semester long courses

OR

- Through 80% of course, for courses that do not meet entire length of term

Processed online through eServices account

Class appears on transcript with a "W" attached

Financially responsible for the credits

Does not impact GPA

Does impact completion rate

## Satisfactory Academic Progress

In order to be in Good Standing students must maintain:

- Overall grade point average (GPA) of at least 2.0. This means at least a C average.
- Overall completion rate of at least 66.67%. This means that all the credits attempted must be completed with 66.67%. W, F, NC, and I grades will negatively affect completion rate.

Students who fail to meet the satisfactory academic requirements after one term will be placed on Academic Warning. Failure to meet the requirements while on Academic Warning will result in the student being placed on Academic Suspension. Policy 2.9 Academic Standing and Financial Aid Academic Progress is below and also available at Policies and Procedures.

## Academic Standing and Financial Aid Academic Progress Policy

Hennepin Technical College (HTC) requires that all students make satisfactory progress toward a degree, diploma, or certificate to remain in good academic standing. Additionally, federal and state laws require that a recipient of financial aid make satisfactory academic progress toward a degree, diploma, or certificate to remain eligible for financial aid. In compliance with federal and state laws and to implement college policy, HTC has established procedures defining the standards of academic progress for all students.

Students bear the primary responsibility for their own academic progress and for seeking assistance when experiencing academic difficulty. Students are encouraged to keep a file of their grades and transcripts. Admission and faculty advisors are available to review students' academic progress.

## Implementation Procedures

**Purpose** This policy and procedure sets forth the process to be used at HTC concerning satisfactory academic standing. Students bear primary responsibility for their own academic standing and for seeking assistance when experiencing academic difficulty. Students are encouraged to keep a file of their grades, transcripts, and course syllabi.

**Requirements** The requirements for satisfactory academic standing are based on students meeting both a qualitative and a quantitative measure. Satisfactory progress will be measured after a student has attempted their first course.

**Qualitative Measure** All students are required to maintain a minimum cumulative 2.0 GPA (Note: A 2.0 GPA is required to graduate.)

**Quantitative Measure** All students are required to complete a minimum of 66.67% cumulative attempted credits.

**Part 1. Implementation** The academic standing of all students will be evaluated at the end of each term as follows:

### Subpart A. Academic Warning

Students who fail to meet the minimum cumulative academic standing requirements that term will receive a warning letter from the Registrar and will be placed on academic warning for one term, commencing immediately. This allows students making substantial improvement to continue with the educational objectives.

Students experiencing academic difficulties are encouraged to use the resources available in the Tutoring Centers. Academic assistance includes support in reading, communications, study skills, limited English proficiency, math, tutoring, and special accommodations.

### Subpart B. Suspension

Students on warning who fail to meet the minimum cumulative academic standing requirements for a second consecutive term will receive a suspension letter from the Registrar and will be subject to suspension commencing immediately. Suspended students who wish to remain enrolled at the college must successfully appeal the suspension in order to be reinstated. If the appeal is denied or not completed the student's registration will be cancelled. If students continue under an approved appeal, they will be placed on warning until the cumulative GPA reaches a 2.0 and the cumulative completion rate reaches 66.67%. If reinstated students fail to meet the standards for satisfactory academic progress within a term, they will be suspended.

### Subpart C. Academic Plan

Students who are reinstated following an academic suspension shall be required to have an academic plan approved by an HTC counselor. Such plans shall specify the required term completion rate, grade point average and registration requirements for the student. Completion of student success education coursework may also be added to the academic plan and shall become a requirement for returning to good standing. If students fail to meet the term standards, they will be suspended.

### Subpart D. Appeals

Students who fail to meet academic standing requirements and are suspended from enrollment have the right to appeal based on unusual or extenuating circumstances. Appeals which are denied may be submitted to the satisfactory academic progress appeals review committee for further review.

### Subpart E. Reinstatement

Students who have been suspended from enrollment may continue at the college after an appeal has been approved. If at any point it is determined that students will not be able to finish the required courses to graduate from their program within the 150% time frame, financial aid eligibility will be terminated immediately. Note: It is possible to be reinstated to good academic standing without being reinstated to financial aid Satisfactory Progress eligibility

## Financial Aid Satisfactory Academic Progress Procedure

### Part 1. Purpose

This procedure sets forth the process to be used at HTC concerning financial aid satisfactory academic progress. Students are required to maintain satisfactory academic progress toward the completion of a degree, diploma, or certificate in order to receive financial aid. Federal and state work-study, loans, grants, and some scholarships are covered under this procedure. Students bear primary responsibility for their own academic progress and for seeking assistance when experiencing academic difficulty. Students are encouraged to keep a file of their grades, transcripts, and course syllabi.

*NOTE: It is possible for a student to be in financial aid Satisfactory Academic Progress suspension status but not be in an academic standing suspension status at HTC.*

HTC reserves the right to withhold financial aid at any time from any students who are not performing satisfactorily at minimal standards due to an attendance pattern, and thus abuses the receipt of financial assistance. For example, financial aid could be withheld from students who withdraw from all classes for two consecutive terms, or students who have previously attended two or more institutions and who have not progressed satisfactorily, or students who do not appear to be pursuing

degree/diploma/certificate completion, etc.

## **Part 2. Qualitative Measure of Progress**

HTC financial aid recipients are required to maintain a cumulative 2.0 or greater Grade Point Average (GPA). Federal Title IV financial aid programs and programs authorized under Minnesota Statutes 136A require HTC to develop satisfactory academic progress procedures that shall apply to all students receiving financial aid under these programs. Monitoring of the quantitative standard is cumulative and will commence with the first credit attempted. All periods of enrollment will be included, regardless of whether a student received financial aid for that period. A cumulative 2.0 GPA is required to graduate.

## **Part 3. Quantitative Measure of Progress**

### **Subpart A. Required Completion Percentage**

Financial aid recipients are required to maintain a cumulative credit completion rate of 66.67% or greater of all credits attempted at HTC. Federal Title IV financial aid programs and programs authorized under Minnesota Statutes 136A require HTC to develop satisfactory academic progress procedures that shall apply to all students receiving financial aid under these programs. Monitoring of the quantitative standard is cumulative and will commence with the first credit attempted. All periods of enrollment will be included, regardless of whether a student received financial aid for the period.

HTC uses cumulative credits completed, divided by credits attempted to measure completion percentage. To remain eligible for financial aid, students are required to progress toward the completion of an academic program by successfully completing 66.67% of all credits attempted at HTC. Courses for which students receive a letter grade of A, B, C, D, and P are included in the calculation of cumulative credit completion percentages as courses successfully completed.

Courses for which students receive a letter grade of I, NC, W, F, FN and FW will be treated as credits attempted but not successfully completed. Audited courses (AU) are not included in the calculation.

### **Subpart B. Maximum time Frame**

The maximum allowable time frame for students to complete an academic program is 150% of the published credit length of the program of study. For example, if the program of study is 60 credits in length, students would be eligible to receive financial aid for up to 90 attempted credits ( $60 \times 1.5 = 90$ ). All cumulative credits attempted are counted, including accepted transfer credits, and consortium credits, regardless of whether financial aid was received for the credits, or the course work was successfully completed. All credits attempted at HTC will be counted, even though a period of time may have elapsed between enrollments and regardless of whether students received financial aid for the terms and credits measured.

## **Part 4. Evaluation Period**

Financial Aid Satisfactory Academic Progress will be evaluated three times each year after Fall and Spring Semester, and Summer Term grades are recorded and prior to the 10th day of the subsequent term.

## **Part 5. Financial Aid Suspension and Warning**

### **1. Maximum Time Frame**

Students who have reached or exceeded the maximum number of credits permitted to complete their program of record will be suspended from financial aid eligibility. Changing majors, withdrawing from courses, and/or repeating courses can contribute to suspension of financial aid based on the standards for maximum time frame. Credits earned in the college's English for Speakers of Other Languages (ESOL) program do not count toward the determination of maximum timeframe. All local attempted credits and transfer credits into Hennepin Technical College count towards the maximum timeframe. Completing a major or changing a major will change timeframe calculation and allow the new count of credits to the new major less any transfer of credit. If courses in the previous major are required in the new major, they will not be counted twice in the new maximum timeframe calculation.

### **2. Qualitative Standard (GPA) or Quantitative Standard (Completion Percentage) Failure**

Students who fail to meet the qualitative or quantitative measure at the time of evaluation will be placed on academic warning. Students will be eligible for financial aid during this period. Students who fail to meet the qualitative or quantitative measures at the end of the warning period will have financial aid eligibility suspended immediately.

### **3. Reinstatement of Students on Warning Status**

At the end of the warning period, students who have met the cumulative qualitative and quantitative standards of the college will have their eligibility for financial aid reinstated by the college.

### **4. Suspension of Students on Warning Status**

At the end of the warning period, students who have not met the cumulative qualitative and quantitative standards of the college will be suspended immediately by the college upon completion of the evaluation.

### **5. Continuation of Students Who Successfully Appeal a Suspension**

Students who fail to make satisfactory academic progress and are suspended from financial aid eligibility have the right to appeal based on extenuating circumstances. Students who are reinstated following an academic suspension shall be

required to have an academic plan approved by an HTC counselor. Such plans shall specify the required term completion rate, grade point average and registration requirements for the student. Completion of student success education coursework may also be added to the academic plan and shall become a requirement for returning to good standing. If students fail to meet the standards documented in the academic plan, they will be suspended.

### **Part 6. Appeals**

Any student who has been suspended from financial aid has the right to appeal their status based on extenuating circumstances. All appeals must be submitted in writing with supporting documentation attached. Results of an appeal will be sent to the student in writing.

### **Part 7. Additional Elements**

#### **Subpart A. Treatment of Grades**

Courses for which students receive a letter grade of A, B, C, D, or P are included in the calculation of cumulative credit completion percentage as courses successfully completed. Courses for which students receive a letter grade of I, NC, W, F, FN or FW will be treated as credits attempted but not successfully completed. All credits and grades in the major are included in the maximum timeframe calculation.

#### **Subpart B. Audited Courses**

Audited courses will not be funded by financial aid and are not included in any financial aid satisfactory academic progress measurements.

#### **Subpart C. Consortium Credits**

Credits for which financial aid is received under a consortium agreement will be included in cumulative GPA, completion percentage, and maximum timeframe calculations.

#### **Subpart D. Developmental Credits**

Developmental credits are included in the cumulative GPA and completion percentage measurement of financial aid satisfactory academic progress. Up to 30 developmental credits are excluded from the maximum timeframe calculation.

#### **Subpart E. Repeated Credits**

Students are allowed to repeat a course as often as allowed by the academic policies of the college. For a course that is repeated, the original grade will remain on the transcript but will not be used in the GPA calculation. The grade earned for the most recent attempt will be used in the cumulative GPA calculation. The original course credits remain in the number of attempted credits, but are removed from the credits earned calculation. A student may not receive financial aid for more than one repetition of a previously passed course.

#### **Subpart F. Transfer Credits**

Transfer credits accepted by HTC and applied toward students' degree, diploma, or certificate requirements to graduate will apply toward the maximum time frame calculation and percent of completion calculation. If at the point of admission transfer students' prior academic record does not meet the college's minimum cumulative qualitative or quantitative satisfactory academic progress standards, HTC may immediately place the student on financial warning or suspend financial aid eligibility, subject to the conditions under which the student is admitted to the institution.

#### **Subpart G. Withdrawals**

Credits for which a grade of "W" is received are considered attempted credits but not successfully completed credits. A grade of "W" does not impact GPA, but does negatively impact the cumulative completion percentage and counts toward the maximum time frame.

## **Student Code of Conduct**

Hennepin Technical College recognizes that all students have responsibilities as citizens and as members of the college community. Student responsibilities include regular attendance, punctuality, positive relationships with other students and staff, appropriate behavior and attitude, and acceptable progress, all of which are necessary to assure success in the college. Policy 3.6 Student Code of Conduct is available at Policies and Procedures.

## **Student Educational Records**

The activities of Hennepin Technical College are administered in accordance with a variety of federal and state laws, including The Family Educational Rights and Privacy Act (FERPA), the Minnesota Government Data Practices Act, Minnesota State Board policies, and assorted rules and regulations, as well as staff and student rights and responsibilities, as they relate to student educational records. For more information concerning applicable College and system policy, go to: HTC Policies and Procedures or Minnesota State Board Policies.

**The Family Education Rights and Privacy Act (FERPA)** protects a student's right to privacy concerning their educational

records. There are some types of information such as grades, financial aid, class schedules, or conduct records that family members might like to receive, but FERPA guidelines prohibit HTC from disclosing information without written consent from a student. This means, that even if a family member or another third party is paying the bills, they cannot access a student's educational or financial records without the student's consent. FERPA affords student certain rights with respect to their education records. They are:

1. **The right to inspect and review the student's education records within 45 days of the day the College receives a request for access.** Students should submit to the Office of the Registrar or other appropriate official, written requests that identify the record(s) they wish to inspect. The College official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the College official to whom the request was submitted, that official shall advise the student of the correct official to whom the request should be addressed.
2. **The right to request the amendment of the student's education records that the student believes are inaccurate or misleading.** Students may ask the College to amend a record that they believe is inaccurate or misleading. They should write the College official responsible for the record, clearly identify the part of the record they want changed, and specify why it is inaccurate or misleading. If the College decides not to amend the record as requested by the student, the College will notify the student of the decision and advise the student of his or her right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when notified of the right to a hearing.
3. **The right to consent to disclosures of personally identifiable information contained in the student's education records, except to the extent FERPA authorizes disclosure without consent.** One exception which permits disclosure without consent is disclosure to school officials with legitimate educational interests. A school official is a person employed by the College in an administration, supervisory, academic or research, or support staff position (including health or medical staff) and also clerical staff who transmit the education record; a person or company with whom the College has contracted (such as an attorney, auditor, or collection agent); a person who is employed by Hennepin Technical College Security Department acting in a health or safety emergency; or a student serving on an official committee, such as disciplinary or grievance committee, or assisting school official in performing his or her tasks. A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibility. Equal Opportunity and Nondiscrimination in Employment and Education.

**Student Education Records College Policy.** Federal law and state statute allow current and former students access to their education records. While the primary record is located in the Office of the Registrar, other records may be located in Admissions, Financial Aid, Business Office, Student Life and Career Development, Student Affairs and academic departments. For more information, refer to policy 3HTC1, Student Data Privacy at: [hennepintech.edu/policy](http://hennepintech.edu/policy)

Hennepin Technical College has designated the following items as Directory Information. As such, this information may be released to the public without the consent of the student: name, dates of enrollment and/or registration, major field of study, degree, diploma, certificates earned, and special student recognition/achievements. Directory information does not include identifying data which references religion, race, color, social position or nationality. Students may request directory information be kept private by contacting the Office of Registrar.

## Student Review and Consultation

Students have the right to appropriate levels of participation in college decision making. Each campus' Student Senate appoints students to college committees and meets regularly with college leadership. For details view Minnesota State Policy 2.3 and Procedure 2.3.1 Student Involvement in Decision Making at Minnesota State Board Policies.

# Emergency Information

## Emergency Closings

In the event of inclement weather or other emergency closings, official Hennepin Technical College closing notifications will be broadcast on all metro area television stations (WCCO, KSTP, KMSP and KARE). Notification of campus closures and emergencies will be posted on the HTC webpage, Facebook and Twitter accounts, and also sent to all Star Alert™ users.

## Star Alert™

The Star Alert™ system sends messages to you through cell phone text messaging and email during emergencies that threaten life, safety, or severely impact normal campus operations. These messages may be weather-related alerts, all clear notifications, timely warnings or other situations that impact campus safety.

Enroll on the HTC Public Safety webpage at Star Alert.

Everyone who regularly comes to Hennepin Technical College is urged to register for this valuable service. In addition to sharing emergency information prior to your arrival on campus, it also supports wireless notification in a timely manner in the event that the campus computer and telephone systems are compromised.

## Emergency Procedures and Drills

Emergency Response Guides and posters are posted throughout campus. Follow the directions given by HTC faculty and staff during an emergency. All students, staff and faculty are required to evacuate the building when instructed to do so.

## Emergency Evacuation Accommodations

If you are a student with a mobility or sensory challenge, please work with your instructors to ensure they are aware of your needs so they may better assist you in the event of emergency evacuations or drills. We also ask that you contact one of the following individuals as soon as you register for classes to discuss safe evacuation practices, and identify areas of rescue assistance.

- Michelle Obergfoll, Director of Academic Support Programs, Brooklyn Park Campus (952) 995-1544
- Randy Roehrick, Director of Public Safety, Brooklyn Park Campus, Eden Prairie Campus and Law Enforcement and Criminal Justice Education Center (952) 995-1525
- Campus Public Safety, Brooklyn Park Campus (763) 488-2655, Eden Prairie Campus (952) 995-1433

# Public Safety and Security

## Crime Awareness and Campus Security Act

Hennepin Technical College's Public Safety publishes an Annual Security Report, detailing three years of campus-specific crime statistics, reporting procedures and safety information. This report is made available to the College community as required by the Clery Act and can be found on the HTC Public Safety webpage.

The Annual Security Report is available at each Public Safety office, and copies are available upon request by contacting the HTC Director of Public Safety at 952-995-1525. HTC maintains a Crime log at each Public Safety office, which is available for review on request.

HTC encourages all students and College community members to be fully aware of safety and security issues on and around the campus and to report illegal and inappropriate activities. Personal awareness and applying personal safety practices are the foundation of a safe community.

## Security and Safety

In an effort to ensure optimal student safety, all students are expected to comply with instructions from Hennepin Technical College faculty, staff, and emergency responders. Emergency Response Guides and posters are posted throughout the campus. These guides identify actions to take during a fire drill, severe weather, fire, medical emergencies, and lockout/lockdown events. Campus-specific guides can be found on the HTC Public Safety webpage, or a copy can be obtained from the HTC Director of Public Safety.

## Abandoned Personal Property

Hennepin Technical College is not responsible for loss of personal property left in classrooms, labs, or in any other area in or around the college. Lost and found is located in the Public Safety Office at each campus. For further details on Policy 6HTC.3 Abandoned Personal Property, visit Policies and Procedures.

## Accident Reporting

If an injury should occur at the college, it must be reported to Public Safety personnel and an accident report form must be completed immediately. When emergency medical services are necessary, 911 is called and victims are transported to the nearest emergency treatment facility. Students electing to decline medical treatment must sign a waiver form provided by the emergency responders. Students are responsible for the cost of their medical insurance and treatment while enrolled at Hennepin Technical College.

## Alcoholic Beverages or Controlled Substances on Campus

HTC adheres to the federal Drug Free Schools and Campuses Act (DFSCA) and Minnesota State Colleges and Universities Board Policy 5.18, which prohibits the unlawful possession, use, or distribution of alcohol and illicit drugs by students and employees on the college premises, or in conjunction with any college-sponsored activity or event, whether on- or off-campus. View Policy 5.18 Alcoholic Beverages or Controlled Substances on Campus at Policies and Procedures.

For a list of community area substance abuse treatment center referrals, visit Community Resources

## Animals on Campus

Animals are not allowed on campus unless there is a valid educational purpose as determined by instructors or authorized college personnel. Service animals are an exception to this policy.

## Background Study of Students in Health and Child Care Programs

Minnesota law requires that any person who provides services that involve direct contact with children, patients, and residents at a health or childcare facility licensed by the State of Minnesota have a background study conducted by the state. Individuals with specified felony convictions are prohibited from having direct contact with children, patients, and residents of licensed facilities. Any individual refusing to cooperate in the criminal background study cannot participate in coursework that requires direct contact with children, patients or residents of licensed facilities.

Students who are disqualified from having direct patient/resident/child contact will not be able to participate in coursework, which includes a practical experience. Therefore, completion of coursework for the program major will not be possible without documentation of a cleared background study.

## Bloodborne Pathogens and Communicable Diseases

Hennepin Technical College will eliminate or minimize student's occupational exposure to blood or other body fluids and comply with the OSHA Bloodborne Pathogens Standard, 29 CFR 1910.1030.

HTC respects the rights of individuals with a communicable disease to education, to privacy, and to be free from discrimination. Hennepin Technical College also acknowledges the rights of others in the system to be educated in a safe environment and the need to educate administrators, faculty, and students about preventing and reducing the risk of transmission of communicable diseases.

Students with communicable diseases will be excluded from attending school in their regular classrooms if their attendance creates a substantial risk of the transmission of illness to other students or employees of the college. View Policy 5HTC.3 Communicable Diseases at Policies and Procedures.

## Children on Campus

Due to disruption and possible risk of harm, children may not be left unsupervised on the college campus. This includes areas such as the cafeteria, student common areas, library, Veterans Resource Center, Student Computer Lab, Learning Resource Center, Writing/Math Centers, and hallways. Children are not allowed in classrooms or labs.

## Hepatitis

Hepatitis is a serious disease caused by a virus that attacks the liver. There are three different types of Hepatitis, identified as A, B, and C, each one with different symptoms and different levels of seriousness.

Students should be aware of the dangers of this disease and are encouraged to visit the HTC website and the Centers for Disease Control and Prevention website for more information about the disease and how to prevent it.

## Immunizations

Minnesota Statute MS. 135A.14 requires all students born after 1956 be immunized against diphtheria, tetanus, measles, mumps, and rubella, allowing for certain specified exceptions. No proof of immunization is needed from students who are assumed to be up-to-date with their immunizations due to requirements imposed by their previous school enrollment, such as students who graduated from a Minnesota high school in 1997 or later.

## Insurance

All students are required by federal law to carry health insurance. Students enrolled in some courses will be required to carry liability insurance coverage.

## Latex Free

Hennepin Technical College promotes a latex free environment.

## Parking

Student parking is available at each campus. Parking fees are included in tuition and fee costs. Parking permits are not issued for students. Each campus has spaces/lots reserved daily for the use of visitors, staff, and faculty. The staff, faculty, and visitor lots/spaces are reserved Monday - Friday between the hours of 7am - 4pm. Public Safety actively enforces parking in the reserved spaces/lots, and will issue \$25 citations for violations. Handicapped parking spaces are available at each campus. Public Safety provides escorts to all campus parking areas on request.

For more information, visit Public Safety for Parking Guidelines and maps.

## Possession or Carry of Firearms and Other Weapons

No student is permitted to carry or possess a firearm on college property except as otherwise provided in the policy. View Policy 5.21 Possession or Carry of Firearms and Other Weapons at Policies and Procedures.

## Safety

Safety is a high priority at Hennepin Technical College. Every attempt is made to comply with safety standards. Safety instruction is included in the program curriculum. All students must know the hazards associated with the educational experience and be fully educated on the proper use and operation of any tool before beginning an assignment. Machine guards must be in place and adjusted to safeguard operators from injury. The proper tools must be used to complete a job safely and effectively.

Personal protective equipment (PPE) must be worn and used in designated on-campus and off-campus instructional areas. Protective eyewear must be worn in designated on-campus and off-campus instructional areas and any other locations where grinding, chipping, sandblasting, welding, and/or chemical hazards exist. If you have questions on proper PPE, please consult with your instructor.

Minnesota State Law provides that every person shall wear industrial quality eye protection in designated areas. Students must purchase their own protective eyewear, which is available at the campus bookstore. Contact lenses may not be worn in designated areas without the addition of safety glasses. Approved hard hats must be worn in designated on-campus and off-campus instructional areas and in any location where there is a chance of objects falling from above.

Students who do not comply with safety requirements are subject to disciplinary action.

## Sexual Violence

Sexual violence is an intolerable intrusion into the most personal and private rights of an individual, and is prohibited at Hennepin Technical College. HTC is committed to eliminating sexual violence in all forms and will take appropriate remedial action against any individual found responsible for acts in violation of this policy. Acts of sexual violence may also constitute violations of criminal or civil law, or other Minnesota State Colleges and Universities Board Policies that may require separate proceedings. To further its commitment against sexual violence, HTC provides reporting options, an investigative and disciplinary process, and prevention training or other related services as appropriate. View Policy 1B.3 Sexual Violence at Policies and Procedures.

### Sexual Violence

Sexual violence includes a continuum of conduct that includes sexual assault, non-forcible sex acts, dating and relationship violence, stalking, as well as aiding acts of sexual violence.

### Sexual Assault

Sexual assault means an actual, attempted, or threatened sexual act with another person without that person's consent. Sexual assault is often a criminal act that can be prosecuted under Minnesota law, as well as form the basis for discipline under Minnesota State Colleges and Universities student conduct codes and employee disciplinary standards. Sexual assault includes but is not limited to:

1. Involvement without consent in any sexual act in which there is force, expressed or implied, or use of duress or deception upon the victim. Forced sexual intercourse is included in this definition, as are the acts commonly referred to as "date rape" or "acquaintance rape." This definition also includes the coercing, forcing, or attempting to coerce or force sexual intercourse or a sexual act on another.

2. Involvement in any sexual act when the victim is unable to give consent.
3. The intentional touching or coercing, forcing, or attempting to coerce or force another to touch an unwilling person's intimate parts (defined as primary genital area, groin, inner thigh, buttocks, or breast).
4. Offensive sexual behavior that is directed at another such as indecent exposure or voyeurism.

### **Dating and Relationship Violence**

Dating and relationship violence includes physical harm or abuse, and threats of physical harm or abuse, arising out of a personal intimate relationship. This violence also may be called domestic abuse or spousal/partner abuse and may be subject to criminal prosecution under Minnesota state law.

### **Stalking**

Stalking is conduct directed at a specific person that is unwanted, unwelcome, or unreciprocated and that would cause a reasonable person to fear for her or his safety or the safety of others or to suffer substantial emotional distress.

### **Affirmative Consent**

Consent is informed, freely given, and mutually understood willingness to participate in sexual activity that is expressed by clear, unambiguous, and affirmative words or actions. It is the responsibility of the person who wants to engage in sexual activity to ensure that the other person has consented to engage in the sexual activity. Consent must be present throughout the entire sexual activity and can be revoked at any time. If coercion, intimidation, threats, and/or physical force are used, there is no consent. If the complainant is mentally or physically incapacitated or impaired so that the complainant cannot understand the fact, nature, or extent of the sexual situation, there is no consent; this includes conditions due to alcohol or drug consumption, or being asleep or unconscious. A lack of protest, absence of resistance, or silence alone does not constitute consent, and past consent of sexual activities does not imply ongoing future consent. The existence of a dating relationship between the people involved or the existence of a past sexual relationship does not prove the presence of, or otherwise provide the basis for, an assumption of consent. Whether the respondent has taken advantage of a position of influence over the complainant may be a factor in determining consent.

### **Reporting Procedure**

Complainants of sexual violence may report incidents at any time, but are strongly encouraged to make reports promptly in order to best preserve evidence for a potential legal or disciplinary proceeding.

Complainants are strongly encouraged to report incidents of sexual violence to law enforcement for the location where the incident occurred. Complainants are also encouraged to contact the local victim/survivor services office, counseling and health care providers, campus Title IX coordinator, or HTC Public Safety authorities for appropriate action.

### **Personal Empowerment**

Below are some things to keep in mind to ensure your safety and the safety of others.

- No means no.
- Know that drinking and drug use can impair your judgment.
- If you drink, drink responsibly.
- Listen carefully. If you feel you are getting a mixed message, ask for clarification.
- Remember that sexual assault is a crime.
- Don't assume that someone wants to have sex because of the way they are dressed, they drink (or drink too much), or agree to go to your room.
- Don't assume that if someone has had sex with you before that they are willing to have sex with you again.
- Don't assume that if your partner consents to kissing/other sexual activities, they are consenting to all sexual activities
- Be aware that having sex with someone who is mentally or physically incapable of giving consent is rape.
- If you have sex with someone who is drugged, intoxicated, passed out, or is otherwise incapable of saying no or knowing what is going on around them, you may be guilty of rape.

### **Don't Be a Bystander**

It is everyone's responsibility to make HTC a safe and respectful campus. If you see something that doesn't seem right, don't be a bystander, do something or get help to do something!

Additional resources can be found at Community Resources

*Portions of this section are adapted from the Minnesota State Personal Empowerment through Self-Awareness Module.*

### **Tobacco Free Campus**

Hennepin Technical College is tobacco free. View Policy 5HTC.6 Tobacco Free Policy at Policies and Procedures.

# Technology Services

HTC provides technology resources to all enrolled students, faculty and staff. The college Information Technology Department takes pride in providing high-quality support and service.

For college-related technical assistance, please contact the IT Helpdesk at (952) 995-1411.

## College Email Account

College provided email is the official means of student communication from the college. It is also how you are notified of any registration waitlist information and any online class communication. Students will automatically receive an email address when they are enrolled and access to email is through Microsoft Office 365. Technical support for student email is provided from the student computer lab on each campus. Student email will be provided for one year after the last semester a student is enrolled.

## College Technology Use Policy

All technology resources are the property of HTC. The use of technology resources is a privilege. Students are required to abide by HTC's Policy 5.22 Acceptable Use of Computers and IT Resources. The policy can be viewed at Policies and Procedures.

## D2L

D2L or Desire to Learn is a course management system. A D2L course site allows anytime, any-where access to syllabi, readings, multimedia files, electronic drop boxes, online quizzes, communication, grading, student progress reports, etc. D2L accounts are activated the day after a student registers for a course.

## eServices

Using your StarID and password, you have the ability to access a variety of eServices:

- Register for classes
- Update your address, phone numbers, and email address
- View your grades by term
- View your complete HTC academic record
- View your Interactive Degree Audit Report (DARS)
- View the status of your Financial Aid
- View your Financial Aid Award Letter
- Accept awarded student loans
- View your account for any balance due
- Pay your HTC account using a credit card

Visit eServices.

## Learning Commons

Each campus has a Learning Commons, with 10 computers. This area is open to all during normal campus hours.

## StarID

StarID is a single username login for D2L, eServices, and other services used by HTC students and employees. Student StarID support is available in the Student Computer Lab.

## Student Computer Labs

Hennepin Technical College offers students internet access and a variety of software programs in an open lab environment. For assistance with any college technology, you may visit the Student Computer Lab. Only college students with a current HTC student ID card may utilize the Student Computer Lab. Hours for the Student Computer Lab are posted outside of the lab.

## Student ID Cards

All students are required to obtain an HTC student ID card. Student ID cards will be required for checkout of library materials and to utilize the Student Computer Labs. Student ID cards are issued by Public Safety staff during New Student Orientation or in the Public Safety Office. To obtain a student ID card, students must provide a current course schedule and photo ID. The first student ID card issued to a student is free; replacement cards and/or name changes are \$10 each. The \$10 fee must be paid at

the Tuition Office before the replacement card can be issued.

## Enrollment Guidelines

### Selecting a Major

A major is the specific A.S. degree, A.A.S. degree, diploma, or certificate in which a student is enrolled. Students typically declare a major during the admissions process. HTC grants some or all awards listed below in each program of study. Students who have questions about their major selection or changing their major should meet with a student success advisor for assistance.

- Associate in Science (A.S.) Degree: A.S. degrees prepare students to transfer to a baccalaureate program in a related scientific, technical, or professional field.
- Associate in Applied Science (A.A.S.) Degree: A.A.S. degrees prepare students for positions in specific occupational areas that typically require two years of education with a general education component.
- Diploma: Diplomas prepare students for positions that typically require one to two years of education with general education included.
- Advanced Technical Certificate: Advanced Technical Certificates prepare students for career advancement and enhancement opportunities that require less than one year of education.
- Occupational Certificate: Occupational Certificates prepare students for positions that require less than one year of education. Occupational Certificates have a credit range from 9-30 credits.

### Visiting Students/Non-Degree Seeking

Students who wish to enroll in classes at Hennepin Technical College (HTC) but not complete a degree are called visiting students. This would include students seeking to enroll in courses for enrichment purposes or career advancement. Visiting students do not apply to the college.

Visiting students must meet the necessary prerequisites as published on the college website to be eligible for registration. Students who do not complete the placement testing prior to enrolling in courses will be required to do so after attempting four credits.

Visiting students register and pay for classes using the Minnesota State eServices site. To make a payment, click the Bills and Payments link following your completed registration. Any questions regarding payment may be directed to the Business Office. Non-degree seeking students are not eligible for financial aid.

### Senior Citizens (62 Years of Age or Older)

Minnesota residents, age 62 or older, are eligible to attend Hennepin Technical College at a reduced fee of \$20 per semester credit. The senior rate fee will only apply to courses taken for credit. There is no tuition fee for auditing courses. Seniors must pay for books, supplies, and materials. Seniors will also be charged for specific course fees, student association, technology, and parking (unless online course). Senior rate registrations will be accepted on a space available basis the day of the first class meeting. Senior citizens wishing to guarantee their enrollment in a course may register earlier, but will be required to pay full tuition and fees. Coursework paid by senior citizens at the regular tuition rate prior to the date on which the reduced rate becomes available cannot be dropped and subsequently added in order to receive the reduced rate. All college policies apply to these students including Satisfactory Academic Progress standards.

### Post-Secondary Enrollment Options (PSEO) for High School Students

High school students with demonstrated academic achievement and the maturity to succeed in a college environment may be admitted to Hennepin Technical College. Post-Secondary Enrollment Options (PSEO) programs are intended to promote a rigorous curriculum and to provide a wider variety of options to students from public, non-public, home school, or American Indian-controlled tribal contract or grant schools eligible for aid under section 124D.83. The Post-Secondary Enrollment Options program allows sophomores, juniors, and seniors the opportunity to earn college credits or to use those credits toward the completion of high school graduation requirements. Enrollment is required and is determined on a space available basis.

#### Eligibility Criteria

- Must be a high school sophomore, junior or senior in any Minnesota public, non-public, home school, or American Indian-controlled tribal contract or grant schools eligible for aid under section 124D.83.
- Students must meet the following requirements:
  - Seniors: Class rank at top half of your class or have a 2.5 GPA.

- Juniors: Class rank at top third of your class or have a 3.0 GPA.
- Sophomores: must provide documentation of passing the 8th Grade Reading MCA or indicate the 8th Grade Reading MCA was not taken at all.

OR

- Students who do not meet class rank or GPA requirements are asked to submit a letter of recommendation from a high school counselor or teacher.
- High School GPA, ACT, MCA or completion of the HTC Accuplacer Test is required to determine placement.
- Remedial, developmental, and other courses not considered college level will not be paid for by the PSEO program.

### **Eligibility Criteria for Sophomores:**

A student who is in 10th grade must meet or exceed scores on the 8th grade Minnesota Comprehensive Assessment in reading and must meet any the other course prerequisites or course enrollment standards established by the college, including but not limited to assessment test scores, program admission, or other requirements, to enroll in one career or technical education course. If the student receives a grade of “C” or better in the course, the student shall be allowed to take additional career or technical education courses in subsequent terms. A career or technical course is a course that is part of a career and technical education program that provides individuals with coherent, rigorous content aligned with academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in current and emerging professions and provides technical skill proficiency, an industry recognized credential, and a certificate, diploma, or an associate degree.

A student who first enrolls in technical courses under this provision while in 10th grade and wishes to enroll in general education courses as an 11th or 12th grade student must achieve the required Accuplacer scores prior to enrollment.

### **To Apply for PSEO Admission at Hennepin Technical College**

- Meet with your high school counselor to see if PSEO is the right fit for you. Then complete the current Notice of Student Registration form and submit it to HTC.
- Apply to HTC online.
- Submit official high school transcript to HTC
- Home schooled students will also need to submit an Immunization Verification eForm
- Register for an Accuplacer placement test online
- Attend a mandatory on campus orientation and register for classes

## **Testing**

### **Placement Testing**

In accordance with Minnesota State’s board policy, testing is administered to place students into appropriate courses that ensure the best chance for success in college. Students who declare a major or have attempted four cumulative credits are required to complete the placement test. Students are allowed to retake in reading, writing, mathematics, computer literacy, or keyboarding once they have obtained Student Success Advisor or Counselor approval. Students are charged a retake fee of \$10. Valid picture identification is required to test. If accommodations are needed based on a disability, contact Access Services prior to testing.

It is recommended that you refresh your skills before you take the placement tests. The tests are meant to indicate your current skill level – not your potential. Study materials are available on the HTC Testing Center website.

Test waivers are based on prior college coursework, ACT/SAT/MCA test scores or acceptable Accuplacer test scores from another institution. Students may request a waiver from testing through the HTC Transfer Center, a Student Success Advisor, or Counselor. Students may only enroll in courses appropriate to their assessed skill level and completed prerequisite coursework.

### **College Level Examination Program**

The College-Level Examination Program® (CLEP) helps you receive college credit for what you already know. More information about CLEP testing is available on the HTC Testing Center website.

# Transfer of Credit

## Transfer of Credit to Hennepin Technical College

Transfer students with prior coursework at another college or university should provide official transcripts to the HTC Transfer Center, Brooklyn Park or Eden Prairie Campus, for transfer evaluation. Any college level course will be considered for transfer at the discretion of the college. For a detailed explanation of the college transfer policy, visit [Transfer Your Credits to HTC](#).

## Minnesota Transfer Curriculum (MnTC) at Hennepin Technical College

By completing at least 40 credits from all ten goal areas, a student can finish the MnTC and transfer this entire block to other Minnesota State colleges or universities. A list of the MnTC courses is available on the HTC website at [Minnesota Transfer Curriculum](#).

## Residency Requirements

To be eligible for an A.S. degree or A.A.S. degree, 20 of the credits must be earned at Hennepin Technical College. To be eligible for a diploma or certificate, a student must earn one-third of the credit requirements at Hennepin Technical College.

## Transfer of Credit to another Post-Secondary Institution

Credit courses in majors at Hennepin Technical College are intended to provide employment skills and, in some situations, transfer to other colleges. The number of credits that may be accepted in transfer is determined by the receiving institution. Hennepin Technical College has articulation agreements with several universities for transfer of A.S. or A.A.S. degrees toward Bachelor degrees. For additional transfer information, visit [www.mntransfer.org](http://www.mntransfer.org)

## Bachelor Degree Opportunities Available

Hennepin Technical College has 2 + 2 agreements with several universities for transfer of A.S. or A.A.S. degrees toward Bachelor degrees. The number of credits that may be transferred is determined by the receiving institution. Students interested in this option may contact an HTC counselor, student success advisor, or may access the information on the HTC website. For additional transfer information, go to [www.mntransfer.org](http://www.mntransfer.org)

## Partner Institutions

Completing a B.A. or B.A.S. degree can help you increase your earning potential and prepare you for professional advancement, as well as personal growth. Since A.S. and A.A.S. degree credits from HTC have already been approved for transfer at many institutions, continuing your education is easier than ever. Contact an HTC counselor or student success advisor to find a partnering university and to learn about your expanded opportunities.

Partnering Universities:

- University of Minnesota – Crookston
- Metropolitan State University
- Minnesota State University – Mankato
- Minnesota State University – Moorhead
- Cardinal Stritch University
- St. Cloud State University
- St. Mary's University
- Southwest Minnesota State University

# Credit for Prior Learning

## Test-out

After being admitted to the college, it may be possible to earn credit for courses offered at Hennepin Technical College by successful completion of an exam. This examination may take the form of a written test, an oral examination, or other demonstration of competency administered by the faculty member who instructs the course.

## High School Articulation

Articulated College Credit (ACC) is a way for students in grades 10, 11, or 12 to earn technical or community college credit. High school students who successfully complete ACC courses through their high school and establish a transcript at Hennepin Technical College may request to have the ACC credit entered on their HTC college transcript.

## Veterans Military Training

College credit for prior military training and experience may be awarded. The standards of the American Council on Education or equivalent standards for awarding credit and the current Hennepin Technical College transfer policy will be used to determine course transfer.

## AP, IB, CLEP and DDST

Credits may be awarded to students who have completed the AP, IB, CLEP, or DSST Exams and have scored at or above the level indicated for specific credit.

# Grading

Hennepin Technical College provides students with three grading options. Students must declare a grading option at the time they register. A letter grade will be assigned for all courses unless Pass/No Credit or Audit is declared. Term and cumulative grade point average (GPA) is calculated on A, B, C, D, F, FN and F/W grades and is listed on the student transcript.

## Letter Grade

Letter grades will be assigned to each course as an evaluation of student performance.

Letter grades of A, B, C, D, F, FN and FW will be used in computation of GPA. A grade of F (including FN and FW) will not satisfy a graduation requirement nor will it count as a course completion for calculation of satisfactory academic progress.

- A: Performance greatly exceeds course requirements (4 quality points per credit)
- B: Performance surpasses course requirements (3 quality points per credit)
- C: Performance meets course requirements (2 quality points per credit)
- D: Performance minimally meets course requirements (1 quality point per credit)
- F: Performance is unsatisfactory (0 quality points per credit)
- FN: Never participated in the course (0 quality points per credit)
- FW: Participation ceased prior to the end of course (0 quality points per credit)
- P: Pass-performance meets course requirements (C or better)
- NC: No Credit-performance does not meet course requirements
- AU: Audit-student registers, pays and attends, but receives no credit (initiated/declared at registration). A student may not audit the same course more than one time.
- I: Incomplete-temporary grade based on written agreement between student and instructor
- W: Withdrawal-Student initiated by deadlines in course schedule

Repeated Courses: When a course is repeated, both courses and grades earned will be shown on the student's transcript. The course that was previously taken is not counted in GPA calculation but will count as an attempted but not completed course for calculation of satisfactory academic progress. The most recent attempt will be used in the review of award requirements.

## Grade Point Average (GPA)

GPA is determined by adding all grade points earned and dividing by the sum of all credits attempted in courses where a letter grade of A, B, C, D, or F (including FN and FW) were received. GPA is computed on a term and a cumulative basis.

GPA calculation does not include test-out grades, transfer grades, advanced placement, portfolio, or articulated courses. Grades of P, NC, W, and AU will not be used in computation of GPA.

## Interactive Degree Audit Report (DARS)

DARS is a tool used by students, advisors, and the graduation evaluator. It produces advising information illustrating a student's progress in fulfilling the graduation requirements of their degree, diploma or certificate. DARS will assist the student with the following:

- Identifying all the requirements needed to complete a specific degree, diploma or certificate
- Indicate which courses have already been completed, and how they apply
- Specify which courses are needed to graduate
- Assist the student and advisor with academic and career counseling

The DARS audit is designed to help the student identify and understand current academic requirements for program completion. The DARS audit is not a transcript. It is not intended to report student achievement to outside parties. Federal law prohibits transmission to a third party.

It is the responsibility of the student to complete all requirements for the selected program whether or not they have been identified on the HTC DARS audit. Students are encouraged to review the college catalog or academic planning guide and report any inaccuracies found on the HTC DARS audit to a student success advisor.

To obtain a DARS Audit, a declared major is required.

Visit eServices for your DARS.

## Transcripts

A transcript is the official record of a student's academic history. An official transcript contains the Registrar's signature and school seal, and is delivered to the recipient directly from the school either electronically or in a sealed envelope with the school's logo.

Hennepin Technical College has authorized Parchment as our online transcript ordering service. You will provide your transcript release consent when you submit your order online through Parchment.

The official academic transcript is available for a \$10 non-refundable fee (plus shipping for physical copies) and must be ordered and paid for online through Parchment. If you attend HTC *prior to 1988*, an official transcript must be requested.

There is no fee for an unofficial transcript which may be obtained through eServices or by presenting a picture ID at the OneStop Center.

## Grade Appeal

Students who feel their grade is inaccurate and cannot resolve the issue with their instructor may appeal their grade through the use of the grade appeal procedure. Grade appeals are submitted to the program dean only if there is no resolution after meeting and discussing the concerns with the faculty member. Grade appeal forms are available online. Appeals to change grades must be submitted within one term of completion of the course.

## Maximum Credit Load

The maximum credit load per term at HTC is 21 credits. The maximum credit load within the Minnesota State system is 22 credits per term. Students may not exceed this limit unless their grades are above average and they have obtained authorization from their faculty advisor or counselor prior to registration.

# Student Recognition

## President's List

Students who are seeking a degree, diploma, or certificate are eligible for the President's List. The President's List shall be determined each term and noted on the student's transcript based on the following:

- A declared major
- A term GPA of 3.5 or greater
- Enrollment status of 6 or more credits during the term

Only courses with grades A-F (including FN and FW) are considered in the calculation of the GPA and enrollment status.

# Graduation

## Award

An award is granted for the completion of the requirements of an A.S. degree, A.A.S. degree, diploma, or certificate.

## Graduation Checklist

Follow the graduation checklist to file for graduation and to participate in the graduation ceremony. This checklist must be completed to be eligible to participate in the graduation ceremony. Apply early to ensure you receive all of the information for the graduation ceremony.

- Meet with your program faculty advisor to review award requirements and to discuss whether you will complete award requirements at the conclusion of the semester.
- Complete an Application for Award form for each degree, diploma, or certificate you are applying for and have your program faculty advisor sign it. Check with the OneStop Center if you are not sure you have completed an Application for Award.
- Submit the Application for Award form to the OneStop Center. If you would like to participate in the Commencement Ceremony, check the box on the form and your student account will be billed a \$10 non-refundable commencement fee.
- Verify that your most current mailing address is on file through your eServices account.
- If you are planning to test out of a course, all test-outs must be scheduled, completed, and transcribed before the deadline.
- Course transfers must be transcribed before the deadline. If you are transferring courses from another college or transferring an articulated course, you should confirm that your transfers have been completed by printing a DARS audit. If you have courses from another Minnesota State institution that have not been transferred, submit an eTranscript Retrieval form. Please contact the Transfer Center with any questions.
- Watch your my.HennepinTech email for a response from the Registrar's Office on your graduation status.
- Refer to the graduation website under Current Students for more information regarding the Commencement Ceremony.

## Honors

Students who have a cumulative GPA of 3.5 or greater at the end of the term prior to graduation will be recognized at the graduation ceremony. The cumulative GPA takes into account any credit based course taken at HTC prior to the term of graduation. A student's honor status cannot be changed on the basis of program GPA or grades earned in the final semester.

# Paying for College

## Financial Aid

To apply for financial aid at Hennepin Technical College, a student must complete the Free Application for Federal Student Aid (FAFSA) at [www.studentaid.gov](http://www.studentaid.gov) and include HTC's school code, 010491. Once this step is complete, view your eServices account to check your financial aid status. Hennepin Technical College hosts FAFSA Complete sessions designed to assist students, step by step, in completing the FAFSA. Sign up for a FAFSA Complete session on the HTC website at: [hennepintech.edu/get-started](http://hennepintech.edu/get-started)

After the Financial Aid Office has all the required paperwork and the student has declared a major that is at least 16 credits in length, a notification email will be sent to the student instructing them to obtain an award letter on eServices.

The award letter shows what the student will receive at each credit level and it also shows how much the student may borrow in Federal Direct Stafford loans. The award letter shows the awards for both fall and spring terms. An award letter will be issued for summer term only if a student enrolls for classes for summer term.

Awards on the award letter may include the following. Not all students will be awarded all awards.

- Federal Pell Grant
- MN State Grant
- Federal Supplemental Educational Opportunity Grant (SEOG)\*
- Federal Direct Stafford Loan, Subsidized, and/or Unsubsidized
- Work Study, Federal or State\*

\*Funds for these programs are limited and are awarded on a first-come basis

**Required Semester Credit Level for Federal Grants (all terms)**

Full-time	12 or more credits
Three-quarter time	9 to 11 credits
Half-time	6 to 8 credits
Less than half-time	1 to 5 credits

**Required Semester Credit Level for Minnesota State Grant (all terms)**

Full-time	15 or more credits
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Minimum enrollment level for a MN State Grant is 3 credits. Awards vary at each credit level.

**Required Semester Credit Level for Federal Direct Stafford Loans**

Half-time or greater	6 or more credits
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**Yearly Federal Direct Stafford Loan Limits**

Dependent Student Grade Level One (completed less than 30 credits):	\$5,500
Dependent Student Grade Level Two (completed 30 or more credits):	\$6,500
Independent Student Grade Level One (completed less than 30 credits):	\$9,500
Independent Student Grade Level Two (completed 30 or more credits):	\$10,500

**Other loan options not listed on the HTC award letter**

- Federal Direct PLUS (Parent Loan for Undergraduate Students)
- The SELF Loan (MN State Aid Program)
- Private education loans

**Other grant options at HTC but not listed on the HTC award letter**

The MN Child Care Grant is available for students with child care costs. A separate application is required for this grant and awarding is based on the availability of funds. Priority is given to returning child care grant recipients.

**Transferring Financial Aid to Hennepin Technical College**

- The financial aid awards at one school do not automatically transfer to another school.
- The student transferring to our school (010491) must add our school code to their FAFSA.
- All financial aid, including future loan disbursements, at the first school must be cancelled by the student. Failure to cancel loans could result in a delay of receiving loans at HTC.

**Pell Census Date (Federal Pell Grant Recipients Only)**

Pell Grant awards do not increase automatically for students who add a class after the Pell census date, which is a date where enrollment levels are "locked" for Pell recipients.

Students who add courses after the Pell Census Date are not eligible for the Pell Grant without filing a Pell Census Appeal form with the financial aid office. For unique situations, such as a course cancellation of one section causing enrollment in a different section, there is a Pell Census Date Appeal Form. If the appeal is approved, the late add course will be made Pell eligible.

**Aid Disbursement**

Financial aid disbursement begins the third week of each term. Disbursements to students are made weekly in the form of direct deposit or paper check (paper checks are not available for pick up) but are made no later than 14 days after the credit balance occurs. Adjustments to aid may be made after disbursement if a student's course schedule changes. Requests to cancel a loan must be made in writing to the Financial Aid Office and if the loan has been disbursed, the amount to be canceled must be returned to HTC.

**Purchasing Textbooks and Required Supplies with Financial Aid**

Students who have submitted a FAFSA will be allowed to charge textbooks and required supplies in the Campus Store prior to financial aid disbursement. The amount of eligibility varies by program of study. Students whose FAFSA or academic record indicates significant issues impacting aid eligibility may not receive this service until those issues are resolved.

### Withdrawal from College/Return of Title IV Funds

Federal law specifies how the college must determine financial aid eligibility if a student withdraws from the college or does not begin attending a course. If a student completely withdraws from all credits for a term before the 60% point of that term or does not begin attending a class, the financial aid disbursed may be recalculated according to the State and Federal Return of Title IV Funds. Return of financial aid calculations are performed no later than 30 days after determining the student withdrew or stopped attending classes. Funds are returned to the Federal/State Aid Programs no later than 45 days after determining the student withdrew or stopped attending classes.

Students earn financial aid in proportion to the time they are enrolled at the college. The unearned share of financial aid is returned in the following order: Federal Direct Unsubsidized Stafford Loan, Federal Direct Subsidized Stafford Loan, Federal Direct PLUS Loan, Federal Pell Grant, Additional Federal Pell Grant, Federal SEOG. State financial aid programs are refunded to the Minnesota Office of Higher Education/State of Minnesota. The student may need to repay a portion of financial aid he/she received.

Failure to attend a class may lead to the return of Federal financial aid, but it does not qualify as a withdrawal from the college unless the student completes a withdrawal form.

If you do not receive all of the funds that you have earned, you may be due a post-withdrawal disbursement. If the post-withdrawal disbursement includes loan funds, you may choose to decline the loan funds so that you don't incur additional debt. HTC may automatically use all or a portion of your post-withdrawal disbursement (including loans funds if you choose to accept them for tuition and fees). For all other charges, HTC needs your permission to use the post-withdrawal disbursement but the funds will be offered. However, it may be in your best interest to keep the funds to reduce your debt at the school.

### Attendance and Last Date of Attendance (LDA)

Attendance is required for students receiving financial aid. Financial aid recipients who do not attend their courses will have an adjustment made to their aid. The aid adjustment could result in a balance due to the college and a late charge.

In some cases, there may not be a change in the aid because the student's new credit level is still within the award's credit range. Students who have applied for financial aid and do not plan on attending must drop their courses before the fifth (5th) day of the term.

For students not receiving a passing grade in a course, the financial aid office must determine the last date of attendance (LDA) to be in compliance with federal regulations. To meet this requirement, the school implemented a process for determining why a grade of F was issued.

Below are the reasons for an F and the impact on financial aid:

#### Reason for F

Never attended/participated\*

Stopped attending classes\*\*

Attended class and didn't pass the class

#### Impact on Financial Aid

Not eligible for financial aid

Reduction in financial aid

Financial aid does not change

\* Participation, in this context, refers to student involvement in academic activities including, but not limited to, classroom attendance and/or online course activities. Logging into D2L or other online course delivery platforms alone does not constitute participation in an academic activity.

\*\* If a student stops attending one class after aid is disbursed and completes other class(es), adjustments to aid may need to be made.

### Third Party Authorization/Agency Funding

The third party billing process allows agencies and employers to pay a student's educational costs. The agency or employer submits a written authorization based on information the student provides to them. Use of the Hennepin Technical College Third Party Authorization for Payment form (available online) is preferred, but the authorization may be in the form of a purchase order or the third party's own form, as long as all required information is provided. A Third Party Authorization must be received by the college prior to the tuition payment deadline to avoid the student's registration from being cancelled. If the third party paperwork cannot be submitted before the tuition payment deadline, the student should pay the outstanding balance or enroll in the NELNET/FACTS tuition payment plan until the third party paperwork is received and processed. Any payments made by the student will be refunded once the third party authorization is in place.

Once the semesters' add/drop period has passed and financial aid has applied to student accounts, the college will invoice the agency or employer. The student is ultimately responsible for their educational costs. If for any reason the third party does not pay all or a portion of the student's charges, the student will need to pay any remaining balance.

The college does not accept authorizations for payment that require a course to be completed or a certain grade to be achieved

before payment is made. Students with this type of authorization will need to pay their tuition by the tuition due date and then seek reimbursement from their agency or employer.

## Scholarships

Information about scholarships from HTC and other sources is available on the HTC website at: [hennepintech.edu/scholarships](http://hennepintech.edu/scholarships)

The application form for HTC Foundation Scholarships is available on the HTC website. To be considered for scholarships, a student must complete the FAFSA and be making Satisfactory Academic Progress. Additional information pertaining to scholarship eligibility is listed on the application. HTC Foundation Scholarships are based on both merit and/or financial need. At the time of selection and disbursement, scholarship recipients must be making satisfactory academic progress.

## Veterans Education Benefits

Any veteran seeking to utilize their education benefits must submit an application to the Veterans Administration (VA). Each semester the student is planning to receive benefits, the college's certifying official must be notified by Veterans Enrollment Certification-Deferment Request eForm. The college's role is to report to the VA the student's enrollment information. This is called the Enrollment Certification.

The certifying official must report any changes to the student's declared major, credit level, address, course schedule, etc., to the VA. Schedule changes after the initial Enrollment Certification may change the amount of benefits.

Hennepin Technical College complies with Minnesota Statute 197.775 which exceeds all criteria of Title 38 United States Code Section 369(e).

# Tuition and Fees

Current tuition and certain fee information (see below) can be found on the HTC website. The college establishes a tuition payment deadline for each semester. Full tuition and fees must be paid by this date. For a list of the most current fee amounts, visit: [hennepintech.edu/fees](http://hennepintech.edu/fees)

You may pay your tuition bill in full by one of the following methods:

- Pay online: The College accepts VISA, MasterCard, Discover, and e-checks from checking or savings accounts. Online payments apply immediately to your student account.
- Cash, Check, or Credit Card: In person on campus during regular business hours using cash, check, or credit card (VISA, MasterCard, or Discover). The college does not accept credit card payments over the phone.

Students who do not pay their tuition and fees in full by the tuition payment deadline may have their course registration cancelled unless one or more of the following conditions are true:

- The student is enrolled in the Automated Payment Plan.
- The college has received a Third Party Authorization for Payment from an employer or a funding agency sufficient to cover tuition and fees.
- The college has received the FAFSA information electronically from the Department of Education.
- The college has received an advance payment of a scholarship sufficient to cover tuition and fees.
- The student is enrolled as a high school PSEO student and has submitted a three-part form to the registration office authorizing enrollment.
- The student has made a tuition payment equal to 15% of the term's balance or \$300 whichever is less.

If none of the conditions mentioned above are true, the student may be subject to a \$50 late fee.

Do not rely on the drop for non-payment process as a way to drop your course(s). You are responsible for paying for your course registration.

Students who add courses after the payment deadline must pay the tuition by the Friday of the week the courses were added. After the fifth day of the semester, tuition must be paid at the time courses are added.

Students may view their account balances and make payments through eServices. For more information about tuition payment methods, including the Automated Payment Plan, visit: [hennepintech.edu/tuition](http://hennepintech.edu/tuition)

Note: In compliance with Minnesota State Board Procedure 7.6.2 Part 4 Subpart C, invoices are not mailed. Students should check their account balances through eServices.

Tuition invoices are not mailed. You are responsible to monitor your student account balance.

## Past Due Accounts/Collections

Students who have not paid the balance owed the college will have their records submitted to the Minnesota Department of Revenue for collection in accordance with Minnesota Statute 16D and Minnesota State Colleges and Universities System Procedure 7.6.2 Accounts Receivable Management. Additional collection fees and interest will be assessed on balances submitted for collection.

## Automated Payment Plan

The college offers a payment plan from Nelnet/FACTS Management Company, Inc. Nelnet/FACTS is a tuition management plan that provides students with a low cost option for budgeting tuition and fees. It is not a loan program - therefore, you have no debt, there are no interest or finance charges assessed, and there is no credit check. The only cost to budget monthly payments through Nelnet/FACTS is a \$25 per semester nonrefundable enrollment fee. To sign up for this payment plan or for more information, visit: [hennepintech.edu/tuition](http://hennepintech.edu/tuition)

## Tuition Rates

Hennepin Technical College is a member institution of the Minnesota State System. The college, in consultation with the Student Senate, develops proposed tuition and fee rates for the academic year, which are submitted to the Minnesota State Board of Trustees for approval. Tuition rates are available on the HTC website. A limited number of courses, including online courses, have approved differential rates. Courses with differential rates are identified in the online course schedule.

## Student Activity Fee/Student Life Fee/Student Association Fee

Each student pays a student activity fee and a student life fee on a per credit basis. This fee supports the activities of the Student Senate and the Student Life Board. Each student also currently pays a state student association fee on a per credit basis. This fee is authorized by Minnesota statute and set each year by the Minnesota State College Student Association (MSCSA). These fees are then remitted to the MSCSA to support their activities.

## Student Health Fee

Each student pays a student health services fee on a per credit basis. This fee supports activities related to providing health related programming and services.

## Parking Fee

All students who park a vehicle on campus are required to pay a parking fee on a per credit basis. The parking fee includes state sales tax.

## Technology Fee

Each student registered for credit courses pays a technology fee on a per credit basis.

## Personal Property/Service Charge Fees

Some courses may require personal property/service charge fees.

## Books, Tools and Other Costs

Students must purchase books, personal tools, other supplies, and special clothing if required. The college furnishes up-to-date equipment in its lab areas. Materials to work on projects may also be provided.

## Late Fees

A late fee will be charged on past due accounts.

## Placement Retest Fee

Students are allowed to retest in reading, writing, mathematics, computer literacy or keyboarding once they have obtained Student Success Advisor or Counselor approval. Students are charged a retest fee for a testing session.

## Portfolio Evaluation

The fee for Portfolio Evaluation is based on the lecture/lab breakdown of the course.

## Non-Sufficient Funds (NSF) Check and ACH/Direct Deposit Fees

The college will apply a service charge to all checks and ACH/direct deposits returned for non-sufficient funds or other reasons as authorized in Minnesota Statute 604-113 subd. 2(a).

## Credit by Examination

The fee for testing out of a course by examination is based on the lecture/lab breakdown.

## Transcript Fee

Your official academic transcript is available for a fee. To request an official Transcript, visit Parchment. There is no fee for an unofficial transcript.

# Registration for Credit Courses

Currently enrolled students are expected to meet with their faculty advisor prior to registration. All currently enrolled students will register online through their HTC eServices account. In order to attend/participate in a class, students must be registered.

Students are responsible for meeting course prerequisites and/or placement test score requirements. Course prerequisites are identified in the college catalog and on the HTC online course schedule. Students who have not met the course requirements must receive authorization from a faculty advisor, counselor or student success advisor prior to registering.

Students are responsible for all tuition and fees incurred by registering for courses subject to the guidelines for adding, dropping and withdrawing from courses and the refund policy described in this catalog. Students may view their account balances and pay online by accessing eServices.

## Course Wait List

A course wait list will be established once a course has filled. Students will be responsible for putting themselves on the wait list. Placement on the wait list will be on a first-come basis. In order to be placed on the wait list, the student must have an active my.HennepinTech email account. All wait list notifications will be sent via email and will include changes in current position, offer of an open seat, and removal from the wait list.

Once an open seat offer is made, the student will have a predetermined amount of time to accept the offer. This will be noted in the email that is sent to the student. If the student accepts the offer by registering, the student accepts all financial obligations. If the student does not accept the offer within the specified time frame, the student will automatically be removed from the wait list.

A student may be on multiple wait lists for the same course (different sections).

The course wait list will become inactive on the last business day prior to the start of the term.

# Course Information

## Technical Courses

Technical courses lead toward an A.S. degree, A.A.S. degree, diploma, or certificate. These courses prepare students to learn the technical knowledge and skill necessary to perform the tasks required for job entry, job enhancement, or job advancement.

## General Education

General education is an essential component of a student's success in technical education as general skills are increasingly required for success and advancement in today's ever-changing global work environment. An integrated approach to technical and general education is applied so that technical and general skills mutually reinforce each other. HTC is committed to integrating into all majors the learner outcomes listed in the learner outcome section of this catalog.

General education courses include instruction that imparts common knowledge, broad applicable skills, perspective, and

attitudes to the students. General education courses contain college-level content in communication, critical thinking, natural sciences, mathematical/logical reasoning, history and the social and behavioral sciences, humanities and fine arts, human diversity, global perspective, ethical and civic responsibility, and people and the environment. All general education courses are college level with the exception of developmental and ESOL courses.

## Required Courses

Courses listed as required in an A.S. degree, A.A.S. degree, diploma, or certificate must be successfully completed to meet graduation requirements.

## Elective Courses

Courses listed as electives in an A.S. degree, A.A.S. degree, diploma, or certificate provide students with the opportunity to select courses to satisfy graduation requirements.

## Course Numbering System

### Minnesota Transfer Curriculum

The Minnesota Transfer Curriculum represents a coordinated effort among Minnesota State institutions and the University of Minnesota to offer general education courses that may transfer from one institution to another. Hennepin Technical College's 2000 level general education courses meet the guidelines of the Minnesota Transfer Curriculum (MnTC).

### College Level

College-level courses are numbered 1000 or above. Diplomas require all courses to be college-level. A.S. and A.A.S. degrees require Minnesota Transfer Curriculum (MnTC) general education courses.

### Developmental Level

Developmental and ESOL courses are numbered 0999 or lower. These courses may be necessary to prepare students for success in college-level coursework but cannot be applied toward an A.S. degree, A.A.S. degree, diploma, or certificate.

## Course Prerequisites/Placement Test Requirements

Course prerequisites/placement test requirements are listed in the course description section of the catalog and on the HTC website. Students are responsible for meeting course prerequisites/minimum qualifying placement test scores or obtaining waiver authorization from program faculty, counselor, or an enrollment advisor. A course taken for audit will not satisfy a prerequisite.

# Adding, Dropping, and Withdrawing

Students are responsible for understanding the processes and timelines for adding, dropping, and withdrawing from courses, as well as the difference between dropping and withdrawing. Students are encouraged to meet with a student success advisor if they do not understand this process.

## Adding Courses

Adding a course means you are officially registered in a course and you assume the responsibility and financial obligation of being an enrolled student.

- Students may add courses during the Add/Drop period, which is the first five days of the term.
- Students may add courses any time during the term if the course has not started, and there are still open seats in the course.
- Instructor permission is required if a student wishes to add a course after the Add/Drop period or after the start date of a late starting course.
- Adding courses may not be done over the telephone. Students must add courses online or in person.

## Dropping Courses

Dropping a course means that it will not appear on the transcript.

- Students may drop courses online without penalty during the Add/Drop period, which is the first five days of the term.

- Some courses begin after the Add/Drop period. Students may drop these courses online through the close of business the day after the first class meets.
- Dropping a course within the Add/Drop period will result in a full refund of tuition and fees. Refund checks will be issued within fifteen (15) business days of the drop.
- Failure to attend class does not qualify as a drop. Unless you officially drop a course, you are responsible for full tuition and fees.

## Withdrawing from Courses

Withdrawing from a course occurs after the Add/Drop period has ended. Withdrawing is the official notification to the college that you will no longer be attending the course. The course will remain on the transcript, and a W will appear on the transcript in place of a letter grade. A W does not affect a student's GPA; however, it does affect a student's completion rate and may lead to academic warning or suspension.

- The final date for official course withdrawal is the last day on which students may officially terminate their enrollment in a course and shall be the date on which eighty percent (80%) of the days in the academic term have elapsed.
- If a course does not meet the entire length of the term, the final date for official course withdrawal shall be established as the date on which eighty percent (80%) of the instructional days for the course have elapsed.
- The last day to withdraw for each course can be found on the online schedule.
- Students may withdraw online through eServices. In some cases, a student may be required to submit an Add/Drop/Withdraw form to the Registrar's Office.
- Failure to attend class does not qualify as a withdrawal.
- Withdrawing from a course does not result in a refund.

### Important Notes about Dropping/Withdrawing

- Dropping or withdrawing from a course may affect a student's financial aid, and may require the student to repay a portion of that aid.
- Students whose cumulative completion rate falls below 66.67% risk being placed on academic warning or suspension.
- Pell Census Date: Courses added after this date are not considered Pell eligible unless approved through a Pell Census Appeal.

## Refunds

If a course is cancelled, the college will refund tuition to the student account.

Some courses are scheduled to meet three or fewer sessions. For those courses, a refund will be issued only if the course is dropped 24 hours prior to the first class session.

In some cases, withdrawing from a class may create a tuition refund. If the withdrawal also leads to the return of State and Federal financial aid, then the tuition refund will be used to pay back the financial aid program.

### Dropping a Course (Reduction of Course/Credit Load)

#### Courses Starting the First Week of the Term

Students may drop any course during the first five days of the term (Add/Drop Period) and receive a 100% refund of tuition and fees.

#### Courses Starting After the Fifth Day of the Term

Some courses have a published start date that occurs after the fifth day of the term. A student who elects to drop a course in this category will be provided a refund of tuition and fees on the following basis:

Course dropped before scheduled start date	100% Refund
Course dropped by the end of the business day following the start date of the course	100% Refund
Courses dropped after the 100% refund period	NO REFUND

### Total Withdrawal from Hennepin Technical College

Students who drop all their credits and formally withdraw from the college will receive a prorated refund of their tuition and fees. A Student Withdrawal form must be submitted to the Registration Office in order to determine eligibility for a refund.

Prorated refunds for total withdrawal are based on the following:

**Fall and Spring Term**

1st through 5th day of the term	100% Refund
6th through 10th day of the term	75% Refund
11th through 15th day of the term	50% Refund
16th through 20th day of the term	25% Refund
After the 20th day of the term	NO REFUND

**Summer Sessions**

1st through 5th day of the session	100% Refund
6th through 10th day of the session	50% Refund
After the 10th day of the session	NO REFUND

\*\*\* Redirect Link \*\*\*  
\*\*\* General-Education \*\*\*

# Degrees and Programs

## Accounting, Business, and Information Technology

### Accounting

## Accounting Transfer Pathway (EP) Associate of Science Degree

### Overview and Award Outcomes

#### Overview

Accounting Transfer Pathway AS offers students a powerful option: the opportunity to complete an Associate of Science degree with course credits that directly transfer to designated Accounting bachelor's degree programs at Minnesota State universities. The curriculum has been specifically designed so that students completing this pathway degree and transferring to one of the seven Minnesota State universities\* enter the university with junior-year status. All courses in the Transfer Pathway associate degree will directly transfer and apply to the designated bachelor's degree programs in a related field. The Accounting Transfer Pathway AS prepares students to advance on to one of the 4-year universities listed below or students are able to enter the workforce right away.

\*Universities within the Minnesota State system include Bemidji State University; Metropolitan State University; Minnesota State University, Mankato; Minnesota State University Moorhead; Southwest Minnesota State University; St. Cloud State University, and Winona State University.

#### Award Outcomes

- Analyze financial statements
- Apply professional communication skills
- Demonstrate critical thinking skills
- Demonstrate mathematical skills essential to accounting
- Demonstrate ethical behavior
- Generate accounting financial statements
- Record business transactions
- Utilize current accounting and office software
- Analyze various tax rules and regulations
- Synthesize business information

#### Career Opportunities

Job opportunities are available in any organization that conducts financial transactions: private business, non-profit and government organizations. Job titles include accounting clerk, payroll specialist, staff accountant, tax preparer, inventory clerk, associate accountant, and accounting support specialist.

#### Program Requirements

##### Technical Studies Required 25 Credits

ACCT1000	Introduction to Accounting	3
	or	
ACCT1102	Principles of Accounting I	4
ACCT2155	Financial Accounting	4
ACCT2221	Managerial Accounting	4
ACCT2950	Accounting Skills Assessment	0
BUSN1140	Business Law	3
BUSN2005	Marketing Concepts and Strategies	4
BUSN2055	Principles of Management	4
ITEC1080	Microsoft Productivity Apps 1	3

##### General Education Required 27 Credits

COMM1250	Interpersonal Communication	3
	or	
COMM1260	Small Group Communication	3
	or	
ENGL1070	Technical Writing	3
COMM1280	Public Speaking	3
ECON1200	Principles of Microeconomics	3

ECON1300	Principles of Macroeconomics	3
ENGL1100	Writing and Research	4
MATH1250	Introduction to Statistics	3
MATH1400	College Algebra	4
	Choose 4 credits from MnTC Goal Area 3	4

**General Education Elective 3 Credits**

Choose an additional 3 credits from at least 1 MnTC Goal Area not listed in the General Education Requirements. Students must ensure that the General Education courses cover at least 6 MnTC Goal Areas.

**Technical Studies Elective 5 Credits**

Any Accounting (ACCT) course that is not required for this award may be used as an elective.

**Total Associate of Science Degree 60 Credits****Semester Sequence - Full-Time****Offered at Eden Prairie Only****First Semester**

ACCT1000	Introduction to Accounting	3
	or	
ACCT1102	Principles of Accounting I	4
ITEC1080	Microsoft Productivity Apps 1	3
COMM1250	Interpersonal Communication	3
	or	
COMM1260	Small Group Communication	3
	or	
ENGL1070	Technical Writing	3
COMM1280	Public Speaking	3
ECON1200	Principles of Microeconomics	3

**Total Credits 15****Second Semester**

ACCT2155	Financial Accounting	4
BUSN1140	Business Law	3
ECON1300	Principles of Macroeconomics	3
	Technical Studies Electives	5

**Total Credits 15****Third Semester**

ACCT2221	Managerial Accounting	4
BUSN2005	Marketing Concepts and Strategies	4
MATH1250	Introduction to Statistics	3
	Choose 4 credits from MnTC Goal Area 3	4

**Total Credits 15****Fourth Semester**

ACCT2950	Accounting Skills Assessment	0
BUSN2055	Principles of Management	4
ENGL1100	Writing and Research	4
MATH1400	College Algebra	4
	General Education Electives	3

**Total Credits 15****Technical Studies Electives**

Any Accounting Careers (ACCT) course that is not required for this award may be used as an elective.

**Choose a Total of: 5 Credits****General Education Electives**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 3 Credits****MnTC Goal Area 3**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
CHEM1000	Introduction to Chemistry	4
CHEM1100	General, Organic, and Biological Chemistry Foundations	4
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
PHYS2005	College Physics I	4
PHYS2010	College Physics II	4

**Choose a Total of: 3 Credits****Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/25/2022 : BP / EP ETAC

**Semester Sequence - Part-Time****Offered at Eden Prairie Only****First Semester**

ACCT1000	Introduction to Accounting	3
	or	
ACCT1102	Principles of Accounting I	4
COMM1250	Interpersonal Communication	3
	or	
COMM1260	Small Group Communication	3
	or	
ENGL1070	Technical Writing	3

**Total Credits 6****Second Semester**

ACCT2155	Financial Accounting	4
MATH1250	Introduction to Statistics	3

**Total Credits 7****Summer Semester**

ITEC1080	Microsoft Productivity Apps 1	3
ECON1200	Principles of Microeconomics	3

**Total Credits 6****Third Semester**

BUSN1140	Business Law	3
COMM1280	Public Speaking	3
ECON1300	Principles of Macroeconomics	3

**Total Credits 9****Fourth Semester**

BUSN2005	Marketing Concepts and Strategies	4
MATH1400	College Algebra	4

**Total Credits 8****Summer Semester**

General Education Electives	3
Choose 4 credits from MnTC Goal Area 3	4

**Total Credits 7****Fifth Semester**

ACCT2221	Managerial Accounting	4
ENGL1100	Writing and Research	4

**Total Credits 8****Sixth Semester**

ACCT2950	Accounting Skills Assessment	0
BUSN2055	Principles of Management	4
Technical Studies Electives	5	

**Total Credits 9****Technical Studies Electives**

Any Accounting Careers (ACCT) course that is not required for this award may be used as an elective.

**Choose a Total of: 5 Credits****General Education Electives**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 3 Credits****MnTC Goal Area 3**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4

BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
CHEM1000	Introduction to Chemistry	4
CHEM1100	General, Organic, and Biological Chemistry Foundations	4
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
PHYS2005	College Physics I	4
PHYS2010	College Physics II	4

**Choose a Total of: 3 Credits**

**Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/25/2022 : BP / EP ETAC

## Accounting (BP/EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

The accountant plays a key role in the management of companies by providing financial information for operation and decision making purposes. Your knowledge and skill in the preparation of financial statements, budgets, forecasts, tax analysis and reports is critical to the success of every business. Operation of computerized accounting software, spreadsheets and other data information applications is required. Accountants work in a team environment, which requires the ability to communicate, both orally and in writing, critical information to management. Students entering this field must be self-motivated, clear-thinking, quality conscious and persistent in accomplishing a wide variety of tasks.

#### Award Outcomes

- Analyze financial statements
- Apply professional communication skills
- Demonstrate critical thinking skills
- Demonstrate mathematical skills essential to accounting
- Demonstrate ethical behavior
- Generate accounting financial statements
- Record business transactions
- Utilize current accounting and office software
- Analyze various tax rules and regulations
- Synthesize business information
- Complete payroll activities

#### Career Opportunities

Accountants are needed in every type of service or manufacturing operation. You may be employed by financial institutions, governmental agencies, private business or in public accounting firms. America's continuing shift to a world-wide service-oriented economy has resulted in an accelerating demand for individuals who possess financial knowledge and accounting skills.

### Program Requirements

#### Technical Studies Required 42 Credits

ACCT1102	Principles of Accounting I	4
ACCT1107	Principles of Accounting II	4
ACCT1111	Payroll Accounting	3
ACCT1125	Excel	3
ACCT1130	Computerized Accounting or	3
ACCT1135	QuickBooks or	3
ACCT1150	Sage 50	3
ACCT2155	Financial Accounting	4
ACCT2200	Intermediate Accounting I	4
ACCT2206	Intermediate Accounting II	3
ACCT2221	Managerial Accounting	4
ACCT2231	Income Tax	4
ACCT2700	Auditing	3
ACCT2950	Accounting Skills Assessment	0
BUSN1140	Business Law	3

#### General Education Required 15 Credits

COMM1250	Interpersonal Communication or	3
COMM1260	Small Group Communication or	3
COMM1280	Public Speaking	3

ECON1200	Principles of Microeconomics	3
ENGL1070	Technical Writing	3
ENGL1100	or Writing and Research	4
MATH1150	Applications of Quantitative Reasoning	3
MATH1250	or Introduction to Statistics	3
MATH1400	or College Algebra	4
	Choose one course from MnTC Goal Area 2	3

**General Education Elective 0 Credits****Technical Studies Elective 3 Credits**

Any ACCT, BUSN, or ITEC course that is not required for this award may be used as an elective.

**Total Associate in Applied Science Degree Credits 60****Semester Sequence - Full-Time****Offered at Brooklyn Park and Eden Prairie****First Semester**

ACCT1102	Principles of Accounting I	4
ACCT1111	Payroll Accounting	3
ACCT1125	Excel	3
	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
	Choose one of the following:	
MATH1150	Applications of Quantitative Reasoning	3
MATH1250	Introduction to Statistics	3
MATH1400	College Algebra	4

**Total Credits 16****Second Semester**

ACCT1107	Principles of Accounting II	4
ACCT1130	Computerized Accounting	3
ACCT1135	or QuickBooks	3
ACCT1150	or Sage 50	3
BUSN1140	Business Law	3
ECON1200	Principles of Microeconomics	3
ENGL1070	Technical Writing	3
ENGL1100	or Writing and Research	4

**Total Credits 16****Third Semester**

ACCT2155	Financial Accounting	4
ACCT2200	Intermediate Accounting I	4
ACCT2221	Managerial Accounting	4
	Technical Studies Electives	3

**Total Credits 15****Fourth Semester**

ACCT2206	Intermediate Accounting II	3
ACCT2231	Income Tax	4
ACCT2700	Auditing	3
ACCT2950	Accounting Skills Assessment	0
	Choose 3 credits from MnTC Goal Area 2	3

**Total Credits 13****Technical Studies Electives**

Any Accounting Careers (ACCT), Business (BUSN), or Information Technology (ITEC) course that is not required for this award may be used as an elective.

**Choose a Total of: 3 Credits****MnTC Goal Area 2**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3
MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

**Choose a Total of: 3 Credits****Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/25/2022 : BP 2004 / EP 2005

**Semester Sequence - Part-Time****Offered at Brooklyn Park and Eden Prairie****First Semester**

ACCT1102	Principles of Accounting I	4
	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3

**Total Credits 7****Second Semester**

ACCT1107	Principles of Accounting II	4
	Choose one of the following:	
MATH1150	Applications of Quantitative Reasoning	3
MATH1250	Introduction to Statistics	3
MATH1400	College Algebra	4

**Total Credits 7****Summer Semester**

ACCT1125	Excel	3
ACCT1130	Computerized Accounting or	3
ACCT1135	QuickBooks	3

**Total Credits 6****Third Semester**

ACCT2155	Financial Accounting	4
ACCT2200	Intermediate Accounting I	4

**Total Credits 8****Fourth Semester**

ACCT2206	Intermediate Accounting II	3
BUSN1140	Business Law	3
ENGL1070	Technical Writing or	3
ENGL1100	Writing and Research	4

**Total Credits 9****Summer Semester**

ACCT1111	Payroll Accounting	3
ECON1200	Principles of Microeconomics	3

**Total Credits 6****Fifth Semester**

ACCT2221	Managerial Accounting	4
ACCT2700	Auditing	3

**Total Credits 7****Sixth Semester**

ACCT2231	Income Tax	4
ACCT2950	Accounting Skills Assessment	0
	Technical Studies Electives	3
	Choose 3 credits from MnTC Goal Area 2	3

**Total Credits 10****Technical Studies Electives**

Any Accounting Careers (ACCT), Business (BUSN), or Information Technology (ITEC) course that is not required for this award may be used as an elective.

**Choose a Total of: 3 Credits**

**MnTC Goal Area 2**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3
MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

**Choose a Total of: 3 Credits**

**Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

3/1/2022 : BP 2004 / EP 2005

# Accounting/Management Information Systems (BP/EP) Associate in Applied Science Degree

## Overview and Award Outcomes

### Overview

Business information systems support the reporting and analysis of financial/business information. To support this objective, this degree blends the skill sets of related professions: accountant and business analyst. Both occupations, from different perspectives and job duties, summarize, process, analyze, propose solutions, and report financial information. This degree develops an employee who is able understand both the information technology and accounting aspects of an organization.

### Award Outcomes

Demonstrate critical thinking skills  
 Generate accounting financial statements  
 Utilize current accounting and office software  
 Synthesize business information  
 Record business transactions  
 Manage MIS processes  
 Apply computational thinking concepts such as abstraction, generalization and composition/decomposition  
 Create relational database tables  
 Retrieve data using TSQL  
 Use analytical function

### Career Opportunities

Accounting positions that demand an understanding in information technology. Business analysis positions that demand an understanding in accounting.

### Program Requirements

#### Technical Studies Required 41 Credits

ACCT1102	Principles of Accounting I	4
ACCT1107	Principles of Accounting II	4
ACCT1125	Excel	3
ACCT1130	Computerized Accounting	3
	or	
ACCT1135	QuickBooks	3
ACCT2155	Financial Accounting	4
ACCT2221	Managerial Accounting	4
ITEC1505	Fundamentals of Programming with Python	4
ITEC2580	Advanced Programming with Python	4
ITEC2701	SQL/NoSQL Database Design	4
ITEC2781	SQL Server - TransactSQL	4
ITEC2841	Client/Server and Cloud Computing	4

#### General Education Required Credits 15

COMM1250	Interpersonal Communication	3
	or	
COMM1260	Small Group Communication	3
	or	
COMM1280	Public Speaking	3
ECON1200	Principles of Microeconomics	3
ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
MATH1150	Applications of Quantitative Reasoning	3

MATH1250	or Introduction to Statistics	3
MATH1400	or College Algebra	4
	Choose one course from MnTC Goal Area 2	3

**General Education Elective Credits 0****Technical Studies Elective 4 Credits**

Any ACCT or ITEC course that is not required for this award may be used as an elective.

**Total Associate in Applied Science Degree 60 Credits****Semester Sequence****Offered at Brooklyn Park and Eden Prairie****First Semester**

ACCT1125	Excel	3
ITEC1505	Fundamentals of Programming with Python	4
COMM1250	Interpersonal Communication	3
COMM1260	or Small Group Communication	3
COMM1280	or Public Speaking	3
ENGL1070	Technical Writing	3
ENGL1100	or Writing and Research	4

**Total Credits 13****Second Semester**

ACCT1102	Principles of Accounting I	4
ITEC2701	SQL/NoSQL Database Design	4
ECON1200	Principles of Microeconomics	3
MATH1150	Applications of Quantitative Reasoning	3
MATH1250	or Introduction to Statistics	3
MATH1400	or College Algebra	4

**Total Credits 14****Third Semester**

ACCT1107	Principles of Accounting II	4
ACCT1130	Computerized Accounting	3
ACCT1135	or QuickBooks	3
ITEC2781	SQL Server - TransactSQL	4
	Choose one course from MnTC Goal Area 2	3
	Technical Studies Electives	4

**Total Credits 17****Fourth Semester**

ACCT2155	Financial Accounting	4
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ACCT2221	Managerial Accounting	4
ITEC2580	Advanced Programming with Python	4
ITEC2841	Client/Server and Cloud Computing	4

**Total Credits 16****Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/25/2022 : BP 2012 / EP 2013

## Accounting Technician (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

The accounting technician is a key member in the accounting department who specializes in a certain area of preparing and maintaining the business records. You may be assigned to the accounts receivable, accounts payable, payroll or other accounting areas. Skills in journaling and posting transactions, preparing financial reports or in the preparation of payroll records are necessary. Accounting technicians must be able to use computerized accounting software, spreadsheets, word processing and other data information software. Individuals entering this field must be team players who display a willingness to share their specialized knowledge with other accounting areas.

#### Award Outcomes

Analyze financial statements  
 Apply professional communication skills  
 Demonstrate critical thinking skills  
 Demonstrate mathematical skills essential to accounting  
 Demonstrate ethical behavior  
 Generate accounting financial statements  
 Record business transactions  
 Utilize current accounting and office software  
 Complete payroll activities

#### Career Opportunities

Accounting Technicians will find high employment demand in both the private and public sectors of business. Large organizations often seek accounting individuals to become specialists in their accounting department. This rapidly growing specialization trend focuses on employing highly trained accounting technicians who can deal with complex problems in their area of expertise.

### Program Requirements

#### Technical Studies Required 24 Credits

ACCT1102	Principles of Accounting I	4
ACCT1107	Principles of Accounting II	4
ACCT1111	Payroll Accounting	3
ACCT1125	Excel	3
ACCT1130	Computerized Accounting	3
	or	
ACCT1135	QuickBooks	3
	or	
ACCT1150	Sage 50	3
ACCT2155	Financial Accounting	4
ACCT2950	Accounting Skills Assessment	0
BUSN1140	Business Law	3

#### General Education Required 3 Credits

COMM1250	Interpersonal Communication	3
	or	
COMM1260	Small Group Communication	3
	or	
COMM1280	Public Speaking	3

#### General Education Elective 0 Credits

#### Technical Studies Elective 4 Credits

Any ACCT, BUSN or ITEC course that is not required for this award may be used as an elective.

#### Total Diploma Credits 31

**Semester Sequence****Offered at Brooklyn Park and Eden Prairie****First Semester**

ACCT1102	Principles of Accounting I	4
ACCT1111	Payroll Accounting	3
ACCT1125	Excel	3
	Technical Studies Electives	4
	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3

**Total Credits 17****Second Semester**

ACCT1107	Principles of Accounting II	4
ACCT1130	Computerized Accounting	3
	or	
ACCT1135	QuickBooks	3
	or	
ACCT1150	Sage 50	3
ACCT2155	Financial Accounting	4
ACCT2950	Accounting Skills Assessment	0
BUSN1140	Business Law	3

**Total Credits 14****Technical Studies Electives**

Any Accounting Careers (ACCT), Business (BUSN), or Information Technology (ITEC) course that is not required for this award may be used as an elective.

**Choose a Total of: 4 Credits****Graduation (31 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/22/2022 : BP 2006 / EP 2007

## Accounting (BP/EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

This certificate is designed to allow individuals to enter the accounting profession without the time and effort needed to complete an accounting degree program. It includes instruction that covers the basic accounting and computers skills that are demanded in the accounting profession.

#### Award Outcomes

Apply professional communication skills  
 Demonstrate mathematical skills essential to accounting  
 Demonstrate ethical behavior  
 Record business transactions  
 Utilize current accounting and office software  
 Complete payroll activities

#### Career Opportunities

Accountants are needed in every type of service or manufacturing operation. You may be employed by financial institutions, governmental agencies, private business or in public accounting firms. America's continuing shift to a world-wide service-oriented economy has resulted in an accelerating demand for individuals who possess financial knowledge and accounting skills.

#### Program Requirements

##### Technical Studies Required 17 Credits

ACCT1102	Principles of Accounting I	4
ACCT1111	Payroll Accounting	3
ACCT1125	Excel	3
ACCT1130	Computerized Accounting or	3
ACCT1135	QuickBooks or	3
ACCT1150	Sage 50	3
ACCT1107	Principles of Accounting II or	4
ACCT2155	Financial Accounting	4

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 17

#### Semester Sequence

##### Offered at Brooklyn Park and Eden Prairie

##### First Semester

ACCT1102	Principles of Accounting I	4
ACCT1111	Payroll Accounting	3
ACCT1125	Excel	3

##### Total Credits 10

##### Second Semester

ACCT1130	Computerized Accounting or	3
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ACCT1135	QuickBooks	3
	or	
ACCT1150	Sage 50	3
ACCT1107	Principles of Accounting II	4
	or	
ACCT2155	Financial Accounting	4

**Total Credits 7****Graduation (17 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/17/2022 : BP 2010 / EP 2011

**Business**

## Business Transfer Pathway (BP/EP) Associate of Science Degree

### Overview and Award Outcomes

#### Overview

The Business Transfer Pathway AS offers students a powerful option: the opportunity to complete an Associate of Science degree with course credits that directly transfer to designated Business bachelor's degree programs at Minnesota State universities. The curriculum has been specifically designed so that students completing this pathway degree and transferring to one of the seven Minnesota State universities\* enter the university with junior-year status. All courses in the Transfer Pathway associate degree will directly transfer and apply to the designated bachelor's degree programs in a related field.

\*Universities within the Minnesota State system include Bemidji State University; Metropolitan State University; Minnesota State University, Mankato; Minnesota State University Moorhead; Southwest Minnesota State University; St. Cloud State University, and Winona State University.

#### Award Outcomes

Demonstrate effective business communication skills  
 Demonstrate interpersonal skills  
 Demonstrate team building skills  
 Demonstrate professional business behavior  
 Solve business problems using critical thinking techniques  
 Apply marketing concepts and strategies to business decision making  
 Apply management concepts to business problems  
 Analyze business problems using financial concepts

#### Career Opportunities

This occupational area includes the following career titles: Business Manager or Business Specialist to name a few. Business Managers work within banks, insurance companies, healthcare facilities, government agencies, educational institutions, retail industries, and various service and manufacturing businesses.

#### Program Requirements

##### Technical Studies Required 29 Credits

ACCT1102	Principles of Accounting I	4
ACCT2155	Financial Accounting	4
ACCT2221	Managerial Accounting	4
BUSN1000	Introduction to Business	3
BUSN1140	Business Law	3
BUSN2005	Marketing Concepts and Strategies	4
BUSN2055	Principles of Management	4
ITEC1080	Microsoft Productivity Apps 1	3

##### General Education Required 26 Credits

COMM1250	Interpersonal Communication	3
COMM1280	Public Speaking	3
ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
ENGL1100	Writing and Research	4
MATH1250	Introduction to Statistics	3
MATH1400	College Algebra	4
PHIL1200	Ethics	3

##### General Education Elective 5 Credits

Choose five credits from two of the following Minnesota Transfer Curriculum (MnTC) Goal Areas: 2, 3, 8, or 10

##### Technical Studies Elective 0 Credits

##### Total Associate of Science Degree Credits 60

##### Semester Sequence

**Offered at Brooklyn Park and Eden Prairie****First Semester**

ACCT1102	Principles of Accounting I	4
BUSN1000	Introduction to Business	3
COMM1250	Interpersonal Communication	3
ENGL1100	Writing and Research	4

**Total Credits 14****Second Semester**

ACCT2155	Financial Accounting	4
BUSN1140	Business Law	3
ECON1200	Principles of Microeconomics	3
PHIL1200	Ethics	3
	Choose 3 credits from MnTC Goal Area 2, 3, 8, or 10	3

**Total Credits 16****Third Semester**

BUSN2005	Marketing Concepts and Strategies	4
BUSN2055	Principles of Management	4
ITEC1080	Microsoft Productivity Apps 1	3
MATH1400	College Algebra	4

**Total Credits 15****Fourth Semester**

ACCT2221	Managerial Accounting	4
COMM1280	Public Speaking	3
ECON1300	Principles of Macroeconomics	3
MATH1250	Introduction to Statistics	3
	Choose two credits from MnTC Goal Area 2, 3, 8, or 10	2

**Total Credits 15****MnTC Goal Area 2**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3
MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

**MnTC Goal Area 3**

BIOL1000	Biology in Society	4
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4

BIOL2235	Microbiology	4
CHEM1000	Introduction to Chemistry	4
CHEM1100	General, Organic, and Biological Chemistry Foundations	4
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
PHYS2005	College Physics I	4
PHYS2010	College Physics II	4
<b>MnTC Goal Area 8</b>		
ARTS1050	Introduction to Art	3
BIOL1100	Nutrition and Health	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
MUSC1015	World Music	3
PHIL1500	World Religions	3
<b>MNTC Goal Area 10</b>		
BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
ENGL1060	Food in Literature and Film	3
PHIL1600	Environmental Ethics	3
SOCI1600	Food and Society	3

**Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/27/2022 : BP BTBU / EP ETBU

## Entrepreneurship (BP/EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

The Entrepreneurship AAS program is designed for students who are interested starting their own business or buying a small business or franchise. The course work will provide students with the innovation, management, marketing, communication and financial skills required to successfully start and run a small business. The program will also give students a solid background in the theory, process and practice of entrepreneurship. Courses for the program are delivered in a mix of classroom and online formats.

#### Award Outcomes

Demonstrate effective business communication skills  
 Demonstrate interpersonal skills  
 Demonstrate team building skills  
 Demonstrate professional business behavior  
 Solve business problems using critical thinking techniques  
 Apply marketing concepts and strategies to business decision making  
 Apply management concepts to business problems  
 Analyze business problems using financial concepts  
 Demonstrate innovative thinking in the development of business models, products and services  
 Apply operations concepts to solving business problems

#### Career Opportunities

Starting or buying a business, or managing a small business is a solid career option for students from a variety of technical and skill backgrounds. This occupational area complements any other certificate, diploma or degree. Entrepreneurs work in virtually every industry in the American economy: finance, real estate, insurance, health-care, manufacturing, construction, automotive and retail industries. In recent years, the allure of entrepreneurship has increased, with the results that more people than ever before are choosing to operate their own business. 600,000 – 800,000 new business are created in the US every year, and small businesses provide almost 50% of all private sector jobs in the U.S.

### Program Requirements

#### Technical Studies Required 45 Credits

ACCT1000	Introduction to Accounting	3
ACCT1135	QuickBooks	3
ACCT1410	Business Finance	3
BUSN1000	Introduction to Business	3
BUSN1020	Introduction to Selling	3
BUSN1100	Supervision	3
BUSN1140	Business Law	3
BUSN1200	Managerial Communication	3
BUSN1510	Entrepreneurship	3
BUSN2005	Marketing Concepts and Strategies	4
BUSN2055	Principles of Management	4
BUSN2075	Digital Marketing	3
BUSN2085	Small Business Operations	4
BUSN2100	Capstone	3

#### General Education Required 15 Credits

COMM1280	Public Speaking	3
ENGL1070	Technical Writing	3
ENGL1100	or Writing and Research	4
PHIL1100	Critical Thinking for College Success	3
	Choose any course from MnTC Goal Area 4 (Mathematical/Logical Reasoning)	3

**Choose one of the following:**

Any course from Goal 5 (History and the Social and Behavioral Sciences) or Goal 9 (Ethics and Civic Responsibility) of the Minnesota Transfer Curriculum	3
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**General Education Elective 0 Credits****Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 60****Semester Sequence****Offered at Brooklyn Park and Eden Prairie****First Semester**

BUSN1000	Introduction to Business	3
BUSN1020	Introduction to Selling	3
BUSN1100	Supervision	3
COMM1280	Public Speaking	3
ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4

**Total Credits 15****Second Semester**

ACCT1000	Introduction to Accounting	3
BUSN1140	Business Law	3
BUSN2005	Marketing Concepts and Strategies	4
PHIL1100	Critical Thinking for College Success	3
	Choose 3 credits from MnTC Goal Area 4	3

**Total Credits 16****Third Semester**

ACCT1410	Business Finance	3
BUSN1200	Managerial Communication	3
BUSN1510	Entrepreneurship	3
BUSN2055	Principles of Management	4
BUSN2075	Digital Marketing	3

**Total Credits 16****Fourth Semester**

ACCT1135	QuickBooks	3
BUSN2085	Small Business Operations	4
BUSN2100	Capstone	3
	Choose 3 credits from MnTC Goal Area 5	3
	or	
	Choose three credits from MnTC Goal Area 9	3

**Total Credits 13****MnTC Goal Area 4**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

MATH1150	Applications of Quantitative Reasoning	3
MATH1250	Introduction to Statistics	3
MATH1400	College Algebra	4
PHIL1000	Introduction to Logic	3

**MnTC Goal Area 5**

ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3

**MnTC Goal Area 9**

ARTS1005	Art and Social Justice	3
BIOL1300	Introduction to Forensic Science	3
ECON1200	Principles of Microeconomics	3
PHIL1200	Ethics	3
PHIL1400	Medical Ethics	4
PHIL1600	Environmental Ethics	3
POLI1000	Introduction to American Government and Politics	3
SOCI1500	Introduction to Criminal Justice	3

**Graduation (60 credits)**

This academic planning guide is a tool meant for students to discuss their schedule each semester with their faculty advisor. Some courses may be offered only once per year and only on one campus.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/27/2022 : BP 2516 / EP 2517

## Management (BP/EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

There is a need for technical professionals to broaden their horizons and enhance their skills. This flexible award lets you bundle technical courses with business skills courses so you can enhance your technical training with the most relevant soft skills.

There is a demand for people who have the ability to apply business knowledge in solving problems. To be successful in business a person must have qualities that include the ability to work well with others, the desire to be part of a team, and the ability to work in a rapidly changing environment. Others include critical thinking, decision-making, problem-solving, questioning, diplomacy, and negotiation, along with good oral and written communication skills.

#### Award Outcomes

- Demonstrate effective business communication skills
- Demonstrate interpersonal skills
- Demonstrate team building skills
- Demonstrate professional business behavior
- Solve business problems using critical thinking techniques
- Apply marketing concepts and strategies to business decision making
- Apply management concepts to business problems
- Analyze business problems using financial concepts
- Develop solutions to customer service problems
- Identify strategies to retain customers
- Apply conflict management skills

#### Career Opportunities

This occupational area includes the following career titles: Business Manager or Business Specialist. Business managers work in every industry including finance, real estate, insurance, healthcare, manufacturing, construction, automotive and retail.

### Program Requirements

#### Technical Studies Required 35 Credits

ACCT1000	Introduction to Accounting	3
	or	
ACCT1102	Principles of Accounting I	4
ACCT1410	Business Finance	3
	or	
ACCT2155	Financial Accounting	4
BUSN1000	Introduction to Business	3
BUSN1020	Introduction to Selling	3
BUSN1100	Supervision	3
BUSN1140	Business Law	3
BUSN1150	Introduction to Service and Work Team Strategies	3
BUSN1200	Managerial Communication	3
BUSN1510	Entrepreneurship	3
BUSN2005	Marketing Concepts and Strategies	4
BUSN2055	Principles of Management	4

#### General Education Required 15 Credits

ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
PHIL1100	Critical Thinking for College Success	3
	Choose any course from MnTC Goal Area 4 (Mathematical/Logical Reasoning)	3

**Choose one of the following:**

COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3

**Choose one of the following:**

Any course from Goal 5 (History and the Social and Behavioral Sciences) or Goal 9 (Ethics and Civic Responsibility) of the Minnesota Transfer Curriculum	3
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**General Education Elective 0 Credits****Technical Studies Elective 10 Credits**

	Recommended:	
BUSN1025	Introduction to Esports Business	3
BUSN1030	Professional Development	3
BUSN1041	Customer Relationship Management (CRM)	3
BUSN1060	Territory/Account Management	3
BUSN1091	Consultative Selling	3
BUSN2000	Business Analysis	4
BUSN2010	Requirements Management with Use Cases	3
BUSN2015	Marketing Applications	3
BUSN2075	Digital Marketing	3
BUSN2085	Small Business Operations	4
BUSN2100	Capstone	3
BUSN2170	Supervised Occupational Experience	4

**Total Associate in Applied Science Degree Credits 60****Semester Sequence****Offered at Brooklyn Park and Eden Prairie**

**Prerequisite:** Qualifying score on Computer Literacy Assessment test

**First Semester**

BUSN1000	Introduction to Business	3
BUSN1100	Supervision	3
ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
	Technical Studies Electives	3

**Total Credits 12****Second Semester**

ACCT1000	Introduction to Accounting	3
	or	
ACCT1102	Principles of Accounting I	4
BUSN1020	Introduction to Selling	3
BUSN2055	Principles of Management	4
COMM1250	Interpersonal Communication	3
	or	
COMM1260	Small Group Communication	3
	or	
COMM1280	Public Speaking	3
	Technical Studies Electives	3

**Total Credits 16****Third Semester**

BUSN1140	Business Law	3
BUSN1150	Introduction to Service and Work Team Strategies	3
BUSN1200	Managerial Communication	3
BUSN2005	Marketing Concepts and Strategies	4
	Choose 3 credits from MnTC Goal Area 5	3
	or	
	Choose 3 credits from MnTC Goal Area 9	3

**Total Credits 16****Fourth Semester**

ACCT1410	Business Finance	3
	or	
ACCT2155	Financial Accounting	4
BUSN1510	Entrepreneurship	3
PHIL1100	Critical Thinking for College Success	3
	Choose 3 credits from MnTC Goal Area 4	3
	Technical Studies Electives	4

**Total Credits 16****Technical Studies Electives**

10 Credits from BUSN courses.

BUSN1025	Introduction to Esports Business	3
BUSN1030	Professional Development	3
BUSN1041	Customer Relationship Management (CRM)	3
BUSN1060	Territory/Account Management	3
BUSN1091	Consultative Selling	3
BUSN2000	Business Analysis	4
BUSN2010	Requirements Management with Use Cases	3
BUSN2015	Marketing Applications	3
BUSN2075	Digital Marketing	3
BUSN2085	Small Business Operations	4
BUSN2100	Capstone	3
BUSN2170	Supervised Occupational Experience	4

**MnTC Goal Area 4**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

MATH1150	Applications of Quantitative Reasoning	3
MATH1250	Introduction to Statistics	3
MATH1400	College Algebra	4
PHIL1000	Introduction to Logic	3

**Choose a Total of: 3 Credits****MnTC Goal Area 5 or MnTC Goal Area 9**

	MnTC Goal Area 5	
ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3

SOCI1600	Food and Society or MnTC Goal Area 9	3
ARTS1005	Art and Social Justice	3
BIOL1300	Introduction to Forensic Science	3
ECON1200	Principles of Microeconomics	3
PHIL1200	Ethics	3
PHIL1400	Medical Ethics	4
PHIL1600	Environmental Ethics	3
POLI1000	Introduction to American Government and Politics	3
SOCI1500	Introduction to Criminal Justice	3

**Choose a Total of: 3 Credits**

**Graduation (60 Credits)**

This semester sequence is a tool meant for students to discuss their schedule each semester with their faculty advisor. Some courses may be offered only once per year and only on one campus.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/27/2022 : BP 2512 / EP 2513

## Marketing and Sales (BP/EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

Professionals in marketing and sales are directly involved with helping businesses expand and grow revenue. Marketing covers a broad spectrum of roles including (but not limited to) advertising, promotion, public relations, sales, branding, creative design, research, analysis and consulting. Since every business must engage in some form of marketing, career opportunities are plentiful. The successful marketing and sales professional is an effective communicator, thinks creatively, values teamwork and focuses on the needs of the customer to find the best solutions. In addition, graduates must develop the following skills: critical thinking, decision-making, problem solving, negotiation, plus excellent oral and written communication.

#### Award Outcomes

Demonstrate effective business communication skills  
 Demonstrate interpersonal skills  
 Demonstrate team building skills  
 Demonstrate professional business behavior  
 Solve business problems using critical thinking techniques  
 Apply marketing concepts and strategies to business decision making  
 Apply management concepts to business problems  
 Analyze business problems using financial concepts  
 Solve marketing and sales problems using critical thinking skills  
 Apply strategic marketing concepts to develop and implement a marketing plan  
 Demonstrate the steps of an interactive sales process

#### Career Opportunities

This occupational area includes the following career titles: Marketing Specialist, Marketing Associate, Account Manager, Sales Professional, Marketing Assistant, Brand Manager, Customer Service Representative, Account Specialist, Client Relations Specialist, Sales Manager, Sales Support Specialist. Marketing and sales professionals work with virtually every industry in the American economy including healthcare, finance, real estate, insurance, manufacturing, construction, automotive and retail industries.

### Program Requirements

#### Technical Studies Required 45 Credits

BUSN1000	Introduction to Business	3
BUSN1020	Introduction to Selling	3
BUSN1030	Professional Development	3
BUSN1041	Customer Relationship Management (CRM)	3
BUSN1060	Territory/Account Management	3
BUSN1091	Consultative Selling	3
BUSN1150	Introduction to Service and Work Team Strategies	3
BUSN1200	Managerial Communication	3
BUSN2005	Marketing Concepts and Strategies	4
BUSN2015	Marketing Applications	3
BUSN2055	Principles of Management	4
BUSN2075	Digital Marketing	3
BUSN2170	Supervised Occupational Experience	4
ITEC1080	Microsoft Productivity Apps 1	3

#### General Education Required 15 Credits

COMM1280	Public Speaking	3
ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
PHIL1100	Critical Thinking for College Success	3
	Choose any course from MnTC Goal Area 4	3

(Mathematical/Logical Reasoning)

**Choose one of the following:**

Any course from Goal 5 (History and the Social and Behavioral Sciences) or Goal 9 (Ethics and Civic Responsibility) of the Minnesota Transfer Curriculum 3

**General Education Elective 0 Credits****Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 60****Semester Sequence****Offered at Brooklyn Park and Eden Prairie****Prerequisite:** Qualifying score on Computer Literacy assessment test**First Semester**

BUSN1000	Introduction to Business	3
BUSN1020	Introduction to Selling	3
ITEC1080	Microsoft Productivity Apps 1	3
ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
	Choose 3 credits from MnTC Goal Area 4	3

**Total Credits 15****Second Semester**

BUSN1091	Consultative Selling	3
BUSN1150	Introduction to Service and Work Team Strategies	3
BUSN2005	Marketing Concepts and Strategies	4
PHIL1100	Critical Thinking for College Success	3

**Total Credits 13****Third Semester**

BUSN1030	Professional Development	3
BUSN1200	Managerial Communication	3
BUSN2055	Principles of Management	4
BUSN2075	Digital Marketing	3
	Choose 3 credits from MnTC Goal Area 5	3
	or	
	Choose 3 credits from MnTC Goal Area 9	3

**Total Credits 16****Fourth Semester**

BUSN1041	Customer Relationship Management (CRM)	3
BUSN1060	Territory/Account Management	3
BUSN2015	Marketing Applications	3
BUSN2170	Supervised Occupational Experience	4
COMM1280	Public Speaking	3

**Total Credits 16****MnTC Goal Area 4**

Hennepin Technical College's 2000-level general education courses meet the guidelines of the Minnesota Transfer Curriculum (MnTC).

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

MATH1150	Applications of Quantitative Reasoning	3
MATH1250	Introduction to Statistics	3
MATH1400	College Algebra	4
PHIL1000	Introduction to Logic	3

**Choose a Total of: 3 Credits**

**MnTC Goal Area 5 or MnTC Goal Area 9**

	MnTC Goal Area 5	
ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3
	or	
	MnTC Goal Area 9	
ARTS1005	Art and Social Justice	3
BIOL1300	Introduction to Forensic Science	3
ECON1200	Principles of Microeconomics	3
PHIL1200	Ethics	3
PHIL1400	Medical Ethics	4
PHIL1600	Environmental Ethics	3
POLI1000	Introduction to American Government and Politics	3
SOCI1500	Introduction to Criminal Justice	3

**Choose a Total of: 3 Credits**

**Graduation (60 Credits)**

Possible 55 Credits toward Bachelor of Applied Science in Sales Management at Metro State University.

This semester sequence is a tool meant for students to discuss their schedule each semester with their faculty advisor. Some courses may be offered only once per year and only on one campus.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Entrepreneurship (BP/EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

This certificate combines a practical, step-by-step approach with a theoretical foundation to form a basic framework for understanding the theory, process, and practice of entrepreneurship. The aim of the certificate is to present the most current thinking in entrepreneurship as well as provide learners the opportunity to apply ideas and develop useful entrepreneurial skills.

#### Award Outcomes

Demonstrate effective business communication skills  
 Demonstrate interpersonal skills  
 Demonstrate team building skills  
 Demonstrate professional business behavior  
 Demonstrate innovative thinking in the development of business models, products, and services  
 Apply marketing concepts and strategies to business decision making

#### Career Opportunities

This occupational area complements any other certificate, diploma or degree. Someone with this certificate will work within banks, insurance companies, health care facilities, government agencies, educational institutions, retail industries, and various service and manufacturing businesses. Entrepreneurs work with virtually every industry in the American economy: finance, real estate, insurance, health-care, manufacturing, construction, automotive and retail industries. In recent years, the allure of entrepreneurship has increased, with the results that more people than ever before are choosing to operate their own business.

#### Program Requirements

##### Technical Studies Required 19 Credits

ACCT1410	Business Finance	3
BUSN1000	Introduction to Business	3
BUSN1020	Introduction to Selling	3
BUSN1100	Supervision	3
BUSN1510	Entrepreneurship	3
BUSN2005	Marketing Concepts and Strategies	4

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 19

#### Semester Sequence

##### Offered at Brooklyn Park and Eden Prairie

##### First Semester

ACCT1410	Business Finance	3
BUSN1000	Introduction to Business	3
BUSN2005	Marketing Concepts and Strategies	4

##### Total Credits 10

##### Second Semester

BUSN1020	Introduction to Selling	3
BUSN1100	Supervision	3
BUSN1510	Entrepreneurship	3

**Total Credits 9**

**Graduation (19 Credits)**

This semester sequence is a tool meant for students to discuss their schedule each semester with their faculty advisor. Some courses may be offered only once per year and only on one campus.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/27/2022 : BP 2514 / EP 2515

## Supervisory Management (BP/EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

This certificate is designed for current supervisors or employees training for current supervisory management positions who are responsible for managing the performance of others in order to achieve organizational results.

Prerequisite: Basic computer literacy, familiarity with the Internet, college-level reading ability, and proficiency in basic mathematics. All students must pass the Computer Literacy assessment test before registering for these courses.

#### Award Outcomes

Demonstrate effective business communication skills  
 Demonstrate interpersonal skills  
 Demonstrate team building skills  
 Demonstrate professional business behavior  
 Describe effective supervision techniques  
 Solve problems using fundamental business concepts

#### Career Opportunities

Someone with this certificate will work in any industry which requires frontline managers to impact employee performance and productivity. Manufacturing businesses, building and construction, banks, insurance companies, healthcare facilities, government agencies, education institutions, retail industries and various service businesses are among industries that hire supervisors.

#### Program Requirements

##### Technical Studies Required 16 Credits

BUSN1000	Introduction to Business	3
BUSN1100	Supervision	3
BUSN1140	Business Law	3
BUSN1150	Introduction to Service and Work Team Strategies	3
BUSN2055	Principles of Management	4

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 16

#### Semester Sequence

##### Offered at Brooklyn Park and Eden Prairie

##### First Semester

BUSN1000	Introduction to Business	3
BUSN1100	Supervision	3
BUSN1140	Business Law	3
BUSN1150	Introduction to Service and Work Team Strategies	3
BUSN2055	Principles of Management	4

##### Total Credits 16

##### Graduation (16 Credits)

This semester sequence is a tool meant for students to discuss their schedule each semester with their faculty advisor. Some courses may be offered only once per year and only on one campus.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/27/2022 : BP 2506 / EP 2507

**Individualized Studies**  
**Information Technology**

## Cyber Defense (BP/EP) Associate of Applied Science

### Overview and Award Outcomes

#### Overview

This degree provides students the opportunity to utilize the tools and systems to monitor, mitigate, and prevent threats to computer networks. Through hands-on experience, this degree prepares individuals to become a skilled network security professional. Learning outcomes for this program are aligned with regulatory and industry standards.

#### Award Outcomes

- Define Cybersecurity principles
- Perform operating system tasks
- Utilize network defense tools
- Analyze security risks
- Identify Cybersecurity threats
- Demonstrate programming logic

#### Career Opportunities

Network and Firewall Security Technician, Security Analyst, Security Specialist/Administrator, Security Operations Specialist, Network Administrator, Penetration Tester, Security Engineer, Cyber Defense Analyst.

#### Program Requirements

##### Technical Studies Required 45 Credits

ITEC1005	Computer Security Awareness	3
ITEC1105	Network Admin 1	4
ITEC1110	Windows Admin 1	3
ITEC1122	Linux Admin 1	4
ITEC1421	Network Admin 2	4
ITEC1431	Network Admin 3	4
ITEC1505	Fundamentals of Programming with Python	4
ITEC2122	Linux Admin 2	4
ITEC2415	IT Security Management and Compliance	3
ITEC2422	CCNA Security	2
ITEC2505	Cybersecurity Essentials	3
ITEC2511	Software Security and Cryptography	2
ITEC2515	Firewall Essentials	2
ITEC2536	Ethical Hacking	3

##### General Education Required 9 Credits

COMM1260	Small Group Communication	3
ENGL1070	Technical Writing	3
	Choose 3 credits from MnTC Goal Area 3, 4, or 5	3

##### General Education Elective 6 Credits

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

##### Technical Studies Elective 0 Credits

#### Total Associate in Applied Science Degree Credits 60

#### Semester Sequence

Completion of this award may require taking courses at both campuses. For more information, please contact your faculty program advisor.

#### First Semester

ITEC1005	Computer Security Awareness	3
ITEC1105	Network Admin 1	4
ITEC1110	Windows Admin 1	3
COMM1260	Small Group Communication	3
	General Education Electives	3

**Total Credits 16****Second Semester**

ITEC1122	Linux Admin 1	4
ITEC1421	Network Admin 2	4
ITEC1505	Fundamentals of Programming with Python	4
ITEC2505	Cybersecurity Essentials	3
ENGL1070	Technical Writing	3

**Total Credits 18****Third Semester**

ITEC1431	Network Admin 3	4
ITEC2122	Linux Admin 2	4
ITEC2415	IT Security Management and Compliance	3
ITEC2511	Software Security and Cryptography	2
	Choose 3 credits from MnTC Goal Area 3, 4, or 5	3

**Total Credits 16****Fourth Semester**

ITEC2422	CCNA Security	2
ITEC2515	Firewall Essentials	2
ITEC2536	Ethical Hacking	3
	General Education Electives	3

**Total Credits 10****MnTC Goal Area 3**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
CHEM1000	Introduction to Chemistry	4
CHEM1100	General, Organic, and Biological Chemistry Foundations	4
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
PHYS2005	College Physics I	4
PHYS2010	College Physics II	4

**MnTC Goal Area 4**

MATH1150	Applications of Quantitative Reasoning	3
MATH1250	Introduction to Statistics	3
MATH1400	College Algebra	4
PHIL1000	Introduction to Logic	3

**MnTC Goal Area 5**

ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3

**Graduation (60 Credits)**

Prerequisite: Basic computer literacy, familiarity with the Internet, college-level reading ability, and proficiency in basic mathematics. All students must pass the computer literacy assessment test before registering for these courses.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

5/10/2022 : BP 2184 / EP 2185

## Software Developer (BP/EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

This degree offers the skills necessary for computer application development and design. Industry standards and frameworks will be used to design, code, document, and implement computer applications. Exposure to database management systems, client/server computing, and cloud environments will further familiarize students with the current trends in distributed processing and application development.

#### Award Outcomes

Construct web based applications  
 Write an application that makes use of common business information systems environments  
 Create graphical user interfaces  
 Create an application that demonstrates the principles of object oriented design  
 Design and code business applications  
 Develop code using software and languages common to the industry  
 Generate data structures using relational databases  
 Use a structured approach to solving business problems using a SDLC Methodology  
 Analyze business communication systems  
 Demonstrate knowledge of program flow and control by writing appropriate application code

#### Career Opportunities

Positions are available as:

Software Developers  
 Application Developers  
 Computer Programmers  
 Software Quality Assurance (QA) Testers  
 Full-Stack Developers  
 Back-End Developers  
 Junior Software Engineers  
 Junior Database Administrators

#### Program Requirements

##### Technical Studies Required 43 Credits

ITEC1301	HTML/CSS and JavaScript	3
ITEC1505	Fundamentals of Programming with Python	4
ITEC2500	Mobile Application Development	4
ITEC2520	Software Security Assurance	4
ITEC2575	.NET Programming I	4
ITEC2580	Advanced Programming with Python	4
ITEC2585	.NET Programming II	4
ITEC2645	Web Development with ASP.NET	4
ITEC2701	SQL/NoSQL Database Design	4
ITEC2781	SQL Server - TransactSQL	4
ITEC2841	Client/Server and Cloud Computing	4

##### General Education Required 9 Credits

COMM1260	Small Group Communication	3
ENGL1070	Technical Writing	3
	Choose 3 credits from MnTC Goal Area 3, 4, or 5	3

##### General Education Elective 6 Credits

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

##### Technical Studies Elective 2 Credits

Any BUSN or ITEC course that is not required for this award may be used as an elective.

Recommended:		
ITEC1000	Information Systems	3
ITEC2055	Project Management	3
ITEC2385	IT Internship	2-8
ITEC2786	SQL Server - System Administration	4

### Total Associate in Applied Science Degree Credits 60

#### Semester Sequence

Completion of this award may require taking courses at both campuses. For more information, please contact your faculty program advisor.

#### First Semester

ITEC1301	HTML/CSS and JavaScript	3
ITEC1505	Fundamentals of Programming with Python	4
COMM1260	Small Group Communication	3
	Choose 3 credits from MnTC Goal Area 3, 4, or 5	3
	General Education Electives	3

#### Total Credits 16

#### Second Semester

ITEC2575	.NET Programming I	4
ITEC2580	Advanced Programming with Python	4
ITEC2701	SQL/NoSQL Database Design	4
ENGL1070	Technical Writing	3

#### Total Credits 15

#### Third Semester

ITEC2500	Mobile Application Development	4
ITEC2585	.NET Programming II	4
ITEC2781	SQL Server - TransactSQL	4
	Technical Studies Electives	2

#### Total Credits 14

#### Fourth Semester

ITEC2520	Software Security Assurance	4
ITEC2645	Web Development with ASP.NET	4
ITEC2841	Client/Server and Cloud Computing	4
	General Education Electives	3

#### Total Credits 15

#### Technical Studies Electives

Any Business (BUSN) or Information Technology (ITEC) course that is not required for this award may be used as an elective.

Recommended:		
ITEC1000	Information Systems	3
ITEC2055	Project Management	3
ITEC2385	IT Internship	2-8
ITEC2786	SQL Server - System Administration	4

#### Choose a Total of: 2 Credits

#### MnTC Goal Area 3

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
CHEM1000	Introduction to Chemistry	4
CHEM1100	General, Organic, and Biological Chemistry Foundations	4
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
PHYS2005	College Physics I	4
PHYS2010	College Physics II	4
<b>MnTC Goal Area 4</b>		
MATH1150	Applications of Quantitative Reasoning	3
MATH1250	Introduction to Statistics	3
MATH1400	College Algebra	4
PHIL1000	Introduction to Logic	3
<b>MnTC Goal Area 5</b>		
ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3

**Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice. This listing is to be used strictly as an advising tool.

5/12/2022 : BP 2152 / EP 2153

## Organizational Support (BP/EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

This program prepares students for a career in organizational support with marketable job skills that are highly valued by many businesses. Coursework will focus heavily on computer training and other office technologies. It is important that students pursuing a career in organizational support are able to keep pace in a busy office environment and adapt to constantly changing technology including an awareness of the issues surrounding computer security in today's highly technological world. Excellent interpersonal skills are necessary. Upon completing the degree program, students have the opportunity to undertake a variety of tasks and responsibilities and work in a professional office environment.

Prerequisite knowledge: Basic computer literacy, computer keyboarding, familiarity with the Internet, college-level reading and writing ability, and proficiency in basic mathematics.

#### Award Outcomes

- Record business transactions
- Compare decision making solutions
- Identify the key skills of effective managers
- Describe the changing role of IS Professional
- Describe issues surrounding computer security
- Construct relational databases with an efficient design
- Produce business documents
- Create dynamic presentations
- Utilize a personal information manager
- Perform basic operating system functions
- Create publications
- Make decisions regarding project task management
- Demonstrate application integration
- Exhibit detail-oriented skills
- Compose business documents
- Utilize proofreading and editing skills
- Demonstrate effective written communication skills
- Identify communication styles
- Demonstrate effective oral communication skills

#### Career Opportunities

Positions are available in organizational support. Organizational support careers rank among the largest occupations in the U.S. economy. Salaries vary by skill, experience, and level of responsibility. Employment may be found with banks, insurance companies, health care facilities, government agencies, educational institutions, retail industries and various service and manufacturing businesses. Information on careers, salary, and employment outlook is available on the Minnesota State Careerwise and Bureau of Labor Statistics websites: [www.careerwise.minnstate.edu](http://www.careerwise.minnstate.edu) and [www.bls.gov](http://www.bls.gov).

#### Program Requirements

##### Technical Studies Required 45 Credits

ACCT1000	Introduction to Accounting	3
ACCT1125	Excel	3
BUSN1000	Introduction to Business	3
CCDS1000	How to Succeed in College	1
CPLT1005	Advanced Keyboarding and Document Processing	3
CPLT1100	Computer Essentials	3
ITEC1000	Information Systems	3
ITEC1005	Computer Security Awareness	3
ITEC1032	Microsoft Access	3
ITEC1035	Microsoft Word	3
ITEC1042	Microsoft PowerPoint	3
ITEC1095	Microsoft 365	2

ITEC1102	PC Operating Systems	3
ITEC1310	Microsoft Publisher	3
ITEC2055	Project Management	3
ITEC2090	Microsoft Integration	3

**General Education Required 9 Credits**

COMM1260	Small Group Communication	3
ENGL1070	Technical Writing	3
MATH1400	College Algebra	4
	or	
	Choose 3 credits from MnTC Goal Area 3, 4, or 5	3

**General Education Elective 6 Credits**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Technical Studies Elective 0 Credit****Total Associate in Applied Science Degree Credits 60****Semester Sequence**

Completion of this award may require taking courses at both campuses. For more information, please contact your faculty program advisor.

**Prerequisite Knowledge:** A student seeking this award should have qualifying assessment scores on the math, reading, writing, computer literacy, and keyboarding placement tests as identified by individual course prerequisites.

**First Semester**

CCDS1000	How to Succeed in College	1
CPLT1100	Computer Essentials	3
ITEC1000	Information Systems	3
ITEC1095	Microsoft 365	2
ITEC1102	PC Operating Systems	3
MATH1400	College Algebra	4
	or	
	Choose 3 credits from MnTC Goal Area 3, 4, or 5	3

**Total Credits 15****Second Semester**

ACCT1000	Introduction to Accounting	3
CPLT1005	Advanced Keyboarding and Document Processing	3
ITEC1005	Computer Security Awareness	3
ITEC1035	Microsoft Word	3
ENGL1070	Technical Writing	3

**Total Credits 15****Third Semester**

ACCT1125	Excel	3
ITEC1032	Microsoft Access	3
ITEC1042	Microsoft PowerPoint	3
COMM1260	Small Group Communication	3
	General Education Electives	3

**Total Credits 15****Fourth Semester**

BUSN1000	Introduction to Business	3
ITEC1310	Microsoft Publisher	3
ITEC2055	Project Management	3
ITEC2090	Microsoft Integration	3
	General Education Electives	3

**Total Credits 15****General Education Electives**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Choose a Total of: 6 Credits****MnTC Goal Area 3**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
CHEM1000	Introduction to Chemistry	4
CHEM1100	General, Organic, and Biological Chemistry Foundations	4
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
PHYS2005	College Physics I	4
PHYS2010	College Physics II	4

**MnTC Goal Area 4**

MATH1150	Applications of Quantitative Reasoning	3
MATH1250	Introduction to Statistics	3
MATH1400	College Algebra	4
MATH2250	Precalculus with Trigonometry	5
MATH2300	Calculus I	5
PHIL1000	Introduction to Logic	3

**MnTC Goal Area 5**

ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3

**Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## IT Support (BP/EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

IT Support prepares the student for employment providing service to computer users, including hardware and software installation and technical assistance. Coursework includes experiences and instruction in communication and problem-solving skills as well as technical training with hardware, software, operating systems, application software and network operations.

IT Support prepares the student to select, maintain, configure and oversee the installation of business-oriented computers and software. Students practice how to train and support users to include skills to analyze problems and resolve recurring difficulties such as issues surrounding computer security in today's highly technological world. This person must be an excellent communicator and troubleshooter who can excel in fast paced environment.

Prerequisite knowledge: Basic computer literacy, computer keyboarding, familiarity with the Internet, college-level reading and writing ability, and proficiency in basic mathematics.

#### Award Outcomes

Compare decision making solutions  
 Describe the changing role of IS Professionals  
 Describe issues surrounding computer security  
 Construct relational databases with an efficient design  
 Produce variety of business documents  
 Create dynamic presentations  
 Perform basic operating system functions  
 Perform network administration tasks in a Cisco environment  
 Perform system administration tasks in a Windows environment  
 Perform system administration tasks in a Linux environment  
 Make decisions regarding project task management  
 Exhibit customer service skills  
 Demonstrate application integration  
 Utilize a personal information manager  
 Apply problem-solving methodologies  
 Provide critical-thinking solution strategies  
 Demonstrate effective written communication skills  
 Demonstrate effective oral communication skills  
 Demonstrate career readiness

#### Career Opportunities

Positions are available as IT Support Specialist, IT Trainer, IT Coordinator, Help Desk and Computer Lab Assistant.

#### Program Requirements

##### Technical Studies Required 45 Credits

ITEC1000	Information Systems	3
ITEC1005	Computer Security Awareness	3
ITEC1080	Microsoft Productivity Apps 1	3
ITEC1090	Microsoft Productivity Apps 2	3
ITEC1095	Microsoft 365	2
ITEC1102	PC Operating Systems	3
ITEC1105	Network Admin 1	4
ITEC1110	Windows Admin 1	3
ITEC1122	Linux Admin 1	4
ITEC2055	Project Management	3
ITEC2065	Help Desk/User Support	3
ITEC2075	IT Career Readiness	2
ITEC2090	Microsoft Integration	3
ITEC2675	A+ Hardware Support	3
ITEC2680	A+ Software Support	3

##### General Education Required 9 Credits

COMM1260	Small Group Communication	3
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ENGL1070	Technical Writing	3
MATH1400	College Algebra	4
	or	
	Choose 3 credits from MnTC Goal Area 3, 4, or 5	3

### General Education Elective 6 Credits

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

### Technical Studies Elective 0 Credits

### Total Associate in Applied Science Degree Credits 60

#### Semester Sequence

Completion of this award may require taking courses at both campuses. For more information, please contact your faculty program advisor

**Prerequisite Knowledge:** A student seeking this award should have qualifying assessment scores on the math, reading, writing, computer literacy, and keyboarding placement tests as identified by individual course prerequisites.

#### First Semester

ITEC1000	Information Systems	3
ITEC1005	Computer Security Awareness	3
ITEC1080	Microsoft Productivity Apps 1	3
ITEC1102	PC Operating Systems	3
MATH1400	College Algebra	4
	or	
	Choose 3 credits from MnTC Goal Area 3, 4, or 5	3

#### Total Credits 15

#### Second Semester

ITEC1090	Microsoft Productivity Apps 2	3
ITEC1095	Microsoft 365	2
ITEC1105	Network Admin 1	4
ITEC2675	A+ Hardware Support	3
ENGL1070	Technical Writing	3

#### Total Credits 15

#### Third Semester

ITEC1110	Windows Admin 1	3
ITEC2090	Microsoft Integration	3
ITEC2680	A+ Software Support	3
	General Education Electives	6

#### Total Credits 15

#### Fourth Semester

ITEC1122	Linux Admin 1	4
ITEC2055	Project Management	3
ITEC2065	Help Desk/User Support	3
ITEC2075	IT Career Readiness	2
COMM1260	Small Group Communication	3

**Total Credits 15****General Education Electives**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Choose a Total of: 6 Credits****MnTC Goal Area 3**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
CHEM1000	Introduction to Chemistry	4
CHEM1100	General, Organic, and Biological Chemistry Foundations	4
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
PHYS2005	College Physics I	4
PHYS2010	College Physics II	4

**MnTC Goal Area 4**

MATH1150	Applications of Quantitative Reasoning	3
MATH1250	Introduction to Statistics	3
MATH1400	College Algebra	4
PHIL1000	Introduction to Logic	3

**MnTC Goal Area 5**

ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3

**Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

# Network Administrator/Analyst (BP/EP) Associate in Applied Science Degree

## Overview and Award Outcomes

### Overview

This degree prepares students to be a network administrator or network analyst. Students will design, manage, troubleshoot, and secure network environments. Technologies include the Windows environment, the Linux environment, and the Cisco environment, as well as topics in hardware and programming.

### Award Outcomes

Perform system administration tasks in a Windows environment  
 Perform system administration tasks in a Linux environment  
 Perform network administration tasks in a Cisco environment  
 Demonstrate troubleshooting tasks  
 Describe network components  
 Demonstrate programming logic

### Career Opportunities

The following positions are available with this degree:

- Network Administrator
- Network Technician
- Network Analyst
- IT Analyst
- Cisco Network Engineer
- Windows Server Administrator
- Linux Server Administrator
- System Administrator
- Computer Network Support Specialist
- Network and Computer Systems Administrator

## Program Requirements

### Technical Studies Required 45 Credits

ITEC1105	Network Admin 1	4
ITEC1110	Windows Admin 1	3
ITEC1122	Linux Admin 1	4
ITEC1421	Network Admin 2	4
ITEC1431	Network Admin 3	4
ITEC1443	Network Admin 4	4
	or	
ITEC1490	CCNA Specialty Fields	3
ITEC1505	Fundamentals of Programming with Python	4
ITEC2122	Linux Admin 2	4
ITEC2150	Windows Admin 2	4
ITEC2162	Linux Admin 3	4
ITEC2270	Windows Admin 3	4
ITEC2675	A+ Hardware Support	3

### General Education Required 9 Credits

COMM1260	Small Group Communication	3
ENGL1070	Technical Writing	3
	Choose 3 credits from MnTC Goal Area 3, 4, or 5	3

### General Education Elective 6 Credits

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Technical Studies Electives 0 Credits****Total Associate in Applied Science Degree Credits 60****Semester Sequence**

Completion of this award may require taking courses at both campuses. For more information, please contact your faculty program advisor.

**Prerequisite:** Qualifying score on the computer literacy assessment test OR CPLT1000 and CPLT1100 OR ITEC1000 and ITEC1101

**First Semester**

ITEC1105	Network Admin 1	4
ITEC1110	Windows Admin 1	3
ITEC1505	Fundamentals of Programming with Python	4
ITEC2675	A+ Hardware Support	3
COMM1260	Small Group Communication	3

**Total Credits 17****Second Semester**

ITEC1122	Linux Admin 1	4
ITEC1421	Network Admin 2	4
ITEC2150	Windows Admin 2	4
ENGL1070	Technical Writing	3

**Total Credits 15****Third Semester**

ITEC1431	Network Admin 3	4
ITEC2122	Linux Admin 2	4
ITEC2270	Windows Admin 3	4
	Choose 3 credits from MnTC Goal Area 3, 4, or 5	3

**Total Credits 15****Fourth Semester**

ITEC1443	Network Admin 4	4
ITEC1490	or CCNA Specialty Fields	3
ITEC2162	Linux Admin 3	4
	General Education Electives	6

**Total Credits 13****General Education Electives**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Choose a Total of: 3 Credits****MnTC Goal Area 3**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4

BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
CHEM1000	Introduction to Chemistry	4
CHEM1100	General, Organic, and Biological Chemistry Foundations	4
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
PHYS2005	College Physics I	4
PHYS2010	College Physics II	4
<b>MnTC Goal Area 4</b>		
MATH1150	Applications of Quantitative Reasoning	3
MATH1250	Introduction to Statistics	3
MATH1400	College Algebra	4
MATH2250	Precalculus with Trigonometry	5
MATH2300	Calculus I	5
PHIL1000	Introduction to Logic	3
<b>MnTC Goal Area 5</b>		
ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3

**Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice. This listing is to be used strictly as an advising tool.

5/12/2022 : BP 2104 / EP 2105

## Software Developer (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

This degree offers the skills necessary for computer application development and design. Industry standards and frameworks will be used to design, code, document, and implement computer applications. Exposure to database management systems, client/server computing, and cloud environments will further familiarize students with the current trends in distributed processing and application development.

#### Award Outcomes

Construct web based applications  
 Write an application that makes use of common business information systems environments  
 Create graphical user interfaces  
 Create an application that demonstrates the principles of object oriented design  
 Design and code business applications  
 Develop code using software and languages common to the industry  
 Generate data structures using relational databases  
 Use a structured approach to solving business problems using a SDLC Methodology  
 Analyze business communication systems  
 Demonstrate knowledge of program flow and control by writing appropriate application code

#### Career Opportunities

Positions are available as:

Software Developers  
 Application Developers  
 Computer Programmers  
 Software Quality Assurance (QA) Testers  
 Full-Stack Developers  
 Back-End Developers  
 Junior Software Engineers  
 Junior Database Administrators

### Program Requirements

#### Technical Studies Required 35 Credits

ITEC1301	HTML/CSS and JavaScript	3
ITEC1505	Fundamentals of Programming with Python	4
ITEC2575	.NET Programming I	4
ITEC2580	Advanced Programming with Python	4
ITEC2585	.NET Programming II	4
ITEC2645	Web Development with ASP.NET	4
ITEC2701	SQL/NoSQL Database Design	4
ITEC2781	SQL Server - TransactSQL	4
ITEC2841	Client/Server and Cloud Computing	4

#### General Education Required 6 Credits

COMM1260	Small Group Communication	3
ENGL1070	Technical Writing	3

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Diploma Credits 41

#### Semester Sequence

Completion of this award may require taking courses at both campuses. For more information, please contact your faculty program advisor.

#### First Semester

ITEC1301	HTML/CSS and JavaScript	3
ITEC1505	Fundamentals of Programming with Python	4
COMM1260	Small Group Communication	3
<b>Total Credits 10</b>		
<b>Second Semester</b>		
ITEC2575	.NET Programming I	4
ITEC2580	Advanced Programming with Python	4
ITEC2701	SQL/NoSQL Database Design	4
<b>Total Credits 12</b>		
<b>Third Semester</b>		
ITEC2585	.NET Programming II	4
ITEC2781	SQL Server - TransactSQL	4
ENGL1070	Technical Writing	3
<b>Total Credits 11</b>		
<b>Fourth Semester</b>		
ITEC2645	Web Development with ASP.NET	4
ITEC2841	Client/Server and Cloud Computing	4

**Total Credits 8****Graduation (41 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/7/2022 : BP 2154 / EP 2155

## IT Support Specialist (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

IT Support prepares the student for employment providing service to computer users, including hardware and software installation and technical assistance. Coursework includes experiences and instruction in communication and problem-solving skills as well as technical training with hardware, software, operating systems, application software and network operations.

IT Support prepares the student to select, maintain, configure and oversee the installation of business-oriented computers and software. Students practice how to train and support users to include skills to analyze problems and resolve recurring difficulties such as issues surrounding computer security in today's highly technological world. This Student must be an excellent communicator and troubleshooter who can excel in fast paced environment.

Prerequisite knowledge: Basic computer literacy, computer keyboarding, familiarity with the Internet, college-level reading and writing ability, and proficiency in basic mathematics.

#### Award Outcomes

- Compare decision making solutions
- Describe the changing role of IS Professionals
- Describe issues surrounding computer security
- Construct relational databases with an efficient design
- Produce variety of business documents
- Create dynamic presentations
- Perform basic operating system functions
- Perform network administration tasks in a Cisco environment
- Perform system administration tasks in a Windows environment
- Perform system administration tasks in a Linux environment
- Make decisions regarding project task management
- Exhibit customer service skills
- Demonstrate application integration
- Utilize a personal information manager
- Apply problem-solving methodologies
- Provide critical-thinking solution strategies
- Identify communication styles
- Demonstrate effective written communication skills
- Demonstrate career readiness

#### Career Opportunities

Positions are available as IT Support Specialist, IT Trainer, IT Coordinator, Help Desk and Computer Lab Assistant

#### Program Requirements

##### Technical Studies Required 46 Credits

CCDS1000	How to Succeed in College	1
ITEC1000	Information Systems	3
ITEC1005	Computer Security Awareness	3
ITEC1080	Microsoft Productivity Apps 1	3
ITEC1090	Microsoft Productivity Apps 2	3
ITEC1095	Microsoft 365	2
ITEC1102	PC Operating Systems	3
ITEC1105	Network Admin 1	4
ITEC1110	Windows Admin 1	3
ITEC1122	Linux Admin 1	4
ITEC2055	Project Management	3
ITEC2065	Help Desk/User Support	3
ITEC2075	IT Career Readiness	2
ITEC2090	Microsoft Integration	3
ITEC2675	A+ Hardware Support	3
ITEC2680	A+ Software Support	3

**General Education Required 0 Credits****General Education Elective 0 Credits****Technical Studies Elective 0 Credits****Total Diploma Credits 46****Semester Sequence**

Completion of this award may require taking courses at both campuses. For more information, please contact your faculty program advisor.

**Prerequisite Knowledge:** A student seeking this award should have qualifying assessment scores on the math, reading, writing, computer literacy, and keyboarding placement tests as identified by individual course prerequisites.

**First Semester**

CCDS1000	How to Succeed in College	1
ITEC1000	Information Systems	3
ITEC1005	Computer Security Awareness	3
ITEC1080	Microsoft Productivity Apps 1	3
ITEC1095	Microsoft 365	2
ITEC1102	PC Operating Systems	3

**Total Credits 15****Second Semester**

ITEC1090	Microsoft Productivity Apps 2	3
ITEC1105	Network Admin 1	4
ITEC1110	Windows Admin 1	3
ITEC2055	Project Management	3
ITEC2675	A+ Hardware Support	3

**Total Credits 16****Third Semester**

ITEC1122	Linux Admin 1	4
ITEC2065	Help Desk/User Support	3
ITEC2075	IT Career Readiness	2
ITEC2090	Microsoft Integration	3
ITEC2680	A+ Software Support	3

**Total Credits 15****Graduation (46 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Network Support Specialist (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

This award provides the skills needed to design, manage, troubleshoot and secure network environments. Students will practice technical skills through hardware installation, software configuration and management of computers, servers and networking devices. Microsoft Windows, Linux, Cisco, and other multi-vendor and cloud-based platforms relevant for today's networks are explored.

#### Award Outcomes

Perform system administration tasks in a Windows environment  
 Perform system administration tasks in a Linux environment  
 Perform network administration tasks in a Cisco environment  
 Demonstrate troubleshooting tasks  
 Describe network components  
 Demonstrate programming logic

#### Career Opportunities

Positions are available as Network Support Specialists, Network Analysts, Network Administrators.

#### Program Requirements

##### Technical Studies Required 38 Credits

ITEC1000	Information Systems	3
ITEC1080	Microsoft Productivity Apps 1	3
ITEC1102	PC Operating Systems	3
ITEC1105	Network Admin 1	4
ITEC1110	Windows Admin 1	3
ITEC1122	Linux Admin 1	4
ITEC1421	Network Admin 2	4
ITEC1505	Fundamentals of Programming with Python	4
ITEC2065	Help Desk/User Support	3
ITEC2150	Windows Admin 2	4
ITEC2675	A+ Hardware Support	3

##### General Education Required 6 Credits

COMM1260	Small Group Communication	3
ENGL1070	Technical Writing	3

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Diploma Credits 44

#### Semester Sequence

Completion of this award may require taking courses at both campuses. For more information, please contact your faculty program advisor.

**Prerequisite:** Qualifying score on the computer literacy assessment test or CPLT1000 and CPLT1100

##### First Semester

ITEC1000	Information Systems	3
ITEC1080	Microsoft Productivity Apps 1	3
ITEC1102	PC Operating Systems	3
COMM1260	Small Group Communication	3

##### Total Credits 12

##### Second Semester

ITEC1105	Network Admin 1	4
ITEC1505	Fundamentals of Programming with Python	4
ITEC2675	A+ Hardware Support	3
ENGL1070	Technical Writing	3

**Total Credits 14****Third Semester**

ITEC1110	Windows Admin 1	3
ITEC1122	Linux Admin 1	4
ITEC1421	Network Admin 2	4

**Total Credits 11****Fourth Semester**

ITEC2065	Help Desk/User Support	3
ITEC2150	Windows Admin 2	4

**Total Credits 7****Graduation (44 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice. This listing is to be used strictly as an advising tool.

5/9/2022 : BP 2112 / EP 2113

## Organizational Specialist (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

The organizational specialist is a key member of the office team. This individual will use current software applications in word processing, spreadsheets, databases, and presentations. As an organizational specialist, you may have the opportunity to serve as a communications liaison to the technology staff. Excellent interpersonal skills and the ability to assume additional responsibility are essential including an awareness of the issues surrounding computer security in today's highly technological world. Upon completing the diploma program, students will have the knowledge to undertake a variety of tasks and responsibilities within a professional office environment.

Prerequisite knowledge: Basic computer literacy, computer keyboarding, familiarity with the Internet, college-level reading and writing ability, and proficiency in basic mathematics.

#### Award Outcomes

- Record business transactions
- Compare decision making solutions
- Identify the key skills of effective managers
- Describe the changing role of IS Professional
- Describe issues surrounding computer security
- Construct relational databases with an efficient design
- Produce business documents
- Create dynamic presentations
- Utilize a personal information manager
- Perform basic operating system functions
- Create publications
- Make decisions regarding project task management
- Demonstrate application integration
- Exhibit detail-oriented skills
- Compose business documents
- Utilize proofreading and editing skills
- Identify communication styles

#### Career Opportunities

Positions are available in organizational support. Organizational support careers rank among the largest occupations in the U.S. economy. Salaries vary by skill, experience, and level of responsibility. Employment may be found with banks, insurance companies, health care facilities, government agencies, educational institutions, retail industries and various service and manufacturing businesses. Information on careers, salary, and employment outlook is available on the Minnesota State Careerwise and Bureau of Labor Statistics websites: [www.careerwise.minnstate.edu](http://www.careerwise.minnstate.edu) and [www.bls.gov](http://www.bls.gov).

#### Program Requirements

##### Technical Studies Required 45 Credits

ACCT1000	Introduction to Accounting	3
ACCT1125	Excel	3
BUSN1000	Introduction to Business	3
CCDS1000	How to Succeed in College	1
CPLT1005	Advanced Keyboarding and Document Processing	3
CPLT1100	Computer Essentials	3
ITEC1000	Information Systems	3
ITEC1005	Computer Security Awareness	3
ITEC1032	Microsoft Access	3
ITEC1035	Microsoft Word	3
ITEC1042	Microsoft PowerPoint	3
ITEC1095	Microsoft 365	2
ITEC1102	PC Operating Systems	3
ITEC1310	Microsoft Publisher	3
ITEC2055	Project Management	3
ITEC2090	Microsoft Integration	3

**General Education Required 0 Credits****General Education Elective 0 Credits****Technical Studies Elective 0 Credits****Total Diploma Credits 45****Semester Sequence**

Completion of this award may require taking courses at both campuses. For more information, please contact your faculty program advisor.

**Prerequisite Knowledge:** A student seeking this award should have qualifying assessment scores on the math, reading, writing, computer literacy, and keyboarding placement tests as identified by individual course prerequisites.

**First Semester**

CCDS1000	How to Succeed in College	1
CPLT1005	Advanced Keyboarding and Document Processing	3
CPLT1100	Computer Essentials	3
ITEC1000	Information Systems	3
ITEC1095	Microsoft 365	2
ITEC1102	PC Operating Systems	3

**Total Credits 15****Second Semester**

ACCT1000	Introduction to Accounting	3
ACCT1125	Excel	3
ITEC1005	Computer Security Awareness	3
ITEC1035	Microsoft Word	3
ITEC1042	Microsoft PowerPoint	3

**Total Credits 15****Third Semester**

BUSN1000	Introduction to Business	3
ITEC1032	Microsoft Access	3
ITEC1310	Microsoft Publisher	3
ITEC2055	Project Management	3
ITEC2090	Microsoft Integration	3

**Total Credits 15****Graduation (45 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Cybersecurity (BP/EP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

This advanced technical certificate is designed for working professionals and students in technology-related degrees. The certificate is a good compliment to additional Cybersecurity credentials. Learning outcomes for this program are aligned with regulatory and industry standards.

Enrollment Requirements: Students must have one of the following: 1) A minimum of two years of computer-related work experience or 2) A college degree in a computer-related field or 3) Be currently enrolled in a computer-related degree.

#### Award Outcomes

Define Cybersecurity principles  
Utilize network defense tools  
Analyze security risks  
Identify Cybersecurity threats

#### Career Opportunities

Security Support Technician, Information Security Specialist, Security Analyst, IT Security Consultant, Network Technician

#### Program Requirements

##### Technical Studies Required 15 Credits

ITEC1005	Computer Security Awareness	3
ITEC1105	Network Admin 1	4
ITEC2415	IT Security Management and Compliance	3
ITEC2505	Cybersecurity Essentials	3
ITEC2511	Software Security and Cryptography	2

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Associate in Applied Science Degree Credits 15

#### Semester Sequence

Completion of this award may require taking courses at both campuses. For more information, please contact your faculty program advisor.

##### First Semester

ITEC1005	Computer Security Awareness	3
ITEC1105	Network Admin 1	4

##### Total Credits 7

##### Second Semester

ITEC2415	IT Security Management and Compliance	3
ITEC2505	Cybersecurity Essentials	3
ITEC2511	Software Security and Cryptography	2

##### Total Credits 8

#### Graduation (15 Credits)

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice. This listing is to be used strictly as an advising tool.

5/9/2022 : BP 2180 / EP 2181

## Cyber Defense (BP/EP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

This advanced technical certificate provides students the opportunity to utilize the tools and systems to monitor, mitigate, and prevent threats to computer networks. Through hands-on experience, this degree prepares individuals to become a skilled network security professional. Learning outcomes for this program are aligned with regulatory and industry standards.

#### Award Outcomes

Define Cybersecurity principles  
Utilize network defense tools  
Analyze security risks  
Identify Cybersecurity threats

#### Career Opportunities

Network and Firewall Security Technician, Security Analyst, Security Specialist/Administrator, Security Consultant, Network Administrator, Penetration Tester, Security Engineer, Cyber Vulnerability Analyst.

#### Program Requirements

##### Technical Studies Required 28 Credits

ITEC1005	Computer Security Awareness	3
ITEC1105	Network Admin 1	4
ITEC1421	Network Admin 2	4
ITEC1431	Network Admin 3	4
ITEC2415	IT Security Management and Compliance	3
ITEC2422	CCNA Security	2
ITEC2505	Cybersecurity Essentials	3
ITEC2511	Software Security and Cryptography	2
ITEC2536	Ethical Hacking	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Associate in Applied Science Degree Credits 28

#### Semester Sequence

Completion of this award may require taking courses at both campuses. For more information, please contact your faculty program advisor.

##### First Semester

ITEC1005	Computer Security Awareness	3
ITEC1105	Network Admin 1	4

##### Total Credits 7

##### Second Semester

ITEC1421	Network Admin 2	4
ITEC2505	Cybersecurity Essentials	3

##### Total Credits 7

##### Third Semester

ITEC1431	Network Admin 3	4
ITEC2415	IT Security Management and Compliance	3

ITEC2511	Software Security and Cryptography	2
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**Total Credits 9****Fourth Semester**

ITEC2422	CCNA Security	2
ITEC2536	Ethical Hacking	3

**Total Credits 5****Graduation (28 Credits)**

Prerequisite: Basic computer literacy, familiarity with the Internet, college-level reading ability, and proficiency in basic mathematics. All students must pass the computer literacy assessment test before registering for these courses.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

5/9/2022 : BP 2182 / EP 2183

## Software Developer (BP/EP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

This certificate is designed to enable computer professionals to acquire the knowledge and skills to be a contributor in a software development role implementing business solutions. Students will explore programming languages, client server concepts, and integrated database design.

#### Award Outcomes

- Construct web based applications
- Write an application that makes use of common business information systems environments
- Develop code using software and languages common to the industry
- Generate data structures using relational databases
- Use a structured approach to solving business problems using a SDLC Methodology
- Analyze business communication system

#### Career Opportunities

Positions are available as Computer Programmers and Application Designers.

#### Program Requirements

##### Technical Studies Required 24 Credits

ITEC1505	Fundamentals of Programming with Python	4
ITEC2575	.NET Programming I	4
ITEC2585	.NET Programming II	4
ITEC2701	SQL/NoSQL Database Design	4
ITEC2781	SQL Server - TransactSQL	4
ITEC2841	Client/Server and Cloud Computing	4

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Advanced Technical Certificate Credits 24

#### Semester Sequence

Completion of this award may require taking courses at both campuses. For more information, please contact your faculty program advisor.

##### First Semester

ITEC1505	Fundamentals of Programming with Python	4
ITEC2701	SQL/NoSQL Database Design	4

##### Total Credits 8

##### Second Semester

ITEC2575	.NET Programming I	4
ITEC2781	SQL Server - TransactSQL	4

##### Total Credits 8

##### Third Semester

ITEC2585	.NET Programming II	4
ITEC2841	Client/Server and Cloud Computing	4

**Total Credits 8**

**Graduation (24 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice. This listing is to be used strictly as an advising tool.

6/6/2022 : BP 2156 / EP 2157

## Cisco Networking (BP/EP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

After successful completion of this award, students will be prepared to support and manage computer networks. Students will practice the skills required to install, operate and troubleshoot network environments. Network fundamentals, LAN switching technologies, IPv4 and IPv6 routing protocols, WAN technologies, infrastructure services, infrastructure security, and enterprise network management will be explored.

The curriculum in this award is aligned with the globally recognized CompTIA Network+ certification, and the Cisco Certified Network Associate (CCNA) certification. These industry certifications validate an IT networking professional's knowledge and skill ability and open doors to beginning or advancing a career in networking.

#### Award Outcomes

Perform network administration tasks in a Cisco environment  
 Demonstrate troubleshooting tasks  
 Describe network components  
 Demonstrate programming logic

#### Career Opportunities

The following positions are available:

- Network Technician
- Network Administrator
- Network Analyst
- Network Engineer
- Cisco Network Infrastructure Analyst
- Cisco Network Engineer

#### Program Requirements

##### Technical Studies Required 20 Credits

ITEC1105	Network Admin 1	4
ITEC1421	Network Admin 2	4
ITEC1431	Network Admin 3	4
ITEC1443	Network Admin 4	4
ITEC1480	CCNA (Cisco Certified Network Associate) Exam Prep	1
ITEC1490	CCNA Specialty Fields	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Advanced Technical Certificate Credits 20

#### Semester Sequence

Completion of this award may require taking courses at both campuses. For more information, please contact your faculty program advisor.

##### First Semester

ITEC1105	Network Admin 1	4
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##### Total Credits 4

##### Second Semester

ITEC1421	Network Admin 2	4
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**Total Credits 4****Third Semester**

ITEC1431	Network Admin 3	4
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**Total Credits 4****Fourth Semester**

ITEC1443	Network Admin 4	4
ITEC1480	CCNA (Cisco Certified Network Associate) Exam Prep	1
ITEC1490	CCNA Specialty Fields	3

**Total Credits 8****Graduation (20 Credits)**

Prerequisite: Strong foundation in computer concepts or coursework required. Basic computer literacy, familiarity with the Internet, college-level reading ability, and proficiency in algebra. All students must pass the computer literacy assessment test before registering for these courses.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

5/9/2022 : BP 2164 / EP 2136

## Linux Networking (BP/EP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

This certificate is designed to enable the Linux computer professional to install, configure and manage Linux systems and servers. Students will define user roles, manage network services, monitor system performance, and implement scripts for automation.

Prerequisite: Basic computer literacy, familiarity with the Internet, college-level reading ability, and proficiency in basic mathematics. All students must pass the Computer Literacy assessment test before registering for these courses.

#### Award Outcomes

Perform system administration tasks in a Linux environment  
 Demonstrate troubleshooting tasks  
 Demonstrate programming logic

#### Career Opportunities

The following positions are available:

- Network Administrator
- Network Developer
- Linux Server Administrator

#### Program Requirements

##### Technical Studies Required 16 Credits

ITEC1122	Linux Admin 1	4
ITEC1505	Fundamentals of Programming with Python	4
ITEC2122	Linux Admin 2	4
ITEC2162	Linux Admin 3	4

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Advanced Technical Certificate Credits 16

#### Semester Sequence

Completion of this award may require taking courses at both campuses. For more information, please contact your faculty program advisor.

##### First Semester

ITEC1122	Linux Admin 1	4
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##### Total Credits 4

##### Second Semester

ITEC1505	Fundamentals of Programming with Python	4
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##### Total Credits 4

##### Third Semester

ITEC2122	Linux Admin 2	4
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##### Total Credits 4

##### Fourth Semester

ITEC2162	Linux Admin 3	4
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**Total Credits 4**

**Graduation (16 Credits)**

**Prerequisite:** Basic computer literacy, familiarity with the Internet, college-level reading ability, and proficiency in basic mathematics. All students must pass the computer literacy assessment test before registering for these courses.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

5/9/2022 : BP 2130 / EP 2131

## Database Specialist (BP/EP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

This advanced technical certificate is designed for students and computer professionals to learn the fundamentals of database application development and database administration. Prior to enrolling, students should possess college-level reading ability, a strong foundation in computer concepts, and basic programming logic.

#### Award Outcomes

- Modify databases
- Test programs and make modifications
- Coordinate security measures to safeguard information
- Calculate values for database parameters
- Create user access levels
- Develop data model describing data elements
- Revise data definitions as defined in data dictionary

#### Career Opportunities

Positions are available as SQL Server Database Administrators and Database Application Developers.

#### Program Requirements

##### Technical Studies Required 23 Credits

ITEC1032	Microsoft Access	3
ITEC1505	Fundamentals of Programming with Python	4
ITEC2575	.NET Programming I	4
ITEC2701	SQL/NoSQL Database Design	4
ITEC2781	SQL Server - TransactSQL	4
ITEC2786	SQL Server - System Administration	4

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Advanced Technical Certificate Credits 23

#### Semester Sequence

Completion of this award may require taking courses at both campuses. For more information, please contact your faculty program advisor.

##### First Semester

ITEC1032	Microsoft Access	3
ITEC1505	Fundamentals of Programming with Python	4

##### Total Credits 7

##### Second Semester

ITEC2575	.NET Programming I	4
ITEC2701	SQL/NoSQL Database Design	4

##### Total Credits 8

##### Third Semester

ITEC2781	SQL Server - TransactSQL	4
ITEC2786	SQL Server - System Administration	4

**Total Credits 8**

**Graduation (23 Credits)**

**Prerequisite:** Strong foundation in computer concepts or coursework required. Basic computer literacy, familiarity with the Internet, college-level reading ability, and proficiency in algebra. All students must pass the computer literacy assessment test before registering for these courses.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice. This listing is to be used strictly as an advising tool.

6/7/2022 : BP 2148 / EP 2133

## Windows Networking (BP/EP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

This certificate is designed to enable the Windows computer professional to install, configure and manage Windows systems and servers. Students will define user roles, manage network services, monitor system performance, and implement scripts for automation.

Prerequisite: Basic computer literacy, familiarity with the Internet, college-level reading ability, and proficiency in basic mathematics. All students must pass the Computer Literacy assessment test before registering for these courses.

#### Award Outcomes

Perform system administration tasks in a Windows environment  
 Demonstrate troubleshooting tasks  
 Demonstrate programming logic

#### Career Opportunities

The following positions are available:

- Network Administrator
- Network Developer
- Windows Server Administrator

#### Program Requirements

##### Technical Studies Required 15 Credits

ITEC1110	Windows Admin 1	3
ITEC1505	Fundamentals of Programming with Python	4
ITEC2150	Windows Admin 2	4
ITEC2270	Windows Admin 3	4

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

#### Total Advanced Technical Certificate Credits 15

#### Semester Sequence

Completion of this award may require taking courses at both campuses. For more information, please contact your faculty program advisor.

##### First Semester

ITEC1110	Windows Admin 1	3
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##### Total Credits 3

##### Second Semester

ITEC1505	Fundamentals of Programming with Python	4
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##### Total Credits 4

##### Third Semester

ITEC2150	Windows Admin 2	4
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##### Total Credits 4

##### Fourth Semester

ITEC2270	Windows Admin 3	4
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**Total Credits 4**

**Graduation (15 Credits)**

**Prerequisite:** Basic computer literacy, familiarity with the Internet, college-level reading ability, and proficiency in basic mathematics. All students must pass the computer literacy assessment test before registering for these courses.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice. This listing is to be used strictly as an advising tool.

5/9/2022 : BP 2128 / EP 2129

## IT Service Desk Technician (BP/EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

The IT Service Desk Technician is responsible for taking calls, troubleshooting, tracking and resolving issues for customers. This person must be an excellent communicator and troubleshooter who can excel in a fast paced environment. This certificate is designed for the individual seeking a position in the computer service desk environment. Students gain the skills necessary to operate, configure, and troubleshoot including an awareness of issues surrounding computer security in today's highly technological world. Students are also introduced to the concepts and practices required of an entry-level technology professional in an effort to prepare them to become service providers.

Prerequisite knowledge: Basic computer literacy, computer keyboarding, familiarity with the Internet, college-level reading and writing ability, and proficiency in basic mathematics.

#### Award Outcomes

- Describe the changing role of IS Professionals
- Describe issues surrounding computer security
- Provide solutions using Microsoft productivity apps
- Perform basic operating system functions
- Exhibit customer service skills
- Utilize office suite personal information manager
- Apply problem-solving methodologies
- Provide critical-thinking solution strategies
- Differentiate desktop vs. cloud apps
- Perform network administration tasks in a Cisco environment

#### Career Opportunities

Positions are available as an IT Service Desk Technician, IT System Specialist, and PC Technician.

#### Program Requirements

##### Technical Studies Required 30 Credits

CCDS1000	How to Succeed in College	1
ITEC1000	Information Systems	3
ITEC1005	Computer Security Awareness	3
ITEC1080	Microsoft Productivity Apps 1	3
ITEC1095	Microsoft 365	2
ITEC1102	PC Operating Systems	3
ITEC1105	Network Admin 1	4
ITEC2065	Help Desk/User Support	3
ITEC2075	IT Career Readiness	2
ITEC2675	A+ Hardware Support	3
ITEC2680	A+ Software Support	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 30

#### Semester Sequence

Completion of this award may require taking courses at both campuses. For more information, please contact your faculty program advisor.

**Prerequisite Knowledge:** A student seeking this award should have qualifying assessment scores on the math, reading, writing, computer literacy, and keyboarding placement tests as identified by individual course prerequisites.

#### First Semester

CCDS1000	How to Succeed in College	1
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ITEC1000	Information Systems	3
ITEC1080	Microsoft Productivity Apps 1	3
ITEC1095	Microsoft 365	2
ITEC1102	PC Operating Systems	3
ITEC2675	A+ Hardware Support	3

**Total Credits 15****Second Semester**

ITEC1005	Computer Security Awareness	3
ITEC1105	Network Admin 1	4
ITEC2065	Help Desk/User Support	3
ITEC2075	IT Career Readiness	2
ITEC2680	A+ Software Support	3

**Total Credits 15****Graduation (30 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice. This listing is to be used strictly as an advising tool.

5/9/2022 : BP 2123 / EP 2124

## Microsoft Applications (BP/EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

This certificate is designed for the business professional who needs to become competent in business software most in demand at the personal computer level. This certificate provides in-depth technical computer skills needed in industry today. Students will use the Microsoft productivity apps in business situations. Some courses can be taken online. Courses completed while earning this certificate may also be applied to the Organizational Support A.A.S. degree or diploma.

Prerequisite knowledge: Basic computer literacy, computer keyboarding, familiarity with the Internet, college-level reading and writing ability, and proficiency in basic mathematics.

#### Award Outcomes

Compare decision making solutions  
 Construct relational databases with an efficient design  
 Produce variety of business documents  
 Create dynamic presentations  
 Create variety of publications  
 Demonstrate integration features of office suite  
 Utilize office suite personal information manager  
 Provide solutions using office suite  
 Differentiate desktop vs. cloud apps

#### Career Opportunities

This certificate is designed to improve the computer skills of office personnel.

#### Program Requirements

##### Technical Studies Required 20 Credits

ACCT1125	Excel	3
ITEC1032	Microsoft Access	3
ITEC1035	Microsoft Word	3
ITEC1042	Microsoft PowerPoint	3
ITEC1095	Microsoft 365	2
ITEC1310	Microsoft Publisher	3
ITEC2090	Microsoft Integration	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 20

#### Semester Sequence

Completion of this award may require taking courses at both campuses. For more information, please contact your faculty program advisor.

**Prerequisite Knowledge:** A student seeking this award should have qualifying assessment scores on the math, reading, writing, computer literacy, and keyboarding placement tests as identified by individual course prerequisites.

#### First Semester

ACCT1125	Excel	3
ITEC1035	Microsoft Word	3
ITEC1042	Microsoft PowerPoint	3
ITEC1095	Microsoft 365	2

#### Total Credits 11

#### Second Semester

ITEC1032	Microsoft Access	3
ITEC1310	Microsoft Publisher	3
ITEC2090	Microsoft Integration	3

**Total Credits 9****Graduation (20 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice. This listing is to be used strictly as an advising tool.

5/9/2022: BP 2120 / EP 2175

## Organizational Assistant (BP/EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

The organizational assistant is a valuable member of the office team who is responsible for a variety of activities that support the day-to-day office operations. Organizational assistants will use current software applications in preparing business documents. Basic accounting procedures and excellent interpersonal skills are essential.

Prerequisite knowledge: Basic computer literacy, computer keyboarding, familiarity with the Internet, college-level reading and writing ability, and proficiency in basic mathematics.

#### Award Outcomes

- Record business transactions
- Describe the changing role of IS Professionals
- Describe issues surrounding computer security
- Produce business documents
- Create dynamic presentations
- Compare decision making solutions
- Construct relational databases with an efficient design
- Utilize a personal information manager
- Perform basic operating system functions
- Exhibit detail-oriented skills

#### Career Opportunities

Positions are available in organizational support. Organizational support careers rank among the largest occupations in the U.S. economy. Salaries vary by skill, experience, and level of responsibility. Employment may be found with banks, insurance companies, health care facilities, government agencies, educational institutions, retail industries and various service and manufacturing businesses. Information on careers, salary, and employment outlook is available on the Minnesota State Careerwise and Bureau of Labor Statistics websites: [www.careerwise.minnstate.edu](http://www.careerwise.minnstate.edu) and [www.bls.gov](http://www.bls.gov).

### Program Requirements

#### Technical Studies Required 30 Credits

ACCT1000	Introduction to Accounting	3
CCDS1000	How to Succeed in College	1
CPLT1005	Advanced Keyboarding and Document Processing	3
ITEC1000	Information Systems	3
ITEC1005	Computer Security Awareness	3
ITEC1035	Microsoft Word	3
ITEC1042	Microsoft PowerPoint	3
ITEC1080	Microsoft Productivity Apps 1	3
ITEC1090	Microsoft Productivity Apps 2	3
ITEC1095	Microsoft 365	2
ITEC1102	PC Operating Systems	3

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Occupational Certificate Credits 30

#### Semester Sequence

Completion of this award may require taking courses at both campuses. For more information, please contact your faculty program advisor.

**Prerequisite Knowledge:** A student seeking this award should have qualifying assessment scores on the math, reading, writing, computer literacy, and keyboarding placement tests as identified by individual course prerequisites.

**First Semester**

ACCT1000	Introduction to Accounting	3
CCDS1000	How to Succeed in College	1
CPLT1005	Advanced Keyboarding and Document Processing	3
ITEC1000	Information Systems	3
ITEC1080	Microsoft Productivity Apps 1	3
ITEC1095	Microsoft 365	2

**Total Credits 15****Second Semester**

ITEC1005	Computer Security Awareness	3
ITEC1035	Microsoft Word	3
ITEC1042	Microsoft PowerPoint	3
ITEC1090	Microsoft Productivity Apps 2	3
ITEC1102	PC Operating Systems	3

**Total Credits 15****Graduation (30 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice. This listing is to be used strictly as an advising tool.

5/9/2022 : BP 2121 / EP 2122

# Building and Landscape

## Architectural Technology

# Architectural Technology (BP/EP) Associate in Applied Science Degree

## Overview and Award Outcomes

### Overview

The primary focus of student training is the preparation of construction documents for projects typically found in the residential and commercial building industry. Students learn how to analyze project requirements and produce construction documents that describe those requirements utilizing the most recent releases of Autodesk's softwares. Other skills developed include the understanding of building science technology, applying sustainable principles, and researching building codes. Students also gain experience in construction cost estimating, basic structural design, office practices and other relevant computer software.

### Award Outcomes

Demonstrate proficiency using CAD software and related computer tools  
 Demonstrate knowledge of construction process, from design to completion  
 Apply building codes and construction standards  
 Perform preliminary structural design calculations  
 Perform construction material take-offs and cost estimating  
 Model effective communication skills  
 Produce construction drawings  
 Demonstrate knowledge of the materials and methods used in construction  
 Model effective problem-solving strategies

### Career Opportunities

Students in the Architectural Technology program are prepared for entry level employment in a design or construction related position within the architecture, engineering or construction industry. Employment opportunities for graduates range from Computer Aided Design (CAD) or Building Information Modeling (BIM) technicians working in architectural, engineering or building firms to estimators working with contractors to detailers and representatives working with material and product suppliers. Hennepin Technical College graduates have advanced to senior positions in many area architecture, engineering or construction offices with experience and continuing education. Articulation agreements with other schools also give students the opportunity to continue their education for advanced degrees in areas such as construction management or operations management.

## Program Requirements

### Technical Studies Required 53 Credits

ARCH1008	Architectural Residential Technology I	5
ARCH1011	Architectural Residential Technology II	5
ARCH1101	Architectural Residential AutoCAD	5
ARCH1203	Residential Materials and Methods of Construction	3
ARCH1206	Strength of Materials	3
ARCH1340	Building Codes: Commercial	2
ARCH1345	Building Systems	3
ARCH2121	Architectural Commercial Technology I	5
ARCH2141	Architectural Commercial Technology II	5
ARCH2370	Architectural Residential Revit	4
ARCH2466	Commercial Materials and Methods of Construction	2
ARCH2562	Capstone: Project Design and Management	5
ARCH2850	Architectural Technology Advancements	2
ARCH2936	Advanced Revit BIM Technology	4

### General Education Required 15 Credits

ENGL1070	Technical Writing	3
	Choose 3 credits from MnTC Goal Area 1	3
	Choose 3 credits from MnTC Goal Area 2	3
	Choose 3 credits from MnTC Goal Area 5	3
	Choose 3 credits from MnTC Goal Areas 9 or 10	3

**General Education Elective 0 Credits****Technical Studies Elective 4 Credits**

## Recommended:

ARCH1505	LEED GA Preparation	2
ARCH1900	Specialized Lab	1 - 4
ARCH2301	Design with SketchUp	2
ARCH2310	Architectural CAD: Introduction to Revit Architecture	2
ARCH2640	Architectural History	3
ARCH2800	Civil Site Plan Development	2
ARCH2900	Internship	2 - 4
ARCH2920	Photoshop for Architecture	4
ARCH2930	Architectural CAD: 3D Studio Max	4

**Total Associate in Applied Science Degree Credits 72****Semester Sequence****Offered at Brooklyn Park and Eden Prairie****First-Semester**

ARCH1008	Architectural Residential Technology I	5
ARCH1101	Architectural Residential AutoCAD	5
ARCH1203	Residential Materials and Methods of Construction	3
ARCH1345	Building Systems	3

**Total Credits 16****Second Semester**

ARCH1011	Architectural Residential Technology II	5
ARCH1340	Building Codes: Commercial	2
ARCH2370	Architectural Residential Revit	4
ARCH2466	Commercial Materials and Methods of Construction	2
	Choose 3 credits from MnTC Goal Area 1	3

**Total Credits 16****Summer Semester**

	Choose 3 credits from MnTC Goal Area 2	3
	Choose 3 credits from MnTC Goal Areas 9 or 10	3

**Total Credits 6****Third Semester**

ARCH1206	Strength of Materials	3
ARCH2121	Architectural Commercial Technology I	5
ARCH2800	Civil Site Plan Development Elective	2
ARCH2936	Advanced Revit BIM Technology	4
ENGL1070	Technical Writing	3

**Total Credits 17****Fourth Semester**

ARCH2141	Architectural Commercial Technology II	5
ARCH2301	Design with SketchUp Elective	2

ARCH2562	Capstone: Project Design and Management	5
ARCH2850	Architectural Technology Advancements	2
	Choose 3 credits from MnTC Goal Area 5	3

**Total Credits 17****Technical Studies Electives**

## Recommended:

ARCH1505	LEED GA Preparation	2
ARCH1900	Specialized Lab	1 - 4
ARCH2301	Design with SketchUp	2
ARCH2310	Architectural CAD: Introduction to Revit Architecture	2
ARCH2640	Architectural History	3
ARCH2800	Civil Site Plan Development	2
ARCH2900	Internship	2 - 4
ARCH2920	Photoshop for Architecture	4
ARCH2930	Architectural CAD: 3D Studio Max	4

**Choose a Total of: 4 Credits****MnTC Goal Area 1**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

COMM1200	Intercultural Communication	3
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
ENGL1070	Technical Writing	3
ENGL1100	Writing and Research	4
ENGL1250	Short Form Composition and Reporting	4
ENGL1300	Introduction to Creative Writing	3

**Choose a Total of: 3 Credits****MnTC Goal Area 2**

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3
MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

**Choose a Total of: 3 Credits****MnTC Goal Area 5**

ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3

PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3

**Choose a Total of: 3 Credits****MnTC Goal Area 9 or 10**

	MnTC Goal Area 9	
ARTS1005	Art and Social Justice	3
BIOL1300	Introduction to Forensic Science	3
ECON1200	Principles of Microeconomics	3
PHIL1200	Ethics	3
PHIL1400	Medical Ethics	4
PHIL1600	Environmental Ethics	3
POLI1000	Introduction to American Government and Politics	3
SOCI1500	Introduction to Criminal Justice	3
	MnTC Goal Area 10	
BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
ENGL1060	Food in Literature and Film	3
PHIL1600	Environmental Ethics	3
SOCI1600	Food and Society	3

**Choose a Total of: 3 Credits****Graduation (72 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/29/2022 : BP 3004 / EP 3005

## Architectural Technology (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

The primary focus of student training is the preparation of construction documents for projects typically found in the residential and commercial building industry. Students learn how to analyze project requirements and produce construction documents that describe those requirements utilizing the most recent releases of Autodesk's softwares. Other skills developed include the understanding of building science technology, applying sustainable principles, and researching building codes. Students also gain experience in construction cost estimating, basic structural design, office practices and other relevant computer software.

#### Award Outcomes

Demonstrate proficiency using CAD software and related computer tools  
 Demonstrate knowledge of construction process, from design to completion  
 Apply building codes and construction standards  
 Perform preliminary structural design calculations  
 Perform construction material take-offs and cost estimating  
 Model effective communication skills  
 Produce construction drawings  
 Demonstrate knowledge of the materials and methods used in construction  
 Model effective problem-solving strategies

#### Career Opportunities

Students in the Architectural Technology program are prepared for entry level employment in a design or construction related position within the architecture, engineering or construction industry. Employment opportunities for graduates range from Computer Aided Design (CAD) or Building Information Modeling (BIM) technicians working in architectural, engineering or building firms to estimators working with contractors to detailers and representatives working with material and product suppliers. Hennepin Technical College graduates have advanced to senior positions in many area architecture, engineering or construction offices with experience and continuing education. Articulation agreements with other schools also give students the opportunity to continue their education for advanced degrees in areas such as construction management or operations management.

### Program Requirements

#### Technical Studies Required 53 Credits

ARCH1008	Architectural Residential Technology I	5
ARCH1011	Architectural Residential Technology II	5
ARCH1101	Architectural Residential AutoCAD	5
ARCH1203	Residential Materials and Methods of Construction	3
ARCH1206	Strength of Materials	3
ARCH1340	Building Codes: Commercial	2
ARCH1345	Building Systems	3
ARCH2121	Architectural Commercial Technology I	5
ARCH2141	Architectural Commercial Technology II	5
ARCH2370	Architectural Residential Revit	4
ARCH2466	Commercial Materials and Methods of Construction	2
ARCH2562	Capstone: Project Design and Management	5
ARCH2850	Architectural Technology Advancements	2
ARCH2936	Advanced Revit BIM Technology	4

#### General Education Required 3 Credits

ENGL1026	Writing for Careers	3
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#### General Education Elective 4 Credits

Any HTC college level general education course may be used to satisfy the elective requirement.

#### Technical Studies Elective 4 Credits

Recommended:		
ARCH1505	LEED GA Preparation	2

ARCH1900	Specialized Lab	1 - 4
ARCH2301	Design with SketchUp	2
ARCH2310	Architectural CAD: Introduction to Revit Architecture	2
ARCH2640	Architectural History	3
ARCH2800	Civil Site Plan Development	2
ARCH2900	Internship	2 - 4
ARCH2920	Photoshop for Architecture	4
ARCH2930	Architectural CAD: 3D Studio Max	4

**Total Diploma Credits 64****Semester Sequence****Offered at Brooklyn Park and Eden Prairie****First Semester**

ARCH1008	Architectural Residential Technology I	5
ARCH1101	Architectural Residential AutoCAD	5
ARCH1203	Residential Materials and Methods of Construction	3
ARCH1345	Building Systems	3

**Total Credits 16****Second Semester**

ARCH1011	Architectural Residential Technology II	5
ARCH1340	Building Codes: Commercial	2
ARCH2370	Architectural Residential Revit	4
ARCH2466	Commercial Materials and Methods of Construction	2
ENGL1026	Writing for Careers	3

**Total Credits 16****Third Semester**

ARCH1206	Strength of Materials	3
ARCH2121	Architectural Commercial Technology I	5
ARCH2936	Advanced Revit BIM Technology	4
	Technical Studies Electives	2
	General Education Electives	2

**Total Credits 16****Fourth Semester**

ARCH2141	Architectural Commercial Technology II	5
ARCH2562	Capstone: Project Design and Management	5
ARCH2850	Architectural Technology Advancements	2
	Technical Studies Electives	2
	General Education Electives	2

**Total Credits 16****Technical Studies Electives**

## Recommended:

ARCH1505	LEED GA Preparation	2
ARCH1900	Specialized Lab	1 - 4
ARCH2301	Design with SketchUp	2
ARCH2310	Architectural CAD: Introduction to Revit Architecture	2
ARCH2640	Architectural History	3
ARCH2800	Civil Site Plan Development	2
ARCH2900	Internship	2 - 4

ARCH2920	Photoshop for Architecture	4
ARCH2930	Architectural CAD: 3D Studio Max	4

**Choose a Total of: 4 Credits**

**General Education Electives**

If a General Education course is required it may not be used as a General Education Elective.

Minnesota Transfer Curriculum (MnTC) may also be used to meet General Education Elective requirements. A complete list of MnTC courses can be found at [www.hennepintech.edu](http://www.hennepintech.edu).

**Choose a Total of: 4 Credits**

**Graduation (64 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/29/2022 : BP 3006 / EP 3007

**Cabinetmaking and Wood Product Design**

# Cabinetmaking (BP) Associate in Applied Science Degree

## Overview and Award Outcomes

### Overview

Cabinetmakers perform hand and machine operations including cutting, shaping and assembly for the construction of store fixtures, office furniture, residential cabinetry, residential furniture and other articles of wood or related materials.

The Cabinetmaking program at Hennepin Technical College is divided into specific courses designed to introduce the many aspects of the cabinetmaking field. Emphasis will be placed on precision manufacturing, safety, traditional and computerized layout and design, blueprint reading and quality.

### Award Outcomes

- Operate woodworking machinery safely and effectively
- Design cabinetry and furniture
- Lay out cabinetry and furniture
- Determine appropriate materials for project
- Interpret blueprints and shop drawings
- Coordinate production operations
- Produce cabinetry and furniture
- Apply wood finishes
- Fabricate laminate and solid surface materials
- Estimate costs of cabinetry and furniture

### Career Opportunities

Graduates of this program choose careers in many different venues including residential cabinet shops, store fixture shops, furniture manufacturers, millwork shops and plastics industries. Some graduates operate their own businesses or shops.

## Program Requirements

### Technical Studies Required 57 Credits

CBTG1110	Joinery	2
CBTG1121	Power Tool Operation	5
CBTG1130	Materials	1
CBTG1141	Basic Case Construction	4
CBTG1170	AutoCAD	4
CBTG1211	Laminated Product Fabrication	4
CBTG1220	Blueprint Reading and Shop Drawings	3
CBTG1230	Wood Finishing	2
CBTG1240	Millroom Operations	2
CBTG1250	Production Woodwork	4
CBTG2311	Residential Cabinet Design	3
CBTG2332	Framed Cabinetry Fabrication	5
CBTG2362	Frameless Cabinetry Fabrication	5
CBTG2410	Furniture Design	2
CBTG2421	Furniture Joinery	4
CBTG2431	Furniture Fabrication	5
CBTG2450	Solid Surface Fabrication	2

### General Education Required 9 Credits

Choose 3 credits from MnTC Goal Area 1	3
Choose 3 credits from MnTC Goal Area 2	3
Choose 3 credits from MnTC Goal Area 3, 4, or 5	3

### General Education Elective 6 Credits

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

### Technical Studies Elective 0 Credits

## Total Associate in Applied Science Degree Credits 72

**Semester Sequence****Offered at Brooklyn Park Only****First Semester**

CBTG1110	Joinery	2
CBTG1121	Power Tool Operation	5
CBTG1130	Materials	1
CBTG1141	Basic Case Construction	4
CBTG1170	AutoCAD	4

**Total Credits 16****Second Semester**

CBTG1211	Laminated Product Fabrication	4
CBTG1220	Blueprint Reading and Shop Drawings	3
CBTG1230	Wood Finishing	2
CBTG1240	Millroom Operations	2
CBTG1250	Production Woodwork	4
	Choose 3 credits from MnTC Goal Area 1	3

**Total Credits 18****Summer Semester**

	General Education Electives	6
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**Total Credits 6****Third Semester**

CBTG2311	Residential Cabinet Design	3
CBTG2332	Framed Cabinetry Fabrication	5
CBTG2362	Frameless Cabinetry Fabrication	5
	Choose 3 credits from MnTC Goal Area 2	3

**Total Credits 16****Fourth Semester**

CBTG2410	Furniture Design	2
CBTG2421	Furniture Joinery	4
CBTG2431	Furniture Fabrication	5
CBTG2450	Solid Surface Fabrication	2
	Choose 3 credits from MnTC Goal Area 3, 4, or 5	3

**Total Credits 16****MnTC Goal Area 1**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

COMM1200	Intercultural Communication	3
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
ENGL1070	Technical Writing	3
ENGL1080	Professional Writing	3
ENGL1100	Writing and Research	4
ENGL1250	Short Form Composition and Reporting	4
ENGL1300	Introduction to Creative Writing	3

**Choose a Total of: 3 Credits****MnTC Goal Area 2**

BIOL1000	Biology in Society	4
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BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3
MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

**Choose a Total of: 3 Credits****MnTC Goal Area 3, 4, or 5**

	MnTC Goal Area 3	
BIOL1000	Biology in Society	4
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
CHEM1000	Introduction to Chemistry	4
CHEM1100	General, Organic, and Biological Chemistry Foundations	4
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
PHYS2005	College Physics I	4
PHYS2010	College Physics II	4
	MnTC Goal Area 4	
MATH1150	Applications of Quantitative Reasoning	3
MATH1250	Introduction to Statistics	3
MATH1400	College Algebra	4
PHIL1000	Introduction to Logic	3
	MnTC Goal Area 5	
ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3

**Choose a Total of: 3 Credits****Graduation (72 Credits)**

A complete list of MnTC courses and Goal Area that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

1/25/2022 : BP 3104 / EP

## Cabinetmaking (BP) Diploma

### Overview and Award Outcomes

#### Overview

Cabinetmakers perform hand and machine operations including cutting, shaping and assembly for the construction of store fixtures, office furniture, residential cabinetry, residential furniture and other articles of wood or related materials.

The Cabinetmaking program at Hennepin Technical College is divided into specific courses designed to introduce the many aspects of the cabinetmaking field. Emphasis will be placed on precision manufacturing, safety, traditional and computerized layout and design, blueprint reading and quality.

#### Award Outcomes

- Operate woodworking machinery safely and effectively
- Design cabinetry and furniture
- Lay out cabinetry and furniture
- Determine appropriate materials for project
- Interpret blueprints and shop drawings
- Coordinate production operations
- Produce cabinetry and furniture
- Apply wood finishes
- Fabricate laminate and solid surface materials
- Estimate costs of cabinetry and furniture

#### Career Opportunities

Graduates of this program choose careers in many different venues including residential cabinet shops, store fixture shops, furniture manufacturers, millwork shops and plastics industries. Some graduates operate their own businesses or shops.

### Program Requirements

#### Technical Studies Required 57 Credits

CBTG1110	Joinery	2
CBTG1121	Power Tool Operation	5
CBTG1130	Materials	1
CBTG1141	Basic Case Construction	4
CBTG1170	AutoCAD	4
CBTG1211	Laminated Product Fabrication	4
CBTG1220	Blueprint Reading and Shop Drawings	3
CBTG1230	Wood Finishing	2
CBTG1240	Millroom Operations	2
CBTG1250	Production Woodwork	4
CBTG2311	Residential Cabinet Design	3
CBTG2332	Framed Cabinetry Fabrication	5
CBTG2362	Frameless Cabinetry Fabrication	5
CBTG2410	Furniture Design	2
CBTG2421	Furniture Joinery	4
CBTG2431	Furniture Fabrication	5
CBTG2450	Solid Surface Fabrication	2

#### General Education Required 6 Credits

Choose six credits from the following:

CCDS1040	Job Seeking Skills	2
EMSV1020	CPR/First Aid	1
MATH1007	Math for the Trades	2
METS1000	Computers in Manufacturing	3

#### General Education Elective 0 Credits

#### Technical Studies Elective 1 Credit

Any Cabinetmaking (CBTG) course not required for this award may be used to satisfy an elective requirement.

**Total Diploma Credits 64****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

CBTG1110	Joinery	2
CBTG1121	Power Tool Operation	5
CBTG1130	Materials	1
CBTG1141	Basic Case Construction	4
CBTG1170	AutoCAD	4

**Total Credits 16****Second Semester**

CBTG1211	Laminated Product Fabrication	4
CBTG1220	Blueprint Reading and Shop Drawings	3
CBTG1230	Wood Finishing	2
CBTG1240	Millroom Operations	2
CBTG1250	Production Woodwork	4

**Total Credits 15****Third Semester**

CBTG2311	Residential Cabinet Design	3
CBTG2332	Framed Cabinetry Fabrication	5
CBTG2362	Frameless Cabinetry Fabrication	5
	Choose three credits from the following:	
CCDS1040	Job Seeking Skills	2
EMSV1020	CPR/First Aid	1
MATH1007	Math for the Trades	2
METS1000	Computers in Manufacturing	3

**Total Credits 17****Fourth Semester**

CBTG2410	Furniture Design	2
CBTG2421	Furniture Joinery	4
CBTG2431	Furniture Fabrication	5
CBTG2450	Solid Surface Fabrication	2
	Technical Studies Electives	1
	Choose three credits from the following:	
CCDS1040	Job Seeking Skills	2
EMSV1020	CPR/First Aid	1
MATH1007	Math for the Trades	2
METS1000	Computers in Manufacturing	3

**Total Credits 16****Technical Studies Electives**

Any Woodworking Technology (CBTG) course not required for this award may be used to satisfy an elective requirement.

**Choose a Total of: 1 Credit****Graduation (64 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/12/2022 : BP 3106 / EP

## CNC Machining for Wood and Plastics (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

The CNC Machining for Wood and Plastics certificate is offered at Hennepin Technical College's Brooklyn Park Campus. The certificate focuses on training individuals in the operation of numerical controlled equipment used for machining wood, plastic and related material.

Participants will refine skills in creating geometry for component parts using AutoCAD. Manual numerical code generation will be taught to reinforce machine manipulation and program knowledge. Computer Aided Machining (CAM) numerical code generation will be accomplished using Router-CIM software. Basic fixturing, controller manipulation, maintenance, tooling and hands-on part manufacturing will be accomplished using KOMO 408 CNC router.

#### Award Outcomes

- Exhibit safety on CNC machinery
- Draw using a CAD program
- Assign tooling using CAM programs
- Set up CNC machines
- Operate CNC machines
- Manufacture parts using CNC machines
- Troubleshoot the manufacturing process of a part

#### Career Opportunities

This certificate program prepares individuals to enter the wood and plastics CNC machining industry. The student will gain experience preparing parts drawings, generating machine code and operating a CNC router. This training may lead to entry-level employment in this very exciting and challenging field.

#### Program Requirements

##### Technical Studies Required 13 Credits

CBTG1170	AutoCAD	4
CBTG2522	CNC Programming	3
CBTG2532	CNC Router Operation	3
CBTG2552	CNC Wood Product Manufacturing	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Advanced Technical Certificate Credits 13

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

CBTG1170	AutoCAD	4
CBTG2552	CNC Wood Product Manufacturing	3

##### Total Credits 7

##### Second Semester

CBTG2522	CNC Programming	3
CBTG2532	CNC Router Operation	3

**Total Credits 6**

**Graduation (13 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

1/25/2022 : BP 3108 / EP

## Furniture Fabrication (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

This certificate focuses on the design, layout and construction of both furniture and furniture components. Emphasis will be placed on the product design and manufacturing techniques for custom furniture.

#### Award Outcomes

Operate woodworking machinery safely and effectively  
 Design cabinetry and furniture  
 Lay out cabinetry and furniture  
 Determine appropriate materials for project  
 Interpret blueprints and shop drawings  
 Coordinate production operations  
 Produce cabinetry and furniture  
 Apply wood finishes  
 Estimate costs of cabinetry and furniture

#### Career Opportunities

This certificate will allow individuals to create and manufacture furniture and furniture components to industry standards and specifications.

#### Program Requirements

##### Technical Studies Required 22 Credits

CBTG1121	Power Tool Operation	5
CBTG1170	AutoCAD	4
CBTG2410	Furniture Design	2
CBTG2421	Furniture Joinery	4
CBTG2431	Furniture Fabrication	5
CBTG2450	Solid Surface Fabrication	2

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 22

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

CBTG1121	Power Tool Operation	5
CBTG1170	AutoCAD	4

##### Total Credits 9

##### Second Semester

CBTG2410	Furniture Design	2
CBTG2421	Furniture Joinery	4
CBTG2431	Furniture Fabrication	5
CBTG2450	Solid Surface Fabrication	2

##### Total Credits 13

#### Graduation (22 Credits)

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is

subject to change without notice.

1/25/2022 : BP 3116 / EP

## Product Fabrication (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

This certificate focuses on production techniques for the manufacturing of wood and wood products. Emphasis will be placed on reading product blueprints, laminations of high pressure laminates and producing wood products in multiples for purpose of time and cost reduction in manufacturing.

#### Award Outcomes

Operate woodworking machinery safely and effectively  
 Lay out cabinetry and furniture  
 Determine appropriate materials for project  
 Interpret blueprints and shop drawings  
 Coordinate production operations  
 Produce cabinetry and furniture  
 Apply wood finishes

#### Career Opportunities

This certificate will allow individuals to enter the wood manufacturing environment with production skills and information for residential and commercial cabinetry and laminated products.

### Program Requirements

#### Technical Studies Required Credits 20 Credits

CBTG1121	Power Tool Operation	5
CBTG1211	Laminated Product Fabrication	4
CBTG1220	Blueprint Reading and Shop Drawings	3
CBTG1230	Wood Finishing	2
CBTG1240	Millroom Operations	2
CBTG1250	Production Woodwork	4

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Occupational Certificate Credits 20

### Semester Sequence

#### Offered at Brooklyn Park Only

#### First Semester

CBTG1121	Power Tool Operation	5
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#### Total Credits 5

#### Second Semester

CBTG1211	Laminated Product Fabrication	4
CBTG1220	Blueprint Reading and Shop Drawings	3
CBTG1230	Wood Finishing	2
CBTG1240	Millroom Operations	2
CBTG1250	Production Woodwork	4

#### Total Credits 15

### Graduation (20 Credits)

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

1/25/2022 : BP 3114 / EP

## Residential Cabinetry (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

This certificate focuses on the design, layout and construction of both framed and frameless residential cabinetry. Emphasis will be placed on the product design and manufacturing techniques for custom cabinetry.

#### Award Outcomes

Operate woodworking machinery safely and effectively  
 Design cabinetry and furniture  
 Lay out cabinetry and furniture  
 Determine appropriate materials for project  
 Interpret blueprints and shop drawings  
 Coordinate production operations  
 Produce cabinetry and furniture  
 Apply wood finishes  
 Estimate costs of cabinetry and furniture

#### Career Opportunities

This certificate will allow individuals to create and manufacture residential cabinetry to specific industry standards and specification.

#### Program Requirements

##### Technical Studies Required 22 Credits

CBTG1121	Power Tool Operation	5
CBTG1170	AutoCAD	4
CBTG2311	Residential Cabinet Design	3
CBTG2332	Framed Cabinetry Fabrication	5
CBTG2362	Frameless Cabinetry Fabrication	5

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 22

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

CBTG1121	Power Tool Operation	5
CBTG1170	AutoCAD	4

##### Total Credits 9

##### Second Semester

CBTG2311	Residential Cabinet Design	3
CBTG2332	Framed Cabinetry Fabrication	5
CBTG2362	Frameless Cabinetry Fabrication	5

##### Total Credits 13

#### Graduation (22 Credits)

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

1/25/2022 : BP 3118 / EP

## Wood Machining Fabrication (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

Cabinetmakers perform hand and machine operations including cutting, shaping and assembly for the construction of store fixtures, office furniture, residential cabinetry, residential furniture and other articles of wood or related materials.

The Cabinetmaking program at Hennepin Technical College is divided into specific courses designed to introduce the many aspects of the cabinetmaking field. The Wood Machining Fabrication certificate will focus on precision manufacturing, safety, traditional and computerized layout and design, blueprint reading and quality.

#### Award Outcomes

Operate woodworking machinery safely and effectively  
 Layout and stock bill basic cabinetry components  
 Determine appropriate material types for cabinetry  
 Manipulate materials for woodworking joinery  
 Produce basic cabinetry  
 Understand physical properties of wood and composite materials  
 Fabricate laminate products  
 Calculate material costs of cabinetry  
 Manipulate CAD software to produce shop drawings  
 Draw cabinetry and furniture components

#### Career Opportunities

Upon completion of the cabinetmaking certificate, an individual will be prepared for employment in a professional woodworking manufacturing facility with responsibilities focused on the machining and assembly of various components.

#### Program Requirements

##### Technical Studies Required 16 Credits

CBTG1110	Joinery	2
CBTG1121	Power Tool Operation	5
CBTG1130	Materials	1
CBTG1141	Basic Case Construction	4
CBTG1170	AutoCAD	4

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 16

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

CBTG1110	Joinery	2
CBTG1121	Power Tool Operation	5
CBTG1130	Materials	1
CBTG1141	Basic Case Construction	4
CBTG1170	AutoCAD	4

##### Total Credits 16

#### Graduation (16 Credits)

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

1/25/2022 : BP 3112 / EP

## **Carpentry**

## Residential Remodeling and Design (BP/EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

The Residential Remodeling and Design program prepares students for a career in the remodeling industry. The program is designed to prepare students to take on a renovation project from start to finish, starting with the initial assessment of the property and preparing an estimate, to choosing proper materials, to the actual renovation process. Professional in this field will make improvements, repairs and renovations to homes in order to improve their aesthetics and increase their monetary value. Some Home Remodeling firms invest in old or damaged houses, renovate them and sell them for profit. Home Remodeling professionals need to ensure that the remodeled homes meet specific building code requirements and pass inspection by an authorized agent to ensure safety.

#### Award Outcomes

- Practice Safe Work habits
- Operate tools and equipment correctly
- Interpret blueprints and applicable building codes
- Utilize computers and CAD software for plan development and research
- Identify materials used in residential construction
- Construct floor, wall, and roof systems
- Install interior and exterior finishes
- Apply various moisture and vapor management techniques
- Install doors and windows
- Discuss outmoded building systems
- Apply cabinet design, construction, and installation techniques
- Demonstrate professionalism with clients and the allied trades
- Understand elements of project coordination

#### Career Opportunities

This program is designed to prepare students to enter the residential remodeling field. Graduates may find employment with remodeling contractors or weatherization firms. A program graduate may advance to the position of crew supervisor or job superintendent. They may start their own business specializing in general remodeling or in a certain areas of remodeling such as kitchens or bathrooms. Graduates of the program may also go into related fields of work such as sales, lumber yard management, building inspection or factory representative.

### Program Requirements

#### Technical Studies Required 28 Credits

CARP1101	Introduction to Residential Construction	2
CARP1111	Floor and Wall Framing	5
CARP1140	Engineered Roof Systems	2
CARP1180	Stair Framing	2
CARP1240	Exterior Finishes	4
CARP1511	Insulation and Drywall	3
CARP1710	Stair Finishing	2
CARP1720	Interior Trim	4
CARP1810	Residential Blueprint Reading	1
CARP1820	Residential Estimating	2
CARP1830	Building Code or	1
ARCH1340	Building Codes: Commercial	2

#### General Education Required 15 Credits

Choose 15 Credits from MnTC General Education in three different Goal Areas.	15
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#### General Education Elective 0 Credits

**Technical Studies Elective 17 Credits**

Choose 17 Credits from ARCH, CARP, CBTG, HVAC, LNDC or IBEM

**Total Associate in Applied Science Degree Credits 60****Semester Sequence****Offered at Brooklyn Park and Eden Prairie****First Semester**

CARP1101	Introduction to Residential Construction	2
CARP1111	Floor and Wall Framing	5
CARP1140	Engineered Roof Systems	2
CARP1240	Exterior Finishes	4
CARP1511	Insulation and Drywall	3
CARP1810	Residential Blueprint Reading	1

**Total Credits 17****Second Semester**

CARP1180	Stair Framing	2
CARP1710	Stair Finishing	2
CARP1720	Interior Trim	4
CARP1820	Residential Estimating	2
CARP1830	Building Code	1
	or	
ARCH1340	Building Codes: Commercial	2

**Total Credits 11****Third Semester**

Technical Studies Electives	8
Choose 8 Credits from the MnTC Goal Area Courses	8

**Total Credits 16****Fourth Semester**

Technical Studies Electives	9
Choose 7 Credits from the MnTC Goal Area Courses	7

**Total Credits 16****Technical Studies Electives**

Choose 17 credits from Architectural Technology (ARCH), Carpentry (CARP), Woodworking Technology (CBTG), Heating, Ventilation, and Air Conditioning (HVAC), Landscape and Horticulture Careers (LNDC), or Industrial Building Engineering and Maintenance (IBEM).

**Choose a Total of: 17 Credits****Graduation (60 Credits)**

The required 15 credits of General Education must satisfy at least 3 different MnTC Goal Areas.

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found on the Hennepin Technical College website at [hennepintech.edu](http://hennepintech.edu), under Future Students and Transfer.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Carpentry (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

Carpenters construct, install, erect and repair structures to comply with all existing codes and in a manner that exhibits skill and craftsmanship. They read blueprints, sketches and specifications for information pertaining to dimensions, types of materials required and standards of work. Carpenters work with a variety of hand tools, power tools and equipment. They work in a variety of physically demanding situations including weather extremes, heights and enclosed areas. A carpenter may be skilled in framing, interior and exterior finishing, forming and/or remodeling of residential and commercial buildings.

#### Award Outcomes

Practice safe work habits  
 Develop blueprint reading skills  
 Assemble floor, wall, roof and stair systems  
 Install windows and doors  
 Install interior trim  
 Apply sustainable/energy efficient building practices  
 Develop an awareness of environmental responsibility  
 Exhibit professionalism and related soft skills

#### Career Opportunities

A person who has carpenter training may be an all around carpenter or may specialize in areas such as framer, interior finisher, sider, shingler, drywall installer, acoustical ceiling installer, maintenance carpenter, millwright, bridge builder or prefabrication production builder. A carpenter may advance to the position of crew supervisor or job superintendent. Carpenters may go into business for themselves and become contractors for new construction or remodeling work. They may also go into related fields of work such as sales, lumber yard management, building inspection or factory representative.

### Program Requirements

#### Technical Studies Required 28 Credits

CARP1101	Introduction to Residential Construction	2
CARP1111	Floor and Wall Framing	5
CARP1140	Engineered Roof Systems	2
CARP1180	Stair Framing	2
CARP1240	Exterior Finishes	4
CARP1511	Insulation and Drywall	3
CARP1710	Stair Finishing	2
CARP1720	Interior Trim	4
CARP1810	Residential Blueprint Reading	1
CARP1820	Residential Estimating	2
CARP1830	Building Code or	1
ARCH1340	Building Codes: Commercial	2

#### General Education Required 2 Credits

MATH1007	Math for the Trades	2
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#### General Education Elective 2 Credits

Any HTC college level general education course may be used to satisfy the elective requirement.

#### Technical Studies Elective 4 Credits

Recommended:

CARP1150	Rafter Framing	3
CARP1190	Deck Construction	1
CARP1420	Concrete Stairs, Walks and Drives	1
CARP1430	Install Concrete Slabs	1
CARP1760	Cabinet Making	3
CARP1900	Specialized Lab	1 - 4

CARP2025	Carpentry Internship	1 - 3
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**Total Diploma Credits 36****Semester Sequence****Offered at Brooklyn Park and Eden Prairie****First Semester**

CARP1101	Introduction to Residential Construction	2
CARP1111	Floor and Wall Framing	5
CARP1140	Engineered Roof Systems	2
CARP1240	Exterior Finishes	4
CARP1511	Insulation and Drywall	3
CARP1810	Residential Blueprint Reading	1
MATH1007	Math for the Trades	2

**Total Credits 19****Second Semester**

CARP1180	Stair Framing	2
CARP1710	Stair Finishing	2
CARP1720	Interior Trim	4
CARP1820	Residential Estimating	2
CARP1830	Building Code	1
	Technical Studies Electives	4
	General Education Electives	2

**Total Credits 17****Technical Studies Electives**

## Recommended:

CARP1150	Rafter Framing	3
CARP1190	Deck Construction	1
CARP1420	Concrete Stairs, Walks and Drives	1
CARP1430	Install Concrete Slabs	1
CARP1760	Cabinet Making	3
CARP1900	Specialized Lab	1 - 4
CARP2025	Carpentry Internship	1 - 3

**Choose a Total of: 4 Credits****General Education Electives**

If a General Education course is required it may not be used as a General Education Elective.

Minnesota Transfer Curriculum (MnTC) may also be used to meet General Education Elective requirements. A complete list of MnTC courses can be found at [www.hennepintech.edu](http://www.hennepintech.edu).

CCDS1000	How to Succeed in College	1
CCDS1020	Interviewing Skills	1
CCDS1040	Job Seeking Skills	2
CCDS1100	Student Success	3
COMM1050	Communication in the Workplace - Deleted Summer 2022	2
CPLT1000	Computer Keyboarding	2
CPLT1005	Advanced Keyboarding and Document Processing	3
CPLT1100	Computer Essentials	3
CPLT1200	Introduction to Macintosh	3
EMSV1020	CPR/First Aid	1
ENGL1021	Essay Fundamentals	3
ENGL1026	Writing for Careers	3
MATH1007	Math for the Trades	2

MATH1020	Geometry and Trigonometry	2
MATH1050	Math Pathways Plus for College and Careers	4
MATH1060	Math Pathways for College and Careers	3
MATH1500	Beginning Algebra	3
MATH1650	Mathematical Literacy	4
MATH1700	Intermediate Algebra	3
METS1000	Computers in Manufacturing	3

**Choose a Total of: 2 Credits**

**Graduation (36 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/29/2022 : BP 3204 / EP 3205

## General Construction Laborer (BP/EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

General construction laborers perform a wide variety of activities during all phases of construction. They assist carpenters and other specialized contractors in framing, roofing, and interior and exterior finishing during the building and/or remodeling of residential and commercial structures. They read blueprints, sketches and specifications for information pertaining to dimensions, types of materials required and standards of work. General construction laborers work with a variety of hand tools, power tools and equipment. They work in a variety of physically demanding situations including weather extremes, heights and enclosed areas.

#### Award Outcomes

Practice safe work habits  
 Develop blueprint reading skills  
 Assemble floor, wall, roof and stair systems  
 Install interior and exterior finishes  
 Apply various moisture and vapor management techniques

#### Career Opportunities

A person trained as a general construction laborer will support craft workers with their duties. They may assist a general carpenter or someone who specializes in areas such as: framer, interior finisher, sider, shingler, drywall installer, acoustical ceiling installer, maintenance carpenter, millwright, bridge builder or prefabrication production builder. They may also go into related fields of work such as sales, lumber yard management, or factory representative.

### Program Requirements

#### Technical Studies Required 17 Credits

CARP1101	Introduction to Residential Construction	2
CARP1111	Floor and Wall Framing	5
CARP1140	Engineered Roof Systems	2
CARP1240	Exterior Finishes	4
CARP1511	Insulation and Drywall	3
CARP1810	Residential Blueprint Reading	1

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Occupational Certificate Credits 17

#### Semester Sequence

#### Offered at Brooklyn Park and Eden Prairie

#### First Semester

CARP1101	Introduction to Residential Construction	2
CARP1111	Floor and Wall Framing	5
CARP1140	Engineered Roof Systems	2
CARP1240	Exterior Finishes	4
CARP1511	Insulation and Drywall	3
CARP1810	Residential Blueprint Reading	1

#### Total Credits 17

#### Graduation (17 Credits)

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/29/2022 : BP 3213 / EP 3212

## **Heating, Ventilation and Air Conditioning**

## Heating, Ventilation, Air Conditioning, and Refrigeration (BP/EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

Trained personnel are in critical short supply for the demands of the residential and commercial heating and air conditioning industry. With the increased need for energy efficient heating and cooling systems, new energy codes and exploding technology advancements, opportunities in the residential/commercial HVAC field are unlimited. The residential/commercial air conditioning, heating and refrigeration areas include working on heat/cool rooftop units, high-efficiency electronically controlled forced air furnaces and hydronic boilers, chillers and large-building computerized energy management control systems, ice cube machines, walk-in coolers/freezers and display cases. The HVAC technician should have the ability to install, retrofit, service and repair residential/commercial air handling units that have the capabilities of cooling, heating, humidifying, dehumidifying and filtration of air for environmental control.

#### Award Outcomes

- Obtain OSHA 30 Certification
- Obtain the EPS Section 608 Refrigerant Handling License
- Practice human relation skills
- Demonstrate basic tool usage
- Apply mathematical, reading, and communication skills essential to the HVAC industry
- Demonstrate knowledge of International Fuel, Gas and Mechanical codes
- Troubleshoot electrical motors
- Troubleshoot control circuits for refrigeration and A/C equipment
- Troubleshoot gas heating equipment
- Adjust water systems for HVAC and refrigeration equipment
- Troubleshoot airflow systems for HVAC equipment
- Solve problems using analytical thinking

#### Career Opportunities

Employment opportunities in the residential/commercial heating, cooling, air conditioning and refrigeration field are based on each individual's goals and qualifications. Opportunities exist in management, sales, service, installation and maintenance of HVAC and refrigeration equipment. Possible positions include: installer, quality control technician, service technician, manufacturer's representative, sales consultant, layout person and designer. In addition, the A.A.S. degree will help qualify individuals for management positions in the sales, installation, and service of HVAC equipment.

### Program Requirements

#### Technical Studies Required 53 Credits

HVAC1000	Electrical Circuits	3
HVAC1005	OSHA 30-Hour Construction Safety Training	2
HVAC1010	1PH Motors and Auxiliary Controls	2
HVAC1020	Tube and Pipe Fabrication	2
HVAC1030	Sheet Metal	2
HVAC1040	Basic Refrigeration	4
HVAC1050	Refrigerant Transition and Recovery	1
HVAC1055	Refrigeration Certification Exam	0
HVAC1071	Gas Heat Systems	4
HVAC1110	Electrical Diagrams	2
HVAC1120	Psychrometrics	1
HVAC1140	Central Air Conditioners	3
HVAC1146	Residential Heat Pumps	2
HVAC1151	Hydronic Heat Systems	2
HVAC2001	Packaged Heating and Cooling Equipment	4
HVAC2005	Commercial HVAC/R Safety and Servicing Procedures	2
HVAC2010	Commercial Heat Pump Systems	2
HVAC2030	Commercial Ice Making Machines	3
HVAC2041	Gas/Refrigeration (Mechanical) Code	1

HVAC2050	Electrical for Commercial HVAC&R Equipment	2
HVAC2111	Low Pressure Steam and Water Boilers	2
HVAC2121	Refrigerated Coolers and Cases	4
HVAC2130	Supermarket Refrigeration	3

**General Education Required 9 Credits**

COMM1250	Interpersonal Communication	3
	or	
	Choose one course from MnTC Goal Area 1 (Communication)	3
PHIL1100	Critical Thinking for College Success	3
	or	
PHYS1005	Introductory Physics I	3
	or	
	Choose one course from MnTC Goal Area 2 (Critical Thinking)	3
SOCI1100	Introduction to Sociology	3
	or	
	Choose one course from MnTC Goal Area 5 (History and the Social and Behavioral Sciences)	3

**General Education Elective 6 Credits**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Technical Studies Elective 4 Credits**

Recommended:

HVAC1015	Residential Heat Load Calculation	1
HVAC1025	Mini-Split Air Conditioners	1
HVAC1060	Low Global Warming Potential (GWP) Refrigerant Certification	1
HVAC1081	Oil Heat Systems	1
HVAC1090	Low Global Warming Potential (GWP) Refrigerant Certification Exam	0
HVAC1100	Service Call Completion	1
HVAC1155	Radiant Heat Systems	1
HVAC1160	Air Quality Systems	1
HVAC1175	R-410A Certification Training	1
HVAC1181	MN Class CBoiler Operator License	3
HVAC1185	R-410A Certification Exam	0
HVAC1190	MN Special Boilers License	1
HVAC2020	Pneumatic Controls	2
HVAC2045	Hydrocarbon Refrigerant Certification	1
HVAC2055	Hydrocarbon Refrigerant Certification Exam	0
HVAC2060	Computer Room Air Conditioning	1
HVAC2100	Water Chiller Machines	3
HVAC2165	Air Handling Units	1
HVAC2170	HVAC/R Externship	1

**Total Associate in Applied Science Degree Credits 72****Semester Sequence****Offered at Brooklyn Park and Eden Prairie****First Semester**

HVAC1000	Electrical Circuits	3
HVAC1005	OSHA 30-Hour Construction Safety Training	2
HVAC1010	1PH Motors and Auxiliary Controls	2
HVAC1020	Tube and Pipe Fabrication	2

HVAC1040	Basic Refrigeration	4
HVAC1050	Refrigerant Transition and Recovery	1
HVAC1055	Refrigeration Certification Exam	0
HVAC1110	Electrical Diagrams	2

**Total Credits 16****Second Semester**

HVAC1030	Sheet Metal	2
HVAC1071	Gas Heat Systems	4
HVAC1120	Psychrometrics	1
HVAC1140	Central Air Conditioners	3
HVAC1146	Residential Heat Pumps	2
HVAC1151	Hydronic Heat Systems	2

SOCI1100	Introduction to Sociology	3
	or	
	Choose 3 credits from MnTC Goal Area 5	3
	Technical Studies Electives	1

**Total Credits 18****Summer Semester**

	General Education Electives	6
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**Total Credits 6****Third Semester****(HVAC Courses offered at Eden Prairie only)**

HVAC2001	Packaged Heating and Cooling Equipment	4
HVAC2005	Commercial HVAC/R Safety and Servicing Procedures	2
HVAC2010	Commercial Heat Pump Systems	2
HVAC2030	Commercial Ice Making Machines	3
HVAC2041	Gas/Refrigeration (Mechanical) Code	1
HVAC2050	Electrical for Commercial HVAC&R Equipment	2
PHIL1100	Critical Thinking for College Success	3
	or	
PHYS1005	Introductory Physics I	3
	or	
	Choose 3 credits from MnTC Goal Area 2	3

**Total Credits 17****Fourth Semester****(HVAC Courses offered at Eden Prairie only)**

HVAC2111	Low Pressure Steam and Water Boilers	2
HVAC2121	Refrigerated Coolers and Cases	4
HVAC2130	Supermarket Refrigeration	3
COMM1250	Interpersonal Communication	3
	or	
	Choose 3 credits from MnTC Goal Area 1	3
	Technical Studies Electives	3

**Total Credits 15****Technical Studies Electives**

**Recommended:**

HVAC1015	Residential Heat Load Calculation	1
HVAC1025	Mini-Split Air Conditioners	1
HVAC1060	Low Global Warming Potential (GWP) Refrigerant Certification	1
HVAC1081	Oil Heat Systems	1
HVAC1090	Low Global Warming Potential (GWP) Refrigerant Certification Exam	0
HVAC1100	Service Call Completion	1
HVAC1155	Radiant Heat Systems	1
HVAC1160	Air Quality Systems	1
HVAC1175	R-410A Certification Training	1
HVAC1181	MN Class CBoiler Operator License	3
HVAC1185	R-410A Certification Exam	0
HVAC1190	MN Special Boilers License	1
HVAC2020	Pneumatic Controls	2
HVAC2045	Hydrocarbon Refrigerant Certification	1
HVAC2055	Hydrocarbon Refrigerant Certification Exam	0
HVAC2060	Computer Room Air Conditioning	1
HVAC2100	Water Chiller Machines	3
HVAC2165	Air Handling Units	1
HVAC2170	HVAC/R Externship	1

**Choose a Total of: 4 Credits****General Education Electives**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Choose a Total of: 6 Credits****MnTC Goal Area 1**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

COMM1200	Intercultural Communication	3
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
ENGL1070	Technical Writing	3
ENGL1100	Writing and Research	4
ENGL1250	Short Form Composition and Reporting	4
ENGL1300	Introduction to Creative Writing	3

**MnTC Goal Area 2**

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3
MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

**MnTC Goal Area 5**

ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3

HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3

### **Graduation (72 credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/28/2022 : BP 3304 / EP 3305

## Commercial Heating, Ventilation, Air Conditioning and Refrigeration (EP) Diploma

### Overview and Award Outcomes

#### Overview

With the increased need for energy efficient heating and cooling systems, opportunities in the commercial refrigeration field are unlimited. Work in the area of supermarket refrigeration contains perhaps one of the biggest challenges and requires intensive quality training. Ice cube machines, walk-in coolers and display cases require technical service skills. The air conditioning and heating areas include working on heat/cool rooftop units, chillers and large building systems that are controlled by electronic, electric or pneumatic systems. The technician should also have the ability to install and maintain large air handling units which have the capabilities of cooling, heating, humidifying, dehumidifying and cleaning air for human and equipment environmental control. Increasing energy costs have created a great demand for skilled technicians in the area of energy management systems.

Prerequisite: Successful completion of the Residential Heating, Ventilation and Air Conditioning program or a minimum of 2 years related work experience.

#### Award Outcomes

- Obtain OSHA 30 Certification
- Obtain the EPA Section 608 Refrigerant Handling License
- Demonstrate knowledge of International Fuel, Gas and Mechanical codes
- Troubleshoot electrical motors
- Troubleshoot control circuits for refrigeration and A/C equipment
- Troubleshoot gas heating equipment
- Adjust water systems for HVAC and refrigeration equipment
- Troubleshoot airflow systems for HVAC equipment
- Solve problems using analytical thinking

#### Career Opportunities

Employment opportunities in the commercial heating, air conditioning and refrigeration field are based on each person's goals and qualifications. Manufacturing, installation, servicing and engineering firms could employ an individual. Possible positions include: installer, quality control technician, service technician, layout person and designer.

### Program Requirements

#### Technical Studies Required 25 Credits

HVAC1005	OSHA 30-Hour Construction Safety Training	2
HVAC2001	Packaged Heating and Cooling Equipment	4
HVAC2005	Commercial HVAC/R Safety and Servicing Procedures	2
HVAC2010	Commercial Heat Pump Systems	2
HVAC2030	Commercial Ice Making Machines	3
HVAC2041	Gas/Refrigeration (Mechanical) Code	1
HVAC2050	Electrical for Commercial HVAC&R Equipment	2
HVAC2111	Low Pressure Steam and Water Boilers	2
HVAC2121	Refrigerated Coolers and Cases	4
HVAC2130	Supermarket Refrigeration	3

#### General Education Required 3 Credits

PHIL1100	Critical Thinking for College Success	3
	or	
PHYS1005	Introductory Physics I	3

#### General Education Elective 0 Credits

#### Technical Studies Elective 3 Credits

Recommended:		
HVAC1060	Low Global Warming Potential (GWP) Refrigerant Certification	1

HVAC1090	Low Global Warming Potential (GWP) Refrigerant Certification Exam	0
HVAC2020	Pneumatic Controls	2
HVAC2045	Hydrocarbon Refrigerant Certification	1
HVAC2055	Hydrocarbon Refrigerant Certification Exam	0
HVAC2060	Computer Room Air Conditioning	1
HVAC2100	Water Chiller Machines	3
HVAC2165	Air Handling Units	1
HVAC2170	HVAC/R Externship	1

**Total Diploma Credits 31****Semester Sequence****Offered at Eden Prairie Only****First Semester**

HVAC2001	Packaged Heating and Cooling Equipment	4
HVAC2005	Commercial HVAC/R Safety and Servicing Procedures	2
HVAC2010	Commercial Heat Pump Systems	2
HVAC2030	Commercial Ice Making Machines	3
HVAC2041	Gas/Refrigeration (Mechanical) Code	1
HVAC2050	Electrical for Commercial HVAC&R Equipment	2

**Total Credits 14****Second Semester**

HVAC1005	OSHA 30-Hour Construction Safety Training	2
HVAC2111	Low Pressure Steam and Water Boilers	2
HVAC2121	Refrigerated Coolers and Cases	4
HVAC2130	Supermarket Refrigeration	3
PHIL1100	Critical Thinking for College Success or	3
PHYS1005	Introductory Physics I	3
	Technical Studies Electives	3

**Total Credits 17****Technical Studies Elective**

## Recommended:

HVAC1060	Low Global Warming Potential (GWP) Refrigerant Certification	1
HVAC1090	Low Global Warming Potential (GWP) Refrigerant Certification Exam	0
HVAC2020	Pneumatic Controls	2
HVAC2045	Hydrocarbon Refrigerant Certification	1
HVAC2055	Hydrocarbon Refrigerant Certification Exam	0
HVAC2060	Computer Room Air Conditioning	1
HVAC2100	Water Chiller Machines	3
HVAC2165	Air Handling Units	1
HVAC2170	HVAC/R Externship	1

**Graduation (31 Credits)**

**Prerequisite:** Successful completion of the Residential Heating, Ventilation and Air Conditioning program or a minimum of 2 years related work experience.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/24/2022 : BP / EP 3308

## Residential Heating, Ventilation and Air Conditioning (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

Trained, highly skilled personnel are needed for the exciting new technological demands of the residential heating, ventilation and air conditioning industry. Independent and critical thinking men and women instilled with troubleshooting and electrical control circuit skills are vital for the future installation and servicing of residential HVAC equipment. Prospective technicians will also master the intricacies of the newest residential energy management controls and indoor air quality equipment.

#### Award Outcomes

Obtain OSHA 30 Certification  
 Obtain the EPS Section 608 Refrigerant Handling License  
 Practice human relation skills  
 Demonstrate basic tool usage  
 Apply mathematical, reading, and communication skills essential to the HVAC industry  
 Troubleshoot electrical motors  
 Troubleshoot control circuits for refrigeration and A/C equipment  
 Troubleshoot gas heating equipment

#### Career Opportunities

Employment is available in management, sales, service and the installation and maintenance of residential HVAC equipment. Qualified graduates can be employed as installers, quality control technicians, service technicians, manufacturer's representatives, sales consultants, layout persons, and designers.

### Program Requirements

#### Technical Studies Required 30 Credits

HVAC1000	Electrical Circuits	3
HVAC1005	OSHA 30-Hour Construction Safety Training	2
HVAC1010	1PH Motors and Auxiliary Controls	2
HVAC1020	Tube and Pipe Fabrication	2
HVAC1030	Sheet Metal	2
HVAC1040	Basic Refrigeration	4
HVAC1050	Refrigerant Transition and Recovery	1
HVAC1055	Refrigeration Certification Exam	0
HVAC1071	Gas Heat Systems	4
HVAC1110	Electrical Diagrams	2
HVAC1120	Psychrometrics	1
HVAC1140	Central Air Conditioners	3
HVAC1146	Residential Heat Pumps	2
HVAC1151	Hydronic Heat Systems	2

#### General Education Required 3 Credits

PHIL1100	Critical Thinking for College Success	3
	or	
PHYS1005	Introductory Physics I	3

#### General Education Elective 0 Credits

#### Technical Studies Elective 1 Credits

Recommended:

HVAC1015	Residential Heat Load Calculation	1
HVAC1025	Mini-Split Air Conditioners	1
HVAC1060	Low Global Warming Potential (GWP) Refrigerant Certification	1
HVAC1081	Oil Heat Systems	1
HVAC1090	Low Global Warming Potential (GWP)	0

	Refrigerant Certification Exam	
HVAC1100	Service Call Completion	1
HVAC1155	Radiant Heat Systems	1
HVAC1160	Air Quality Systems	1
HVAC1175	R-410A Certification Training	1
HVAC1181	MN Class CBoiler Operator License	3
HVAC1185	R-410A Certification Exam	0
HVAC1190	MN Special Boilers License	1
HVAC2045	Hydrocarbon Refrigerant Certification	1
HVAC2055	Hydrocarbon Refrigerant Certification Exam	0
HVAC2170	HVAC/R Externship	1

**Total Diploma Credits 34****Semester Sequence - Full-Time****Offered at Brooklyn Park and Eden Prairie****First Semester**

HVAC1000	Electrical Circuits	3
HVAC1005	OSHA 30-Hour Construction Safety Training	2
HVAC1010	1PH Motors and Auxiliary Controls	2
HVAC1020	Tube and Pipe Fabrication	2
HVAC1040	Basic Refrigeration	4
HVAC1050	Refrigerant Transition and Recovery	1
HVAC1055	Refrigeration Certification Exam	0
HVAC1110	Electrical Diagrams	2

**Total Credits 16****Second Semester**

HVAC1030	Sheet Metal	2
HVAC1071	Gas Heat Systems	4
HVAC1120	Psychrometrics	1
HVAC1140	Central Air Conditioners	3
HVAC1146	Residential Heat Pumps	2
HVAC1151	Hydronic Heat Systems	2
	Technical Studies Electives	1
PHIL1100	Critical Thinking for College Success or	3
PHYS1005	Introductory Physics I	3

**Total Credits 18****Technical Studies Electives**

## Recommended:

HVAC1015	Residential Heat Load Calculation	1
HVAC1025	Mini-Split Air Conditioners	1
HVAC1060	Low Global Warming Potential (GWP) Refrigerant Certification	1
HVAC1081	Oil Heat Systems	1
HVAC1090	Low Global Warming Potential (GWP) Refrigerant Certification Exam	0
HVAC1100	Service Call Completion	1
HVAC1155	Radiant Heat Systems	1
HVAC1160	Air Quality Systems	1
HVAC1175	R-410A Certification Training	1
HVAC1181	MN Class CBoiler Operator License	3
HVAC1185	R-410A Certification Exam	0
HVAC1190	MN Special Boilers License	1

HVAC2045	Hydrocarbon Refrigerant Certification	1
HVAC2055	Hydrocarbon Refrigerant Certification Exam	0
HVAC2170	HVAC/R Externship	1

**Choose a Total of: 1 Credit**

**Graduation (34 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/23/2022 : BP 3306 / EP 3307

**Landscape, Horticulture and Greenhouse**

## Greenhouse Management Technician (BP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

This program of study is for the student seeking a career in the plant production industry. Graduates in this program will have a strong knowledge and skills in greenhouse operation and management; plant production in a variety of ornamentals such as bedding plants, holiday plants (Easter Lilies, Poinsettias, etc.), and interior foliage plants. This degree will allow for advancement to supervisory and management positions.

#### Award Outcomes

Identify crops to be grown and their cultural needs  
 Maintain crops  
 Diagnose greenhouse pests using an IPM program  
 Design a master plan for a business based on growing or selling crops  
 Propagate woody and herbaceous plants sexually and asexually  
 Operate greenhouse equipment efficiently  
 Select pesticides and fertilizer formulations  
 Calculate pesticide and fertilizer formulations  
 Select proper media and amendments for plant crops  
 Demonstrate technical knowledge of the greenhouse physical structure  
 Select proper containers for crops  
 Demonstrate technical knowledge of the environmental systems in the greenhouse  
 Interpret soil and water tests  
 Market crops

#### Career Opportunities

Employment options include greenhouse production, plant propagation, greenhouse management and plant brokering.

### Program Requirements

#### Technical Studies Required 37 Credits

LNDC1110	Introduction to Landscape/Horticulture Careers	1
LNDC1141	Nursery Propagation and Production	3
LNDC1160	Greenhouse Infrastructure Technology	2
LNDC1166	Sustainable Food and Plant Production - Fall	3
LNDC1176	Sustainable Food and Plant Production - Winter	3
LNDC1187	Sustainable Food and Plant Production - Summer	2
LNDC1202	Herbaceous Plant Materials	4
LNDC1220	Integrated Pest Management	2
LNDC1231	Nursery Operations	2
LNDC1242	Plant Biology	4
LNDC1250	Bedding Plant Production	3
LNDC1271	Soil Science	3
LNDC2210	Tropical Plants and Their Uses	2
LNDC2261	Professional Gardening	3

#### General Education Required 9 Credits

ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
	Choose one course from MnTC Goal Area 2	3
	Choose one course from MnTC Goal Area 5	3

#### General Education Elective 6 Credits

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

### Technical Studies Elective 8 Credits

Recommended:

LNDC1120	Woody Plants I - Trees	4
LNDC1151	Insects and Diseases of Landscape Plants	3
LNDC1190	Woody Plants II - Shrubs	4
LNDC1900	Specialized Lab	1 - 4
LNDC2360	Horticulture Internship	1 - 4

### Total Associate in Applied Science Degree Credits 60

#### Semester Sequence

#### Offered at Brooklyn Park Only

##### First Semester

LNDC1110	Introduction to Landscape/Horticulture Careers	1
LNDC1166	Sustainable Food and Plant Production - Fall	3
LNDC1242	Plant Biology	4
LNDC1271	Soil Science	3
ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4

#### Total Credits 14

##### Second Semester

LNDC1160	Greenhouse Infrastructure Technology	2
LNDC1176	Sustainable Food and Plant Production - Winter	3
LNDC1220	Integrated Pest Management	2
LNDC1250	Bedding Plant Production	3
LNDC2210	Tropical Plants and Their Uses	2
	Choose 3 credits from MnTC Goal Area 5	3

#### Total Credits 15

##### Summer Semester

LNDC1187	Sustainable Food and Plant Production - Summer	2
LNDC2261	Professional Gardening	3

#### Total Credits 5

##### Third Semester

LNDC1141	Nursery Propagation and Production	3
LNDC1202	Herbaceous Plant Materials	4
LNDC1231	Nursery Operations	2
	Technical Studies Electives	4
	General Education Electives	3

#### Total Credits 16

##### Fourth Semester

	Choose 3 credits from MnTC Goal Area 2	3
	Technical Studies Electives	4
	General Education Electives	3

#### Total Credits 10

#### Technical Studies Electives

**Recommended:**

LNDC1120	Woody Plants I - Trees	4
LNDC1151	Insects and Diseases of Landscape Plants	3
LNDC1190	Woody Plants II - Shrubs	4
LNDC1900	Specialized Lab	1 - 4
LNDC2360	Horticulture Internship	1 - 4

**Choose a Total of: 8 Credits****General Education Electives**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Choose a Total of: 6 Credits****MnTC Goal Area 2**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3
MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

**Choose a Total of: 3 Credits****MnTC Goal Area 5**

ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3

**Choose a Total of: 3 Credits****Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Landscape Design and Construction (BP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

This program of study leading to a degree gives the student a basic landscape/horticulture education the first year. The second year focuses on landscape design and landscape construction. The design area will include courses in drafting and graphics, residential design, estimating, presentation techniques and computer drafting. The construction area includes courses in blueprint reading, estimating, surveying, landscape installation and specialized hardscape construction.

#### Award Outcomes

- Identify plants and recommended uses
- Operate landscape equipment safely and efficiently
- Use hand tools safely and efficiently
- Interpret blueprints and landscape plans
- Measure a residential property
- Design a master plan for a residential property
- Complete working drawings with details for a residential property
- Create complete landscape plans using CAD software
- Construct landscape elements from plans and detail drawings
- Layout landscape plans in the field
- Demonstrate presentation techniques for landscape plans
- Diagnose insect and disease problems of landscape plans
- Calculate material quantities from plans
- Determine and set grades and elevations in field
- Communicate effectively with staff and clients
- Analyze customer needs and recommend solutions

#### Career Opportunities

Students completing this area of study will have employment options as landscape designers or construction specialists with design/building firms or landscape construction businesses.

#### Program Requirements

##### Technical Studies Required 52 Credits

LNDC1110	Introduction to Landscape/Horticulture Careers	1
LNDC1120	Woody Plants I - Trees	4
LNDC1151	Insects and Diseases of Landscape Plants	3
LNDC1190	Woody Plants II - Shrubs	4
LNDC1202	Herbaceous Plant Materials	4
LNDC1231	Nursery Operations	2
LNDC1235	Landscape Operations	2
LNDC1242	Plant Biology	4
LNDC1271	Soil Science	3
LNDC2110	Introduction to Landscape Construction	2
LNDC2120	Landscape Construction I	4
LNDC2131	Landscape Construction II	3
LNDC2160	Sustainable Landscape Design I	4
LNDC2171	Sustainable Landscape Design II	3
LNDC2241	Landscape Equipment Operation	3
LNDC2271	Landscape Computer Design and Applications I	3
LNDC2280	Landscape Computer Design and Applications II	3

##### General Education Required 9 Credits

Choose one course from MnTC Goal Area 1	3
Choose one course from MnTC Goal Area 2	3

Choose one course from MnTC Goal Area 5 3

### General Education Elective 6 Credits

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

### Technical Studies Elective 5 Credits

Recommended:

LNDC1141	Nursery Propagation and Production	3
LNDC1160	Greenhouse Infrastructure Technology	2
LNDC1166	Sustainable Food and Plant Production - Fall	3
LNDC1176	Sustainable Food and Plant Production - Winter	3
LNDC1187	Sustainable Food and Plant Production - Summer	2
LNDC1220	Integrated Pest Management	2
LNDC1250	Bedding Plant Production	3
LNDC1300	Minnesota Invasive Terrestrial Plants	2
LNDC1315	Minnesota Native Plants and Communities	4
LNDC1900	Specialized Lab	1 - 4
LNDC2210	Tropical Plants and Their Uses	2
LNDC2261	Professional Gardening	3
LNDC2335	Landscape Construction Internship	1 - 4

### Total Associate in Applied Science Degree Credits 72

#### Semester Sequence

#### Offered at Brooklyn Park Only

##### First Semester

LNDC1110	Introduction to Landscape/Horticulture Careers	1
LNDC1120	Woody Plants I - Trees	4
LNDC1202	Herbaceous Plant Materials	4
LNDC1231	Nursery Operations	2
LNDC1242	Plant Biology	4
LNDC1271	Soil Science	3

#### Total Credits 18

##### Second Semester

LNDC1151	Insects and Diseases of Landscape Plants	3
LNDC1190	Woody Plants II - Shrubs	4
LNDC1235	Landscape Operations	2
LNDC2110	Introduction to Landscape Construction	2
	Technical Studies Electives	5

#### Total Credits 16

##### Summer Semester

LNDC2241	Landscape Equipment Operation	3
	General Education Electives	3

#### Total Credits 6

##### Third Semester

LNDC2120	Landscape Construction I	4
LNDC2160	Sustainable Landscape Design I	4
LNDC2271	Landscape Computer Design and Applications I	3
	Choose 3 credits from MnTC Goal Area 1	3
	General Education Electives	3

**Total Credits 17****Fourth Semester**

LNDC2131	Landscape Construction II	3
LNDC2171	Sustainable Landscape Design II	3
LNDC2280	Landscape Computer Design and Applications II	3
	Choose 3 credits from MnTC Goal Area 2	3
	Choose 3 credits from MnTC Goal Area 5	3

**Total Credits 15****Technical Studies Electives**

Recommended:

LNDC1141	Nursery Propagation and Production	3
LNDC1160	Greenhouse Infrastructure Technology	2
LNDC1166	Sustainable Food and Plant Production - Fall	3
LNDC1176	Sustainable Food and Plant Production - Winter	3
LNDC1187	Sustainable Food and Plant Production - Summer	2
LNDC1220	Integrated Pest Management	2
LNDC1250	Bedding Plant Production	3
LNDC1300	Minnesota Invasive Terrestrial Plants	2
LNDC1315	Minnesota Native Plants and Communities	4
LNDC1900	Specialized Lab	1 - 4
LNDC2210	Tropical Plants and Their Uses	2
LNDC2261	Professional Gardening	3
LNDC2335	Landscape Construction Internship	1 - 4

**Choose a Total of: 3 Credits****General Education Electives**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Choose a Total of: 3 Credits****MnTC Goal Area 1**A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

COMM1200	Intercultural Communication	3
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
ENGL1070	Technical Writing	3
ENGL1100	Writing and Research	4
ENGL1250	Short Form Composition and Reporting	4
ENGL1300	Introduction to Creative Writing	3

**Choose a Total of: 3 Credits****MnTC Goal Area 2**

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3

MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

**Choose a Total of: 3 Credits**

**MnTC Goal Area 5**

ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3

**Choose a Total of: 3 Credits**

**Graduation (72 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Landscape/Horticulture (BP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

This program of study leading to a degree concentrates on the multi-faceted career opportunities available in the landscape horticulture industry. Students will study a variety of required subjects and elective courses allowing them to customize their program. This is an excellent general program leading to varied opportunities in the landscape or greenhouse/nursery industry.

#### Award Outcomes

Demonstrate knowledge of greenhouse operation and management  
 Demonstrate knowledge of nursery production and nursery crop management  
 Demonstrate knowledge of the care and maintenance of trees in the landscape  
 Demonstrate knowledge of the care and maintenance of landscapes  
 Diagnose abiotic and biotic tree problems  
 Identify solutions for tree problems  
 Communicate effectively with staff and clients  
 Design flowerbeds  
 Install landscapes  
 Demonstrate knowledge of pesticides and their safe use  
 Diagnose abiotic and biotic landscape plant problems  
 Identify solutions for landscape plant problems  
 Propagate nursery crops  
 Use hand tools safely and efficiently  
 Operate landscape and turf equipment safely and efficiently  
 Identify plants and recommend uses

#### Career Opportunities

Employment options include greenhouse/nursery production, grounds care, retail and wholesale sales, interior landscaping, landscape installation and many specialized areas such as garden design and as municipal tree inspectors.

### Program Requirements

#### Technical Studies Required 53 Credits

LNDC1110	Introduction to Landscape/Horticulture Careers	1
LNDC1120	Woody Plants I - Trees	4
LNDC1125	Introduction to Arboriculture	4
LNDC1141	Nursery Propagation and Production	3
LNDC1151	Insects and Diseases of Landscape Plants	3
LNDC1190	Woody Plants II - Shrubs	4
LNDC1202	Herbaceous Plant Materials	4
LNDC1220	Integrated Pest Management	2
LNDC1231	Nursery Operations	2
LNDC1235	Landscape Operations	2
LNDC1242	Plant Biology	4
LNDC1250	Bedding Plant Production	3
LNDC1271	Soil Science	3
LNDC1300	Minnesota Invasive Terrestrial Plants	2
LNDC1315	Minnesota Native Plants and Communities	4
LNDC2210	Tropical Plants and Their Uses	2
LNDC2241	Landscape Equipment Operation	3
LNDC2261	Professional Gardening	3

#### General Education Required 9 Credits

Choose one course from MnTC Goal Area 1	3
Choose one course from MnTC Goal Area 2	3
Choose one course from MnTC Goal Area 5	3

#### General Education Elective 6 Credits

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Technical Studies Elective 4 Credits**

## Recommended:

LNDC1160	Greenhouse Infrastructure Technology	2
LNDC1166	Sustainable Food and Plant Production - Fall	3
LNDC1176	Sustainable Food and Plant Production - Winter	3
LNDC1187	Sustainable Food and Plant Production - Summer	2
LNDC1900	Specialized Lab	1 - 4
LNDC2110	Introduction to Landscape Construction	2
LNDC2120	Landscape Construction I	4
LNDC2131	Landscape Construction II	3
LNDC2160	Sustainable Landscape Design I	4
LNDC2335	Landscape Construction Internship	1 - 4
LNDC2346	Arboriculture Internship	3
LNDC2360	Horticulture Internship	1 - 4

**Total Associate in Applied Science Degree Credits 72****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

LNDC1110	Introduction to Landscape/Horticulture Careers	1
LNDC1120	Woody Plants I - Trees	4
LNDC1202	Herbaceous Plant Materials	4
LNDC1242	Plant Biology	4
LNDC1271	Soil Science	3
	Technical Studies Electives	2

**Total Credits 18****Second Semester**

LNDC1151	Insects and Diseases of Landscape Plants	3
LNDC1190	Woody Plants II - Shrubs	4
LNDC1235	Landscape Operations	2
LNDC1250	Bedding Plant Production	3
	Technical Studies Electives	2

**Total Credits 14****Summer Semester**

LNDC1315	Minnesota Native Plants and Communities	4
LNDC2241	Landscape Equipment Operation	3
LNDC2261	Professional Gardening	3

**Total Credits 10****Third Semester**

LNDC1125	Introduction to Arboriculture	4
LNDC1141	Nursery Propagation and Production	3
LNDC1231	Nursery Operations	2
	Choose 3 credits from MnTC Goal Area 1	3
	General Education Electives	6

**Total Credits 18****Fourth Semester**

LNDC1220	Integrated Pest Management	2
LNDC1300	Minnesota Invasive Terrestrial Plants	2
LNDC2210	Tropical Plants and Their Uses	2
	Choose 3 credits from MnTC Goal Area 2	3
	Choose 3 credits from MnTC Goal Area 5	3

**Total Credit 12****Technical Studies Electives**

Recommended:

LNDC1160	Greenhouse Infrastructure Technology	2
LNDC1166	Sustainable Food and Plant Production - Fall	3
LNDC1176	Sustainable Food and Plant Production - Winter	3
LNDC1187	Sustainable Food and Plant Production - Summer	2
LNDC1900	Specialized Lab	1 - 4
LNDC2120	Landscape Construction I	4
LNDC2131	Landscape Construction II	3
LNDC2160	Sustainable Landscape Design I	4
LNDC2210	Tropical Plants and Their Uses	2
LNDC2335	Landscape Construction Internship	1 - 4
LNDC2346	Arboriculture Internship	3
LNDC2360	Horticulture Internship	1 - 4

**Choose a Total of: 4 Credits****General Education Electives**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Choose a Total of: 6 Credits****MnTC Goal Area 1**A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

COMM1200	Intercultural Communication	3
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
ENGL1070	Technical Writing	3
ENGL1100	Writing and Research	4
ENGL1250	Short Form Composition and Reporting	4
ENGL1300	Introduction to Creative Writing	3

**Choose a Total of: 3 Credits****MnTC Goal Area 2**

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3

MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

**Choose a Total of: 3 Credits**

**MnTC Goal Area 5**

ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3

**Choose a Total of: 3 Credits**

**Graduation (72 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

# Urban Forestry Technician (BP) Associate in Applied Science Degree

## Overview and Award Outcomes

### Overview

This program of study will lead to a degree in the multi-faceted area of Arboriculture. The tree care industry has expanded over the years to include areas of conservation, landscape maintenance, and management issues. Extensive employment opportunities are available nationwide. Students will study a variety of required subjects and elective courses, allowing them to customize their program.

### Award Outcomes

- Identify Minnesota native woody plants by botanical/common names
- Identify Minnesota native plant communities
- Select plant needs with proper site characteristics
- Implement proper planting techniques
- Implement proper tree care to potential clients
- Identify common urban tree pests
- Prescribe treatment for common urban tree pests
- Integrate a sustainable approach to landscape installation and maintenance
- Demonstrate knowledge to take Minnesota Tree Inspector Certification Test
- Demonstrate knowledge to take the certification exam of the International Society of Arboriculture (Knowledge Portion)
- Demonstrate cutting and pruning a tree canopy

### Career Opportunities

Employment options include career opportunities in municipalities, park districts; utility companies; private residential sites; and commercial tree service companies. Each of these areas utilizes trees for a different purpose. The tree care industry has expanded over the years to include areas of conservation, landscape maintenance, and management issues.

### Program Requirements

#### Technical Studies Required 41 Credits

LNDC1110	Introduction to Landscape/Horticulture Careers	1
LNDC1120	Woody Plants I - Trees	4
LNDC1125	Introduction to Arboriculture	4
LNDC1151	Insects and Diseases of Landscape Plants	3
LNDC1155	Applied Arboriculture Operations	4
LNDC1190	Woody Plants II - Shrubs	4
LNDC1220	Integrated Pest Management	2
LNDC1242	Plant Biology	4
LNDC1271	Soil Science	3
LNDC1300	Minnesota Invasive Terrestrial Plants	2
LNDC1315	Minnesota Native Plants and Communities	4
LNDC2241	Landscape Equipment Operation	3
LNDC2346	Arboriculture Internship	3

#### General Education Required 9 Credits

Choose one course from MnTC Goal Area 1	3
Choose one course from MnTC Goal Area 2	3
Choose one course from MnTC Goal Area 5	3

#### General Education Elective 6 Credits

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

#### Technical Studies Elective 4 Credits

Recommended:		
LNDC1141	Nursery Propagation and Production	3

LNDC1160	Greenhouse Infrastructure Technology	2
LNDC1202	Herbaceous Plant Materials	4
LNDC1231	Nursery Operations	2
LNDC1235	Landscape Operations	2
LNDC2261	Professional Gardening	3

**Total Associate in Applied Science Degree Credits 60**

**Semester Sequence**

**Offered at Brooklyn Park Only**

**First Semester**

LNDC1110	Introduction to Landscape/Horticulture Careers	1
LNDC1120	Woody Plants I - Trees	4
LNDC1242	Plant Biology	4
LNDC1271	Soil Science	3
	Choose 3 credits from MnTC Goal Area 5	3

**Total Credits 15**

**Second Semester**

LNDC1151	Insects and Diseases of Landscape Plants	3
LNDC1190	Woody Plants II - Shrubs	4
LNDC1220	Integrated Pest Management	2
	Choose 3 credits from MnTC Goal Area 2	3

**Total Credits 12**

**Summer Semester**

LNDC1315	Minnesota Native Plants and Communities	4
LNDC2241	Landscape Equipment Operation	3

**Total Credits 7**

**Third Semester**

LNDC1125	Introduction to Arboriculture	4
LNDC1300	Minnesota Invasive Terrestrial Plants	2
	Technical Studies Electives	2
	Choose 3 credits from MnTC Goal Area 1	3
	General Education Electives	3

**Total Credits 14**

**Fourth Semester**

LNDC1155	Applied Arboriculture Operations	4
LNDC2346	Arboriculture Internship	3
	Technical Studies Electives	2
	General Education Electives	3

**Total Credits 12**

**Technical Studies Electives**

Recommended:

LNDC1141	Nursery Propagation and Production	3
LNDC1160	Greenhouse Infrastructure Technology	2
LNDC1202	Herbaceous Plant Materials	4
LNDC1231	Nursery Operations	2

LNDC1235	Landscape Operations	2
LNDC2261	Professional Gardening	3

**Choose a Total of: 4 Credits****General Education Electives**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Choose a Total of: 6 Credits****MnTC Goal Area 1**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

COMM1200	Intercultural Communication	3
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
ENGL1070	Technical Writing	3
ENGL1100	Writing and Research	4
ENGL1250	Short Form Composition and Reporting	4
ENGL1300	Introduction to Creative Writing	3

**Choose a Total of: 3 Credits****MnTC Goal Area 2**

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3
MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

**Choose a Total of: 3 Credits****MnTC Goal Area 5**

ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POL1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3

**Choose a Total of: 3 Credits****Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is

subject to change without notice.

7/22/2022 : BP 6111 / EP

## Landscape Design and Construction (BP) Diploma

### Overview and Award Outcomes

#### Overview

This program of study leading to a diploma gives the student a basic landscape/horticulture education the first year. The second year focuses on landscape design and landscape construction. The design area will include courses in drafting and graphics, residential design, estimating, presentation techniques and computer drafting. The construction area includes courses in blueprint reading, estimating, surveying, landscape installation and specialized hardscape construction.

#### Award Outcomes

Identify plants and recommended uses  
 Operate landscape equipment safely and efficiently  
 Use hand tools safely and efficiently  
 Interpret blueprints and landscape plans  
 Measure a residential property  
 Design a master plan for a residential property  
 Complete working drawings with details for a residential property  
 Create complete landscape plans using CAD software  
 Construct landscape elements from plans and detail drawings  
 Layout landscape plans in the field  
 Demonstrate presentation techniques for landscape plans  
 Diagnose insect and disease problems of landscape plans  
 Calculate material quantities from plans  
 Determine and set grades and elevations in field  
 Communicate effectively with staff and clients  
 Analyze customer needs and recommend solutions

#### Career Opportunities

Students completing this area of study will have employment options as landscape designers or construction specialists with design/building firms or landscape construction businesses.

### Program Requirements

#### Technical Studies Required 46 Credits

LNDC1110	Introduction to Landscape/Horticulture Careers	1
LNDC1120	Woody Plants I - Trees	4
LNDC1151	Insects and Diseases of Landscape Plants	3
LNDC1190	Woody Plants II - Shrubs	4
LNDC1202	Herbaceous Plant Materials	4
LNDC1231	Nursery Operations	2
LNDC1235	Landscape Operations	2
LNDC1242	Plant Biology	4
LNDC1271	Soil Science	3
LNDC2110	Introduction to Landscape Construction	2
LNDC2120	Landscape Construction I	4
LNDC2131	Landscape Construction II	3
LNDC2160	Sustainable Landscape Design I	4
LNDC2171	Sustainable Landscape Design II	3
LNDC2241	Landscape Equipment Operation	3

#### General Education Required 4 Credits

COMM1050	Communication in the Workplace - Deleted Summer 2022	2
MATH1007	Math for the Trades	2

#### General Education Elective 4 Credits

Any HTC 1000 level or higher general education course may be used to satisfy the elective requirements.

#### Technical Studies Elective 10 Credits

## Recommended:

LNDC1141	Nursery Propagation and Production	3
LNDC1220	Integrated Pest Management	2
LNDC1900	Specialized Lab	1 - 4
LNDC2210	Tropical Plants and Their Uses	2
LNDC2261	Professional Gardening	3
LNDC2271	Landscape Computer Design and Applications I	3
LNDC2280	Landscape Computer Design and Applications II	3
LNDC2335	Landscape Construction Internship	1 - 4
LNDC2346	Arboriculture Internship	3

**Total Diploma Credits 64****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

LNDC1110	Introduction to Landscape/Horticulture Careers	1
LNDC1120	Woody Plants I - Trees	4
LNDC1202	Herbaceous Plant Materials	4
LNDC1231	Nursery Operations	2
LNDC1242	Plant Biology	4
LNDC1271	Soil Science	3

**Total Credits 18****Second Semester**

LNDC1151	Insects and Diseases of Landscape Plants	3
LNDC1190	Woody Plants II - Shrubs	4
LNDC1235	Landscape Operations	2
LNDC2110	Introduction to Landscape Construction	2
MATH1007	Math for the Trades	2
	Technical Studies Electives	4

**Total Credits 17****Summer Semester**

LNDC2241	Landscape Equipment Operation	3
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**Total Credits 3****Third Semester**

LNDC2120	Landscape Construction I	4
LNDC2160	Sustainable Landscape Design I	4
COMM1050	Communication in the Workplace - Deleted Summer 2022	2
	Technical Studies Electives	3

**Total Credits 13****Fourth Semester**

LNDC2131	Landscape Construction II	3
LNDC2171	Sustainable Landscape Design II	3
	General Education Electives	4
	Technical Studies Electives	3

**Total Credits 13****Technical Studies Electives**

Any Landscape and Horticulture Career (LNDC) course that is not required for this award may be used as an elective.

## Recommended:

LNDC1141	Nursery Propagation and Production	3
LNDC1220	Integrated Pest Management	2
LNDC1900	Specialized Lab	1 - 4
LNDC2210	Tropical Plants and Their Uses	2
LNDC2261	Professional Gardening	3
LNDC2271	Landscape Computer Design and Applications I	3
LNDC2280	Landscape Computer Design and Applications II	3
LNDC2335	Landscape Construction Internship	1 - 4
LNDC2346	Arboriculture Internship	3

**Choose a Total of: 10 Credits****General Education Electives**

If a General Education course is required it may not be used as a General Education Elective.

Minnesota Transfer Curriculum (MnTC) may also be used to meet General Education Elective requirements. A complete list of MnTC courses can be found at [www.hennepintech.edu](http://www.hennepintech.edu).

**Choose a Total of: 4 Credits****Graduation (64 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

06/10/2022 : BP 6107 / EP

## Landscape/Horticulture (BP) Diploma

### Overview and Award Outcomes

#### Overview

This program of study leading to a diploma concentrates on the multi-faceted career opportunities available in the landscape horticulture industry. Students will study a variety of required subjects and elective courses allowing them to customize their program. This is an excellent general program leading to varied opportunities in the landscape or greenhouse/nursery industry.

#### Award Outcomes

Demonstrate knowledge of greenhouse operation and management  
 Demonstrate knowledge of nursery production and nursery crop management  
 Demonstrate knowledge of the care and maintenance of trees in the landscape  
 Demonstrate knowledge of the care and maintenance of turf  
 Demonstrate knowledge of the care and maintenance of landscapes  
 Diagnose abiotic and biotic tree problems  
 Recommend solutions for tree problems  
 Communicate effectively with staff and clients  
 Design flowerbeds  
 Install landscapes  
 Demonstrate knowledge of pesticides and their safe use  
 Diagnose abiotic and biotic turf problems  
 Recommend solutions for turf problems  
 Diagnose abiotic and biotic landscape plant problems  
 Recommend solutions for landscape plant problems  
 Propagate nursery crops  
 Use hand tools safely and efficiently  
 Operate landscape and turf equipment safely and efficiently  
 Identify plants and recommend uses

#### Career Opportunities

Employment options include greenhouse/nursery production, grounds care, retail and wholesale sales, interior landscaping, landscape installation and many specialized areas such as garden design and as municipal tree inspectors.

### Program Requirements

#### Technical Studies Required 41 Credits

LNDC1110	Introduction to Landscape/Horticulture Careers	1
LNDC1120	Woody Plants I - Trees	4
LNDC1141	Nursery Propagation and Production	3
LNDC1151	Insects and Diseases of Landscape Plants	3
LNDC1190	Woody Plants II - Shrubs	4
LNDC1202	Herbaceous Plant Materials	4
LNDC1220	Integrated Pest Management	2
LNDC1231	Nursery Operations	2
LNDC1235	Landscape Operations	2
LNDC1242	Plant Biology	4
LNDC1250	Bedding Plant Production	3
LNDC1271	Soil Science	3
LNDC2241	Landscape Equipment Operation	3
LNDC2261	Professional Gardening	3

#### General Education Required 4 Credits

COMM1050	Communication in the Workplace - Deleted Summer 2022	2
MATH1007	Math for the Trades	2

#### General Education Elective 4 Credits

Any HTC 1000 level or higher general education course may be used to satisfy the elective requirements.

**Technical Studies Elective 15 Credits**

## Recommended:

LNDC1160	Greenhouse Infrastructure Technology	2
LNDC1166	Sustainable Food and Plant Production - Fall	3
LNDC1176	Sustainable Food and Plant Production - Winter	3
LNDC1187	Sustainable Food and Plant Production - Summer	2
LNDC1900	Specialized Lab	1 - 4
LNDC2110	Introduction to Landscape Construction	2
LNDC2120	Landscape Construction I	4
LNDC2131	Landscape Construction II	3
LNDC2160	Sustainable Landscape Design I	4
LNDC2210	Tropical Plants and Their Uses	2
LNDC2335	Landscape Construction Internship	1 - 4
LNDC2346	Arboriculture Internship	3
LNDC2350	Grounds Maintenance Internship	1 - 4
LNDC2360	Horticulture Internship	1 - 4

**Total Diploma Credits 64****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

LNDC1110	Introduction to Landscape/Horticulture Careers	1
LNDC1120	Woody Plants I - Trees	4
LNDC1202	Herbaceous Plant Materials	4
LNDC1242	Plant Biology	4
LNDC1271	Soil Science	3
MATH1007	Math for the Trades	2

**Total Credits 18****Second Semester**

LNDC1151	Insects and Diseases of Landscape Plants	3
LNDC1190	Woody Plants II - Shrubs	4
LNDC1235	Landscape Operations	2
LNDC1250	Bedding Plant Production	3
	Technical Studies Electives	3

**Total Credits 15****Summer Semester**

LNDC2241	Landscape Equipment Operation	3
LNDC2261	Professional Gardening	3

**Total Credits 6****Third Semester**

LNDC1141	Nursery Propagation and Production	3
LNDC1231	Nursery Operations	2
COMM1050	Communication in the Workplace - Deleted Summer 2022	2
	Technical Studies Electives	6

**Total Credits 13****Fourth Semester**

LNDC1220	Integrated Pest Management	2
	General Education Electives	4

## Technical Studies Electives

6

**Total Credits 12****Technical Studies Electives**

Any Landscape and Horticulture Career (LNDC) course that is not required for this award may be used as an elective.

## Recommended:

LNDC1160	Greenhouse Infrastructure Technology	2
LNDC1166	Sustainable Food and Plant Production - Fall	3
LNDC1176	Sustainable Food and Plant Production - Winter	3
LNDC1187	Sustainable Food and Plant Production - Summer	2
LNDC1900	Specialized Lab	1 - 4
LNDC2110	Introduction to Landscape Construction	2
LNDC2120	Landscape Construction I	4
LNDC2131	Landscape Construction II	3
LNDC2160	Sustainable Landscape Design I	4
LNDC2210	Tropical Plants and Their Uses	2
LNDC2335	Landscape Construction Internship	1 - 4
LNDC2346	Arboriculture Internship	3
LNDC2350	Grounds Maintenance Internship	1 - 4
LNDC2360	Horticulture Internship	1 - 4

**Choose a Total of: 15 Credits****General Education Electives**

If a General Education course is required it may not be used as a General Education Elective.

Minnesota Transfer Curriculum (MnTC) may also be used to meet General Education Elective requirements. A complete list of MnTC courses can be found at [www.hennepintech.edu](http://www.hennepintech.edu).

**Choose a Total of: 4 Credits****Graduation (64 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Landscape Computer Design (BP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

This certificate program focuses on landscape design and landscape construction. The design area will include courses in drafting and graphics, residential design, estimating, presentation techniques and computer drafting. The construction area includes courses in blueprint reading, estimating, surveying, landscape installation and specialized hardscape construction.

Prerequisite: Graduation from a 2-year landscape design and construction program OR a minimum of 2 years related work experience.

#### Award Outcomes

- Identify plants and recommended uses
- Operate landscape equipment safely and efficiently
- Use hand tools safely and efficiently
- Interpret blueprints and landscape plans
- Measure a residential property
- Design a master plan for a residential property
- Complete working drawings with details for a residential property
- Create complete landscape plans using CAD software
- Construct landscape elements from plans and detail drawings
- Layout landscape plans in the field
- Demonstrate presentation techniques for landscape plans
- Diagnose insect and disease problems of landscape plans
- Calculate material quantities from plans
- Determine and set grades and elevations in field
- Communicate effectively with staff and clients
- Analyze customer needs and recommend solutions

#### Career Opportunities

Students completing this area of study will have employment options as landscape designers or construction specialists with design/building firms or landscape construction businesses.

#### Program Requirements

##### Technical Studies Required 17 Credits

LNDC1235	Landscape Operations	2
LNDC2110	Introduction to Landscape Construction	2
LNDC2160	Sustainable Landscape Design I	4
LNDC2171	Sustainable Landscape Design II	3
LNDC2271	Landscape Computer Design and Applications I	3
LNDC2280	Landscape Computer Design and Applications II	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Advanced Technical Certificate Credits 17

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

LNDC1235	Landscape Operations	2
LNDC2110	Introduction to Landscape Construction	2
LNDC2160	Sustainable Landscape Design I	4

LNDC2171	Sustainable Landscape Design II	3
LNDC2271	Landscape Computer Design and Applications I	3
LNDC2280	Landscape Computer Design and Applications II	3

**Total Credits 17**

**Graduation (17 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/14/2022 : BP 6116 / EP

## Landscape Construction (BP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

This program of study leading to a certificate in landscape construction provides the student with specific courses, each focusing on an individual aspect of landscape construction. Included are decks, fences, retaining walls, patios, construction specifications, estimating and job planning. There is extensive lab time for field projects.

Prerequisite: A minimum of one year experience in the landscape industry.

#### Award Outcomes

- Identify plants and recommended uses
- Operate landscape equipment safely and efficiently
- Use hand tools safely and efficiently
- Interpret blueprints and landscape plans
- Measure a residential property
- Complete working drawings with details for a residential property
- Create complete landscape plans using CAD software
- Construct landscape elements from plans and detail drawings
- Layout landscape plans in the field
- Demonstrate presentation techniques for landscape plans
- Calculate material quantities from plans
- Determine and set grades and elevations in field
- Communicate effectively with staff and clients
- Analyze customer needs and recommend solutions

#### Career Opportunities

Completion of the construction certificate will lead directly to opportunities with landscape construction and design/building firms.

### Program Requirements

#### Technical Studies Required 18 Credits

LNDC1235	Landscape Operations	2
LNDC2110	Introduction to Landscape Construction	2
LNDC2120	Landscape Construction I	4
LNDC2131	Landscape Construction II	3
LNDC2241	Landscape Equipment Operation	3
LNDC2330	Landscape Construction Internship Certificate	4

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Advanced Technical Certificate Credits 18

#### Semester Sequence

#### Prerequisite Semester

#### First Semester

#### Second Semester

#### Third Semester

#### Fourth Semester

## Arboriculture (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

This specialized area of study leads to a certificate in arboriculture. Arboriculture is the study of and care of trees and other landscape woody plants. The students will study plant materials, insects, diseases and environmental problems affecting woody plants of the upper midwest. This course of study will also include courses relating to maintenance practices necessary to insure the health and beauty of woody plants in the landscape. Students will have the opportunity to develop field skills in rope and saddle trimming work.

#### Award Outcomes

Identify Minnesota native woody plants by botanical/common name  
 Select plant needs with proper site characteristics  
 Implement proper planting techniques  
 Implement proper tree care to potential clients  
 Identify common urban tree pests  
 Prescribe treatment for common urban tree pests  
 Integrate a sustainable approach to landscape installation and maintenance

#### Career Opportunities

Students completing the arboriculture certificate may be employed in the tree service industry, park systems and ground maintenance businesses.

#### Program Requirements

##### Technical Studies Required 25 Credits

LNDC1120	Woody Plants I - Trees	4
LNDC1125	Introduction to Arboriculture	4
LNDC1145	Tree Climbing Operations	3
LNDC1151	Insects and Diseases of Landscape Plants	3
LNDC1155	Applied Arboriculture Operations	4
LNDC1190	Woody Plants II - Shrubs	4
LNDC2346	Arboriculture Internship	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 25

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

LNDC1120	Woody Plants I - Trees	4
LNDC1125	Introduction to Arboriculture	4
LNDC1145	Tree Climbing Operations	3

##### Total Credits 11

##### Second Semester

LNDC1151	Insects and Diseases of Landscape Plants	3
LNDC1155	Applied Arboriculture Operations	4
LNDC1190	Woody Plants II - Shrubs	4
LNDC2346	Arboriculture Internship	3

**Total Credits 14**

**Graduation (25 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/14/2022 : BP 6109 / EP

## Greenhouse Technician (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

This program of study is for the student seeking a career in the plant production industry. Graduates in this program will have a strong knowledge and skills in greenhouse operation and management; plant production in a variety of ornamentals such as bedding plants, holiday plants (Easter Lilies, Poinsettias, etc.), and interior foliage plants. This degree will allow for advancement to supervisory and management positions.

#### Award Outcomes

Identify crops to be grown and their cultural needs  
 Maintain crops  
 Diagnose greenhouse pests using an IPM program  
 Design a master plan for a business based on growing or selling crops  
 Propagate woody and herbaceous plants sexually and asexually  
 Operate greenhouse equipment efficiently  
 Select pesticides and fertilizer formulations  
 Calculate pesticide and fertilizer formulations  
 Select proper media and amendments for plant crops  
 Demonstrate technical knowledge of the greenhouse physical structure  
 Select proper containers for crops  
 Demonstrate technical knowledge of the environmental systems in the greenhouse  
 Interpret soil and water tests  
 Market crops

#### Career Opportunities

Employment options include greenhouse production, plant propagation, greenhouse management and plant brokering.

### Program Requirements

#### Technical Studies Required 22 Credits

LNDC1160	Greenhouse Infrastructure Technology	2
LNDC1166	Sustainable Food and Plant Production - Fall	3
LNDC1176	Sustainable Food and Plant Production - Winter	3
LNDC1187	Sustainable Food and Plant Production - Summer	2
LNDC1220	Integrated Pest Management	2
LNDC1231	Nursery Operations	2
LNDC1250	Bedding Plant Production	3
LNDC2210	Tropical Plants and Their Uses	2
LNDC2241	Landscape Equipment Operation	3

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 2 Credits

Recommended:		
LNDC2360	Horticulture Internship	1 - 4

### Total Occupational Certificate Credits 24

#### Semester Sequence

#### Offered at Brooklyn Park Only

#### First Semester

LNDC1166	Sustainable Food and Plant Production - Fall	3
LNDC1231	Nursery Operations	2

**Total Credits 5****Second Semester**

LNDC1160	Greenhouse Infrastructure Technology	2
LNDC1176	Sustainable Food and Plant Production - Winter	3
LNDC1220	Integrated Pest Management	2
LNDC1250	Bedding Plant Production	3
LNDC2210	Tropical Plants and Their Uses	2

**Total Credits 12****Summer Semester**

LNDC1187	Sustainable Food and Plant Production - Summer	2
LNDC2241	Landscape Equipment Operation	3

**Total Credits 5****Graduation (24 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/14/2022 : BP 6114 / EP

## Professional Gardening (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

The professional gardener certificate is designed to prepare students to professionally design, install and maintain ornamental and vegetable gardens, container plantings and seasonal displays in residential, commercial and institutional settings. Some of the skills taught include plant production, site preparation, plant selection, pest and weed identification, creating garden maintenance plans, pruning techniques, tool selection and use, and basic business practices.

#### Award Outcomes

Propagate woody and herbaceous plants sexually and asexually  
 Identify plants and recommended uses  
 Operate landscape equipment safely and efficiently  
 Design flowerbeds  
 Diagnose insect and disease problems of landscape plants  
 Identify Minnesota natural plant communities  
 Communicate effectively with staff and clients  
 Use hand tools safely and efficiently

#### Career Opportunities

Landscape/Horticulture professionals design, install and care for residential, commercial and public landscapes. They find work with companies that provide landscape design, construction and maintenance services, as well as garden centers, nurseries, golf courses and municipal parks, community gardens and public works departments.

#### Program Requirements

##### Technical Studies Required 29 Credits

LNDC1151	Insects and Diseases of Landscape Plants	3
LNDC1187	Sustainable Food and Plant Production - Summer	2
LNDC1202	Herbaceous Plant Materials	4
LNDC1220	Integrated Pest Management	2
LNDC1250	Bedding Plant Production	3
LNDC1271	Soil Science	3
LNDC1300	Minnesota Invasive Terrestrial Plants	2
LNDC2160	Sustainable Landscape Design I	4
LNDC2241	Landscape Equipment Operation	3
LNDC2261	Professional Gardening	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 29

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

LNDC1202	Herbaceous Plant Materials	4
LNDC1271	Soil Science	3
LNDC1300	Minnesota Invasive Terrestrial Plants	2
LNDC2160	Sustainable Landscape Design I	4

##### Total Credits 13

##### Second Semester

LNDC1151	Insects and Diseases of Landscape Plants	3
LNDC1220	Integrated Pest Management	2
LNDC1250	Bedding Plant Production	3

**Total Credits 8****Summer Semester**

LNDC1187	Sustainable Food and Plant Production - Summer	2
LNDC2241	Landscape Equipment Operation	3
LNDC2261	Professional Gardening	3

**Total Credits 8****Graduation (29 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/14/2022 : BP 6115 / EP

**Plumbing Pre-Apprenticeship**

## Plumbing Pre-Apprenticeship (EP) Diploma

### Overview and Award Outcomes

#### Overview

The Plumbing Pre-Apprenticeship program prepares students to begin a career in plumbing and pipefitting at the apprentice level with a plumbing contractor. Coursework provides students with the technical understanding and basic skills development in safety, plumbing codes, material identification, tool usage, piping procedures, blueprint interpretation, and design and installation of plumbing systems.

#### Award Outcomes

Analyze plumbing codes, rules, and regulations  
 Apply proper safety techniques and procedures  
 Calculate plumbing measurements  
 Complete proper piping procedures  
 Interpret blueprints and pipe isometrics  
 Design plumbing systems  
 Install plumbing systems

#### Career Opportunities

Graduating students will be prepared for entry-level opportunities as an apprentice plumber in residential, commercial, industrial and service plumbing contractor companies. Further career training can lead to journeyman plumber, master plumber, job foreman, project superintendent, estimator, wholesale distribution, plumbing inspector, plumbing instructor, and plumbing contractor.

### Program Requirements

#### Technical Studies Required 36 Credits

PLBG1000	Iron and Steel Pipe Procedures	2
PLBG1005	Introduction to Plumbing and Safety	2
PLBG1011	Blueprint Reading and Estimating I	3
PLBG1020	Copper Pipe Procedures	2
PLBG1025	Plastic Pipe Procedures	2
PLBG1031	Plumbing Calculations I	3
PLBG1035	Minnesota State Plumbing Code I	3
PLBG1041	Plumbing Systems Design	3
PLBG1045	Minnesota State Plumbing Code II	3
PLBG1050	Plumbing Systems Installation	3
PLBG1060	Plumbing Calculations II	3
PLBG1065	Blueprint Reading and Estimating II	3
PLBG1070	Plumbing Service and Repair	3
EMSV1020	CPR/First Aid	1

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Diploma Credits 36

#### Semester Sequence

#### Offered at Eden Prairie Only

#### First Semester

PLBG1000	Iron and Steel Pipe Procedures	2
PLBG1005	Introduction to Plumbing and Safety	2
PLBG1011	Blueprint Reading and Estimating I	3
PLBG1020	Copper Pipe Procedures	2
PLBG1025	Plastic Pipe Procedures	2

PLBG1031	Plumbing Calculations I	3
PLBG1035	Minnesota State Plumbing Code I	3
EMSV1020	CPR/First Aid	1

**Total Credits 18****Second Semester**

PLBG1041	Plumbing Systems Design	3
PLBG1045	Minnesota State Plumbing Code II	3
PLBG1050	Plumbing Systems Installation	3
PLBG1060	Plumbing Calculations II	3
PLBG1065	Blueprint Reading and Estimating II	3
PLBG1070	Plumbing Service and Repair	3

**Total Credits 18****Graduation (36 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

1/31/2022 : BP / EP 3503

## Plumbing Pre-Apprenticeship (EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

The Plumbing Pre-Apprenticeship program prepares students to begin a career in plumbing and pipefitting at the helper level with a plumbing contractor. Coursework provides students with the technical understanding and basic skills development in safety, plumbing codes, material identification, tool usage, piping procedures, and blueprint interpretation.

#### Award Outcomes

Analyze plumbing codes, rules, and regulations  
 Apply proper safety techniques and procedures  
 Calculate plumbing measurements  
 Complete proper piping procedures  
 Interpret blueprints and pipe isometrics

#### Career Opportunities

Graduating students will be prepared for entry-level opportunities as a plumbers helper in residential, commercial, industrial and service plumbing contractor companies. Further career training can lead to apprentice plumber, journeyman plumber, master plumber, job foreman, project superintendent, estimator, wholesale distribution, plumbing inspector, plumbing instructor, and plumbing contractor.

#### Program Requirements

##### Technical Studies Required 18 Credits

PLBG1000	Iron and Steel Pipe Procedures	2
PLBG1005	Introduction to Plumbing and Safety	2
PLBG1011	Blueprint Reading and Estimating I	3
PLBG1020	Copper Pipe Procedures	2
PLBG1025	Plastic Pipe Procedures	2
PLBG1031	Plumbing Calculations I	3
PLBG1035	Minnesota State Plumbing Code I	3
EMSV1020	CPR/First Aid	1

##### General Education Required 0 Credit

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 18

#### Semester Sequence

##### Offered at Eden Prairie Only

##### First Semester

PLBG1000	Iron and Steel Pipe Procedures	2
PLBG1005	Introduction to Plumbing and Safety	2
PLBG1011	Blueprint Reading and Estimating I	3
PLBG1020	Copper Pipe Procedures	2
PLBG1025	Plastic Pipe Procedures	2
PLBG1031	Plumbing Calculations I	3
PLBG1035	Minnesota State Plumbing Code I	3
EMSV1020	CPR/First Aid	1

**Total Credits 18**

**Graduation (18 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

3/2/2022 : BP / EP 3505

**Public Works**

## Street, Utility, and Park Maintenance Technician (BP/EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

Students completing this program will gain the basic skills necessary to work efficiently and safely in a variety of municipal, county and state positions, such as street, utility, and park maintenance.

#### Award Outcomes

- Identify the role of public works agencies in local government
- Identify role in a public safety emergency
- Perform maintenance of surfaces and external grounds
- Demonstrate methods used for water leak detection, system flushing and disinfection
- Appraise construction methods for park and recreation facilities
- Demonstrate effective customer service techniques
- Identify health and safety hazards in accordance with OSHA and industry standards
- Perform repairs to small engines, physical structures and their mechanical systems
- Operate mechanized equipment in accordance with OSHA/industry standards

#### Career Opportunities

There are a number of options to choose from in this field. Employees in this field can expect good pay & benefits, year round employment, and challenging outdoor work assignments.

### Program Requirements

#### Technical Studies Required 19 Credits

PWRK1020	Basic Engine Repair	3
PWRK1025	Street Maintenance, Materials and Applications	3
PWRK1045	Practical Skills for Public Works	4
PWRK1050	Introduction to Municipal Utilities	3
PWRK1065	Introduction to Park Maintenance	3
PWRK2000	Public Works Internship	3

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Occupational Certificate Credits 19

#### Semester Sequence

#### Offered at Brooklyn Park and Eden Prairie

#### First Semester

PWRK1020	Basic Engine Repair	3
PWRK1025	Street Maintenance, Materials and Applications	3
PWRK1045	Practical Skills for Public Works	4
PWRK1050	Introduction to Municipal Utilities	3
PWRK1065	Introduction to Park Maintenance	3

#### Total Credits 16

#### Second Semester

PWRK2000	Public Works Internship	3
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**Total Credits 3**

**Graduation (19 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/8/2022 : BP 4908 / EP 4907

# Emergency and Public Service

**Emergency Medical Services**

## Community Paramedic Clinician (BP/EP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

The Community Paramedic Clinician navigates and establishes systems to better serve the citizens of their communities. They help individuals and communities overcome barriers that prevent them from accessing and benefitting from health services. They serve as advocates, facilitators, liaisons, community brokers and resource coordinators. Community Paramedic Clinicians also trained as direct service providers which will ensure basic and advanced levels of care appropriate to prevention, emergencies, evaluation, triage, disease management, and basic oral and mental health.

Prerequisite: Currently certified as an Emergency Medical Technician (EMT-P) and have two (2) years of full-time service as an EMT-P, or its part-time equivalent.

#### Award Outcomes

Explain the scope of service for the role of the Community Paramedic (CP)

Differentiate between the role of the Community Paramedic, traditional community health care workers and the emergency medical personnel

Demonstrate knowledge and skills required to perform clinical interventions

Evaluate treatment and referral programs according to policies and protocols

Evaluate the characteristics of health in the community

Identify relevant health and welfare services

Characterize the role of the CP as a liaison between patients, health and welfare service providers and community advocates

#### Career Opportunities

Job opportunities are available in any organization that provides community health care, emergency medical services, and public health.

#### Program Requirements

##### Technical Studies Required 14 Credits

EMSV2001	Role Advocacy and Outreach	3
EMSV2005	Community Assessment	2
EMSV2011	Care and Prevention Development Strategies	4
EMSV2025	Care Coordination Practicum	1
EMSV2035	Core Concepts in Primary Care	1
EMSV2040	Needs Assessment Implementation Internship	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Advanced Technical Certificate Credits 14

#### Semester Sequence

##### First Semester

EMSV2001	Role Advocacy and Outreach	3
EMSV2011	Care and Prevention Development Strategies	4

##### Total Credits 7

##### Second Semester

EMSV2005	Community Assessment	2
EMSV2025	Care Coordination Practicum	1
EMSV2035	Core Concepts in Primary Care	1
EMSV2040	Needs Assessment Implementation Internship	3

**Total Credits 7**

**Graduation (14 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/7/2022 : BP 7210 / EP 7211

# Community Paramedic Technician (BP/EP) Advanced Technical Certificate

## Overview and Award Outcomes

### Overview

The Community Paramedic Technician navigates and establishes systems to better serve the citizens of their communities. They help individuals and communities overcome barriers that prevent them from accessing and benefiting from health services. They serve as advocates, facilitators, liaisons, community brokers and resource coordinators. Community Paramedic Technicians also trained as direct service providers which will ensure basic and advanced levels of care appropriate to prevention, emergencies, evaluation, triage, disease management, and basic oral and mental health.

Prerequisite: Currently certified as a Paramedic without experience or an AEMT with two (2) years of full-time service as an AEMT, or its part-time equivalent.

### Award Outcomes

Explain the scope of service for the role of the Community Paramedic Technician (CPT)

Differentiate between the role of the Community Paramedic Technician, traditional community health care workers and the emergency medical personnel

Demonstrate knowledge and skills required to perform clinical interventions

Evaluate treatment and referral programs according to policies and protocols

Evaluate the characteristics of health in the community

Identify relevant health and welfare services

Characterize the role of the CP as a liaison between patients, health and welfare service providers and community advocates

### Career Opportunities

Job opportunities are available in any organization that provides community health care, emergency medical services, and public health.

### Program Requirements

#### Technical Studies Required 11 Credits

EMSV2001	Role Advocacy and Outreach	3
EMSV2005	Community Assessment	2
EMSV2011	Care and Prevention Development Strategies	4
EMSV2025	Care Coordination Practicum	1
EMSV2035	Core Concepts in Primary Care	1

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Advanced Technical Certificate Credits 11

#### Semester Sequence

##### First Semester

EMSV2001	Role Advocacy and Outreach	3
EMSV2011	Care and Prevention Development Strategies	4

##### Total Credits 7

##### Second Semester

EMSV2005	Community Assessment	2
EMSV2025	Care Coordination Practicum	1
EMSV2035	Core Concepts in Primary Care	1

**Total Credits 4**

**Graduation (11 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/7/2022 : BP 7216 / EP 7215

## Primary Care Technician (BP/EP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

The Primary Care Technician (PCT) navigates and establishes systems to better serve the citizens of their communities. They help individuals and communities overcome barriers that prevent them from accessing and benefitting from health services. They serve as advocates, facilitators, liaisons, community brokers and resource coordinators. Primary Care Technicians are also trained as direct service providers which will ensure basic levels of care according to an established Plan of Care appropriate to prevention, emergencies, evaluation, and triage.

#### Award Outcomes

Explain the scope of service for the role of the Primary Care Technician

Differentiate between the role of the Primary Care Technician, traditional community health care workers and the emergency medical personnel

Demonstrate knowledge and skills required to assist the patient with the established Plan of Care

Evaluate treatment and referral programs according to policies and protocols

Evaluate the characteristics of health in the community

Identify relevant health and welfare services

Characterize the role of the PCT as a liaison between patients, health and welfare service providers and community advocates

#### Career Opportunities

Job opportunities are available in any organization that provides community health care, emergency medical services, and public health.

#### Program Requirements

##### Technical Studies Required 13 Credits

EMSV1050	Emergency Medical Responder (First Responder)	3
EMSV1100	Emergency Medical Technician - Basic	6
EMSV2001	Role Advocacy and Outreach	3
EMSV2025	Care Coordination Practicum	1

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Advanced Technical Certificate Credits 13

#### Semester Sequence

##### First Semester

EMSV1050	Emergency Medical Responder (First Responder)	3
EMSV1100	Emergency Medical Technician - Basic	6

##### Total Credits 9

##### Second Semester

EMSV2001	Role Advocacy and Outreach	3
EMSV2025	Care Coordination Practicum	1

##### Total Credits 4

#### Graduation (13 Credits)

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/7/2022 : BP 7218 / EP 7217

# Emergency Medical Services Specialist (BP/EP) Occupational Certificate

## Overview and Award Outcomes

### Overview

The EMS Certificate provides enhanced entry-level job training for employment in a Basic Life Support (BLS) ambulance service and the EMS ride-along experience requirements for persons interested in entering a paramedic program. Included in the program is an 80 hour ride-along clinical with Metro Ambulance Services. Areas covered are special transportation training, an ambulance service operations and run simulation course, behind-the-wheel emergency driving course, proper lifting techniques plus interpersonal communication skills that paramedic schools and employers are seeking. Cleared criminal background check and completed TB skin test required.

### Award Outcomes

Demonstrate his/her role and responsibilities as a member of the emergency medical team  
 Apply emergency medical safety principles in the work place  
 Apply critical thinking skills in care management  
 Assess patient for traumatic injuries  
 Assess patient for medical illnesses  
 Demonstrate clear oral communications  
 Exhibit personal, professional and academic ethics  
 Apply quality improvement concepts  
 Classify patient conditions for treatments needed  
 Demonstrate effective treatment skills  
 Demonstrate safe transport of patients  
 Demonstrate skills for the National Registry of EMT's

### Career Opportunities

The EMS Certificate prepare and enhances a person's job opportunities for work as an EMT in a BLS medical transportation service or in a ALS service that combines EMT's and paramedics. The certificate meets several prerequisites in course work and the ride-along ambulance experience required for entry into paramedic programs.

## Program Requirements

### Technical Studies Required 25 Credits

EMSV1000	Introduction to EMS Systems	1
EMSV1050	Emergency Medical Responder (First Responder)	3
EMSV1070	Pediatric Education for Prehospital Providers	1
EMSV1100	Emergency Medical Technician - Basic	6
EMSV1105	Ambulance Operations	2
EMSV1110	Lifting Techniques for Health Professionals	1
EMSV1115	Passenger Assistant Technician	1
EMSV1120	Ambulance Clinical	2
EMSV1136	Understanding EKGs	2
EMSV1146	Medical Terminology for EMS/ER Personnel	3
EMSV1190	Intravenous (IV) Access	1
EMSV1195	International Trauma Life Support (ITLS)	1
EMSV1225	Advanced Cardiac Life Support (ACLS) for EMT	1

### General Education Required 3 Credits

COMM1250	Interpersonal Communication	3
	or	
COMM1260	Small Group Communication	3

### General Education Elective 0 Credits

### Technical Studies Elective 0 Credits

**Total Occupational Certificate Credits 28****Semester Sequence****First Semester**

EMSV1000	Introduction to EMS Systems	1
EMSV1050	Emergency Medical Responder (First Responder)	3
EMSV1146	Medical Terminology for EMS/ER Personnel	3
COMM1250	Interpersonal Communication or	3
COMM1260	Small Group Communication	3

**Total Credits 10****Second Semester**

EMSV1100	Emergency Medical Technician - Basic	6
EMSV1110	Lifting Techniques for Health Professionals	1
EMSV1115	Passenger Assistant Technician	1
EMSV1190	Intravenous (IV) Access	1

**Total Credits 9****Third Semester**

EMSV1070	Pediatric Education for Prehospital Providers Fall BPC or Spring EPC	1
EMSV1105	Ambulance Operations Fall EPC or Spring BPC	2
EMSV1120	Ambulance Clinical	2
EMSV1136	Understanding EKGs	2
EMSV1195	International Trauma Life Support (ITLS) Fall EPC or Spring BPC	1
EMSV1225	Advanced Cardiac Life Support (ACLS) for EMT Fall EPC or Spring BPC	1

**Total Credits 9****Graduation (28 Credits)**

Students must clear a criminal background study during the 1st Semester. Students must complete a mantoux TB skin test during the 1st Semester.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Emergency Medical Technician (BP/EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

The Emergency Medical Technician (EMT) Certificate provides entry-level job training for employment in a Basic Life Support (BLS) ambulance service or satisfies Fire and Police Department requirement for training at the Emergency Medical Technician (EMT) level. Included in the program is the opportunity for 10 patient contacts as required by the Minnesota EMS Regulatory Board. Areas covered include those identified in the National Emergency Medical Services Education Standards for Emergency Medical Responder and EMT. Cleared criminal background check and completed Mantoux skin test required for clinical training.

#### Award Outcomes

- Demonstrate his/her role and responsibilities as a member of the emergency medical team
- Apply emergency medical safety principles in the work place
- Apply critical thinking skills in care management
- Assess patient for traumatic injuries
- Assess patient for medical illnesses
- Demonstrate clear oral communications
- Exhibit personal, professional and academic ethics
- Apply quality improvement concepts
- Classify patient conditions for treatments needed
- Demonstrate effective treatment skills
- Demonstrate safe transport of patients
- Demonstrate skills for the National Registry of EMT's

#### Career Opportunities

The EMT Certificate prepares students for job opportunities as an EMT in a BLS medical transportation service or in an Advanced Life Support ambulance service that combines EMT's and paramedics. Many Fire and Police Departments require EMT certification as a job requirement. EMT's are also currently being hired as Emergency Room Technicians in hospitals across Minnesota and the US. The certificate meets prerequisites in course work for the EMS and ER Tech Certificates.

#### Program Requirements

##### Technical Studies Required 9 Credits

EMSV1050	Emergency Medical Responder (First Responder)	3
EMSV1100	Emergency Medical Technician - Basic	6

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 9

#### Semester Sequence

##### Prerequisite Semester

##### First Semester

##### Second Semester

##### Third Semester

##### Fourth Semester

## Emergency Room Technician (BP/EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

The Emergency Room Technician (ER Tech) Certification prepares you to be part of the health care team in an Emergency Department (ED) or Urgent Care setting. This certificate will enhance your job opportunities because of the knowledge and skills acquired in the classroom plus the supervised clinical in a metro hospital Emergency Department. Some of the courses and skills taught are EMT, administering a 12-lead EKG test, venipuncture techniques (blood drawing), splinting and casting, urinary catheterization, wound cleaning, IV set-up and proper lifting techniques. Cleared criminal background check and completed TB skin test required.

#### Award Outcomes

Demonstrate his/her role and responsibilities as a member of the emergency medical team  
 Apply emergency medical safety principles in the work place  
 Apply critical thinking skills in care management  
 Assess patient for traumatic injuries  
 Assess patient for medical illnesses  
 Demonstrate clear oral communications  
 Exhibit personal, professional and academic ethics  
 Apply quality improvement concepts  
 Classify patient conditions for treatments needed  
 Demonstrate effective treatment skills  
 Demonstrate safe transport of patients  
 Demonstrate skills for the National Registry of EMT's

#### Career Opportunities

The new ER Tech Certification provides a standard that Hospital ED's and Urgent Care Centers and clinics are seeking in this entry-level position for a health care career. This training and work experience will expose you and prepare you for other health care careers in hospitals and clinics.

### Program Requirements

#### Technical Studies Required 21 Credits

EMSV1050	Emergency Medical Responder (First Responder)	3
EMSV1100	Emergency Medical Technician - Basic	6
EMSV1110	Lifting Techniques for Health Professionals	1
EMSV1136	Understanding EKGs	2
EMSV1146	Medical Terminology for EMS/ER Personnel	3
EMSV1155	Phlebotomy Techniques	3
EMSV1170	ER Procedures and Clinical	3

#### General Education Required 3 Credits

COMM1250	Interpersonal Communication	3
	or	
COMM1260	Small Group Communication	3

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Occupational Certificate Credits 24

### Semester Sequence

#### First Semester

EMSV1050	Emergency Medical Responder (First Responder)	3
EMSV1146	Medical Terminology for EMS/ER Personnel	3

COMM1250	Interpersonal Communication	3
	or	
COMM1260	Small Group Communication	3

**Total Credits 9**

**Second Semester**

EMSV1100	Emergency Medical Technician - Basic	6
EMSV1155	Phlebotomy Techniques	3

**Total Credits 9**

**Third Semester**

EMSV1110	Lifting Techniques for Health Professionals	1
EMSV1136	Understanding EKGs	2
EMSV1170	ER Procedures and Clinical	3
	Offered Spring Only at BPC and EPC	

**Total Credits 6**

**Graduation (24 Credits)**

Students must clear a criminal background study during the 1st Semester.

Students must complete a mantoux TB skin test during the 1st Semester.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/7/2022 : BP 7212 / EP 7207

**Fire Protection**

## Emergency Management (EP) Associate in Applied Science

### Overview and Award Outcomes

#### Overview

The Associate in Applied Science Degree in Emergency Management is designed to prepare students to work as lead emergency managers in public and private organizations. Courses address the management principles, public policies and best practices that are essential for any emergency management professional. The interdisciplinary design of the degree allows students to become familiar with a wide range of industry partners and response organizations. Students prepare to lead people, organizations, and multi-agency groups by taking courses in writing, communication, management, finance, politics, justice, and critical thinking.

After completing this award, students will have completed the required prerequisite training for the Minnesota Emergency Manager and Critical Infrastructure Planner certifications through the Minnesota Department of Homeland Security and various prerequisites to attend training at the national level through the National Domestic Preparedness Consortium. Additionally, students who complete the Federal Emergency Management Agency's Professional Development Series will earn a certificate from FEMA.

#### Award Outcomes

Display a core understanding of emergency management theory and concepts  
 Identify the components of the incident management system and integrate into daily work assignments and emergency operations  
 Demonstrate principles and best practices in incident management  
 Explain the theory and history of critical infrastructure and homeland security and apply lessons learned to modern problems  
 Recognize the roles and interactions of public and private organizations in relation to emergency management and determine how they could be best utilized  
 Explain the unique and varying roles, training, subcultures, and historical development, of public safety agencies  
 Apply basic supervisory and management skills  
 Demonstrate effective oral and written communication  
 Use basic mathematical and calculations to create and complete financial documents

#### Career Opportunities

Graduates may find emergency manager positions within a variety of organizations in the public and private sectors. Potential careers include emergency manager, risk manager, disaster communications, business continuity, homeland security professional, search and rescue, firefighting, law enforcement, and training and exercise officer.

#### Program Requirements

##### Technical Studies Required 29 Credits

ACCT1000	Introduction to Accounting	3
BUSN2055	Principles of Management	4
EMSV1000	Introduction to EMS Systems	1
FRPT1137	Introduction to Fire and Emergency Services	3
FRPT1250	Incident Command for Emergency Services	3
FRPT1255	Introduction to Emergency Management	3
FRPT2250	Incident Command for Emergency Managers	3
FRPT2255	Introduction to Homeland Security	3
FRPT2260	Legal Aspects of Emergency Services	3
PWRK1001	Introduction to Public Works Employment	3

##### General Education Required 15 Credits

ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4

	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
POLI1000	Introduction to American Government and Politics	3
SOCI1500	Introduction to Criminal Justice	3
	Choose one course from MnTC Goal Area 2	3

**General Education Elective 0 Credits****Technical Studies Elective 16 Credits**

Any FRPT, LAWE, EMSV, or PWRK course that is not required for this award may be used as an elective.

**Total Associate in Applied Science Degree Credits 60****Semester Sequence****Offered at Eden Prairie Only****First Semester**

FRPT1137	Introduction to Fire and Emergency Services	3
FRPT1250	Incident Command for Emergency Services	3
PWRK1001	Introduction to Public Works Employment	3
ENGL1070	Technical Writing	3
ENGL1100	or Writing and Research	4
	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3

**Total Credits 15****Second Semester**

EMSV1000	Introduction to EMS Systems	1
FRPT2255	Introduction to Homeland Security	3
FRPT2260	Legal Aspects of Emergency Services	3
POLI1000	Introduction to American Government and Politics	3
	Technical Studies Electives	6

**Total Credits 16****Third Semester**

ACCT1000	Introduction to Accounting	3
BUSN2055	Principles of Management	4
FRPT1255	Introduction to Emergency Management	3
	Technical Studies Electives	5

**Total Credits 15****Fourth Semester**

FRPT2250	Incident Command for Emergency Managers	3
SOCI1500	Introduction to Criminal Justice	3

Choose one course from MnTC Goal Area 2	3
Technical Studies Electives	5

**Total Credits 14**

**Technical Studies Electives**

Any EMSV, FRPT, LAWE, or PWRK course that is not required for this award may be used as an elective.

**Choose a Total of: 16 Credits**

**Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

12/27/2022 : BP / EP 7423

## Fire Science (EP) Associate in Applied Science

### Overview and Award Outcomes

#### Overview

The Associate of Science in Fire Science degree provides an educational path for students interested in working in the fire industry and related fields. Students will learn the science behind fire prevention, growth, suppression, and control. Students will explore the unique history and culture of the fire service and fire protection fields. Case studies, after action reports, and professional organizations will be used to enhance learning, apply concepts, and analyze trends. This degree follows the U.S. Fire Administrations Fire and Emergency Services Higher Education (FESHE) standardized model for two-year degrees. By completing this degree students are prepared to progress in their careers or continue their education at a four-year institution. Ultimately, students in this program will be able to use the knowledge gained to make their organizations and communities a safer place.

Note: Initial firefighter training may be applied to the elective portion of this award. For students looking for initial firefighter training, the Initial Firefighter Certificate may be used towards the technical electives portion of this degree.

#### Award Outcomes

Illustrate the history and culture of the fire service

List the major organizations that provide emergency response service and how they interrelate

Identify fire protection and emergency-service careers in both the public and private sector

Describe building construction as it relates to firefighter safety, buildings codes, fire prevention, code inspection, firefighting strategy, and tactics

Explain the physical and chemical properties of fire

Discuss the factors that influence smoke and fire movement in a structure

Explain concepts of risk management and mitigation as it pertains to emergency services

Explain the role of fire prevention in accordance with the national fire problem

Define laws, rules, regulations, ordinances, and codes, as they relate to emergency services

Summarize the elements of public water supply systems as they relate to fire protections systems

Identify the different types and components of fire suppression systems

Demonstrate effective oral and written communication

#### Career Opportunities

Fire Science graduates may perform a variety of jobs in the fire protection family. Titles may include Firefighter, Driver Operator, Inspector or Fire Investigator. Higher level positions, requiring experience and exams, are Fire Marshal, Lieutenant, Captain, District Chief, Deputy Chief, Assistant Chief and Chief of Department.

#### Program Requirements

##### Technical Studies Required 21 Credits

FRPT1137	Introduction to Fire and Emergency Services	3
FRPT1156	Fire Protection Systems	3
FRPT1161	Building Construction for Emergency Services	3
FRPT1250	Incident Command for Emergency Services	3
FRPT1260	Fire Behavior and Combustion	3
FRPT1265	Principles of Emergency Services Safety and Survival	3
FRPT1270	Introduction to Fire Prevention	3

##### General Education Required 15 Credits

ENGL1070	Technical Writing or	3
ENGL1100	Writing and Research	4
	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3

	Choose one of the following:	
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
	One course from MnTC Goal Area 2	3
	Choose three credits from MnTC Goal Areas 3, 4, or 5	3
	Choose three credits from MnTC Goal Area 9	3
	Recommended:	
POLI1000	Introduction to American Government and Politics	3
SOCI1500	Introduction to Criminal Justice	3

### General Education Elective 0 Credits

### Technical Studies Elective 24 Credits

EMSV1000	Introduction to EMS Systems	1
EMSV1050	Emergency Medical Responder (First Responder)	3
EMSV1100	Emergency Medical Technician - Basic	6
EMSV1136	Understanding EKGs	2
EMSV1146	Medical Terminology for EMS/ER Personnel	3
EMSV1190	Intravenous (IV) Access	1
FRPT1101	Fire Fighter I	4
FRPT1105	Fire Fighter II	2
FRPT1126	Introduction to Fire Investigation	3
FRPT1166	Apparatus Operator	1
FRPT1176	Hazardous Materials First Responder Operational	2
FRPT1181	Hazardous Materials Technician	1
FRPT1255	Introduction to Emergency Management	3
FRPT1275	Introduction to Emergency Communication Systems	3
FRPT1280	Hazardous Materials Chemistry	3
FRPT1285	Fire Protection Hydraulics and Water Supply	2
FRPT1290	Emergency Services Instructor	4
FRPT2111	Strategy and Tactics	3
FRPT2121	Advanced Fire Investigation	3
FRPT2250	Incident Command for Emergency Managers	3
FRPT2260	Legal Aspects of Emergency Services	3
FRPT2265	Principles of Fire and Emergency Service Administration	3
FRPT2270	Fire and Life Safety Education	4
FRPT2275	Fire Inspection and Code Enforcement	3
FRPT2280	Emergency Services Internship	1

### Total Associate in Applied Science Degree Credits 60

### Semester Sequence

#### Offered at Eden Prairie Only

#### First Semester

FRPT1137	Introduction to Fire and Emergency Services	3
FRPT1161	Building Construction for Emergency Services	3
FRPT1250	Incident Command for Emergency Services	3
FRPT1265	Principles of Emergency Services Safety and Survival	3

ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4

**Total Credits 15****Second Semester**

	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
	Technical Studies Electives	12
	Recommended:	
FRPT1126	Introduction to Fire Investigation	3

**Total Credits 15****Third Semester**

FRPT1156	Fire Protection Systems	3
FRPT1260	Fire Behavior and Combustion	3
FRPT1270	Introduction to Fire Prevention	3
	Choose three credits from MnTC Goal Areas 3, 4, or 5	3
	Technical Studies Electives	3

**Total Credits 15****Fourth Semester**

	Choose one of the following:	
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
	One course from MnTC Goal Area 2	3
	Choose 3 credits from MnTC Goal Area 9	3
	Recommended:	
POLI1000	Introduction to American Government and Politics	3
SOCI1500	Introduction to Criminal Justice	3
	Technical Studies Electives	9

**Total Credits 15****MnTC Goal Area 3**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
CHEM1000	Introduction to Chemistry	4
CHEM1100	General, Organic, and Biological Chemistry Foundations	4
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3

PHYS2005	College Physics I	4
PHYS2010	College Physics II	4
<b>MnTC Goal Area 4</b>		
MATH1150	Applications of Quantitative Reasoning	3
MATH1250	Introduction to Statistics	3
MATH1400	College Algebra	4
PHIL1000	Introduction to Logic	3
<b>MnTC Goal Area 5</b>		
ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3
<b>MnTC Goal Area 9</b>		
ARTS1005	Art and Social Justice	3
BIOL1300	Introduction to Forensic Science	3
ECON1200	Principles of Microeconomics	3
PHIL1200	Ethics	3
PHIL1400	Medical Ethics	4
PHIL1600	Environmental Ethics	3
POLI1000	Introduction to American Government and Politics	3
SOCI1500	Introduction to Criminal Justice	3
<b>Technical Studies Electives</b>		
Recommended:		
EMSV1000	Introduction to EMS Systems	1
EMSV1050	Emergency Medical Responder (First Responder)	3
EMSV1100	Emergency Medical Technician - Basic	6
EMSV1136	Understanding EKGs	2
EMSV1146	Medical Terminology for EMS/ER Personnel	3
EMSV1190	Intravenous (IV) Access	1
FRPT1061	Occupational Safety and Health for Emergency Services	3
FRPT1101	Fire Fighter I	4
FRPT1105	Fire Fighter II	2
FRPT1126	Introduction to Fire Investigation	3
FRPT1166	Apparatus Operator	1
FRPT1176	Hazardous Materials First Responder Operational	2
FRPT1181	Hazardous Materials Technician	1
FRPT1255	Introduction to Emergency Management	3
FRPT1275	Introduction to Emergency Communication Systems	3
FRPT1280	Hazardous Materials Chemistry	3
FRPT1285	Fire Protection Hydraulics and Water Supply	2
FRPT1290	Emergency Services Instructor	4
FRPT2111	Strategy and Tactics	3
FRPT2121	Advanced Fire Investigation	3
FRPT2250	Incident Command for Emergency Managers	3

FRPT2255	Introduction to Homeland Security	3
FRPT2260	Legal Aspects of Emergency Services	3
FRPT2265	Principles of Fire and Emergency Service Administration	3
FRPT2270	Fire and Life Safety Education	4
FRPT2275	Fire Inspection and Code Enforcement	3
FRPT2280	Emergency Services Internship	1

**Choose a Total of: 24 Credits**

**Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice. This listing is to be used strictly as an advising tool.

5/24/2022 : BP / EP 7421

## Fire Rescue (EP) Associate in Applied Science

### Overview and Award Outcomes

#### Overview

The Fire Rescue Associate in Applied Science degree prepares students to perform the duties of a modern firefighter in busy departments where most calls are of a medical nature. The degree requirements also provide advancement opportunities, prepare students to take promotional exams, and allow flexibility for students to earn a specialty certificate as part of their electives.

Student must be 18 years of age or meet the requirements for eligibility under Hennepin Technical College's Post-Secondary Enrollment Options (PSEO) standards.

#### Award Outcomes

Identify the dangers associated with various emergency situations and apply the proper safety procedures for responders and the public

Demonstrate firefighting and hazardous materials response skills

Utilize personnel, apparatus, equipment, and extinguishing agents on the fire ground

Identify and apply the components of the incident management system

Function as an emergency medical technician at emergency scenes and integrate with other medical providers as part of the larger emergency medical services system

Demonstrate the ability to comprehend, apply, and evaluate clinical information relevant to the role of EMS

Demonstrate technical proficiency in all skills necessary to fulfill the role as an EMS provider

Demonstrate effective oral and written communication

#### Career Opportunities

Fire Science graduates may perform a variety of jobs in the fire protection family. Titles may include Firefighter, Driver Operator, Inspector or Fire Investigator. Higher level positions, requiring experience and exams, are Fire Marshal, Lieutenant, Captain, District Chief, Deputy Chief, Assistant Chief and Chief of Department. The medical focus of this degree allows students to work in various emergency medical positions in such places as emergency rooms, special events, or ambulance services.

#### Program Requirements

##### Technical Studies Required 26 Credits

EMSV1050	Emergency Medical Responder (First Responder)	3
EMSV1100	Emergency Medical Technician - Basic	6
EMSV1136	Understanding EKGs	2
EMSV1146	Medical Terminology for EMS/ER Personnel	3
EMSV1190	Intravenous (IV) Access	1
FRPT1101	Fire Fighter I	4
FRPT1105	Fire Fighter II	2
FRPT1176	Hazardous Materials First Responder Operational	2
FRPT1250	Incident Command for Emergency Services	3

##### General Education Required 15 Credits

ENGL1070	Technical Writing or	3
ENGL1100	Writing and Research	4
	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3

	Choose one course from MnTC Goal Area 2	3
BIOL1100	Recommended: Nutrition and Health	3
	Choose one course from MnTC Goal Area 3, 4, or 5	3
BIOL2125	Recommended: Anatomy and Physiology I	4
	Choose one course from MnTC Goal Area 9	3
PHIL1400	Recommended: Medical Ethics	4

**General Education Elective 0 Credits****Technical Studies Elective 19 Credits**

Any FRPT or EMSV course that is not required for this award may be used as an elective.

**Total Associate in Applied Science Degree Credits 60****Semester Sequence****Offered at Eden Prairie Only****First Semester**

EMSV1050	Emergency Medical Responder (First Responder)	3
FRPT1101	Fire Fighter I	4
FRPT1105	Fire Fighter II	2
FRPT1176	Hazardous Materials First Responder Operational	2
FRPT1250	Incident Command for Emergency Services	3
	Technical Studies Electives	3

**Total Credits 17****Second Semester**

EMSV1100	Emergency Medical Technician - Basic	6
EMSV1146	Medical Terminology for EMS/ER Personnel	3
EMSV1190	Intravenous (IV) Access	1
COMM1250	Interpersonal Communication	3
	or	
COMM1260	Small Group Communication	3
	or	
COMM1280	Public Speaking	3
	Choose one course from MnTC Goal Area 2	3
BIOL1100	Recommended: Nutrition and Health	3

**Total Credits 16****Summer Semester**

ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
	Technical Studies Electives	3

**Total Credits 6****Third Semester**

EMSV1136	Understanding EKGs	2
	Choose one course from MnTC Goal Area 3, 4, or 5	3
BIOL2125	Recommended: Anatomy and Physiology I	4
	Technical Studies Electives	6

**Total Credits 11****Fourth Semester**

	Choose one course from MnTC Goal Area 9	3
PHIL1400	Recommended: Medical Ethics	4
	Technical Studies Electives	7

**Total Credits 10****Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice. This listing is to be used strictly as an advising tool.

12/31/2022 : BP / EP 7425

## Company Officer (EP) Diploma

### Overview and Award Outcomes

#### Overview

This diploma prepares firefighters to be able to perform the duties of a company officer. This will include the areas of basic management, tactics, inspection, fire investigation and incident management which meet the requirements of NFPA 1021.

#### Award Outcomes

Perform the required duties of a fire company officer

Identify the dangers associated with various emergency situations and apply the proper safety procedures for responders and the public

Describe the legal and regulatory duties and responsibilities of the fire department as a public organization

Interpret professionally recognized standards, rules, and behaviors and apply them to fire department operations

Be able to integrate the incident command system and its component parts into daily work assignments and all emergency response settings

Demonstrate knowledge of fire ground strategy and tactics

Demonstrate effective oral and written communication

#### Career Opportunities

Firefighters who complete this certificate are qualified to perform company officer duties.

#### Program Requirements

##### Technical Studies Required 25 Credits

FRPT1126	Introduction to Fire Investigation	3
FRPT1250	Incident Command for Emergency Services	3
FRPT1265	Principles of Emergency Services Safety and Survival	3
FRPT1270	Introduction to Fire Prevention	3
FRPT1290	Emergency Services Instructor	4
FRPT2111	Strategy and Tactics	3
FRPT2260	Legal Aspects of Emergency Services	3
FRPT2265	Principles of Fire and Emergency Service Administration	3

##### General Education Required 6 Credits

ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Diploma Credits 31

##### Semester Sequence

##### Offered at Eden Prairie Only

##### First Semester

FRPT1250	Incident Command for Emergency Services	3
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FRPT1265	Principles of Emergency Services Safety and Survival	3
FRPT1270	Introduction to Fire Prevention	3
FRPT2260	Legal Aspects of Emergency Services	3
ENGL1070	Technical Writing or	3
ENGL1100	Writing and Research	4

**Total Credits 15****Second Semester**

FRPT1126	Introduction to Fire Investigation	3
FRPT1290	Emergency Services Instructor	4
FRPT2111	Strategy and Tactics	3
FRPT2265	Principles of Fire and Emergency Service Administration	3
	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3

**Total Credits 16****Graduation (31 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Professional Emergency Manager (EP) Diploma

### Overview and Award Outcomes

#### Overview

The Professional Emergency Manager Diploma encompasses the foundational knowledge necessary for the student to address successfully the threats or hazards facing organizations today. Students examine issues that arise prior to, during, and after a disaster or emergency and develop disaster relief plans for local, municipal, and government agencies. This award builds on foundational knowledge by exploring the different branches of the emergency services field and prepares students to take on additional responsibilities by providing education in management, finance, writing, and oral communications.

After completing this award, students will have completed the required prerequisite training for the Minnesota Emergency Manager and Critical Infrastructure Planner certifications through the Minnesota Department of Homeland Security and various prerequisites to attend training at the national level through the National Domestic Preparedness Consortium. Additionally, students who complete the Federal Emergency Management Agency's Professional Development Series will earn a certificate from FEMA.

#### Award Outcomes

Display a core understanding of emergency management theory and concepts  
 Identify the components of the incident management system and integrate into daily work assignments and emergency operations  
 Demonstrate principles and best practices in incident management  
 Explain the theory and history of critical infrastructure and homeland security and apply lessons learned to modern problems  
 Recognize the roles and interactions of public and private organizations in relation to emergency management and determine how they could be best utilized  
 Explain the unique and varying roles, training, subcultures, and historical development, of public safety agencies  
 Apply basic supervisory and management skills  
 Demonstrate effective oral and written communication  
 Use basic mathematical and calculations to create and complete financial documents

#### Career Opportunities

Students who complete this diploma will have the knowledge and skills necessary to seek promotion or serve as a professional emergency manager within a variety of organizations in the public and private sectors. Potential careers include emergency manager, risk manager, disaster communications, business continuity, homeland security professional, search and rescue, firefighting, law enforcement, and training and exercise officer.

#### Program Requirements

##### Technical Studies Required 29 Credits

ACCT1000	Introduction to Accounting	3
BUSN2055	Principles of Management	4
EMSV1000	Introduction to EMS Systems	1
FRPT1137	Introduction to Fire and Emergency Services	3
FRPT1250	Incident Command for Emergency Services	3
FRPT1255	Introduction to Emergency Management	3
FRPT2250	Incident Command for Emergency Managers	3
FRPT2255	Introduction to Homeland Security	3
FRPT2260	Legal Aspects of Emergency Services	3
PWRK1001	Introduction to Public Works Employment	3

##### General Education Required 12 Credits

ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
	Choose one of the following:	
COMM1250	Interpersonal Communication	3

COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
POLI1000	Introduction to American Government and Politics	3
SOCI1500	Introduction to Criminal Justice	3

**General Education Elective 0 Credits****Technical Studies Elective 0 Credits****Total Diploma Credits 41****Semester Sequence****Offered at Eden Prairie Only****First Semester**

FRPT1137	Introduction to Fire and Emergency Services	3
FRPT1250	Incident Command for Emergency Services	3
FRPT1255	Introduction to Emergency Management	3
FRPT2250	Incident Command for Emergency Managers	3
ENGL1070	Technical Writing	3
ENGL1100	or Writing and Research	4

**Total Credits 15****Second Semester**

BUSN2055	Principles of Management	4
EMSV1000	Introduction to EMS Systems	1
FRPT2255	Introduction to Homeland Security	3
FRPT2260	Legal Aspects of Emergency Services	3
	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3

**Total Credits 14****Third Semester**

ACCT1000	Introduction to Accounting	3
PWRK1001	Introduction to Public Works Employment	3
POLI1000	Introduction to American Government and Politics	3
SOCI1500	Introduction to Criminal Justice	3

**Total Credits 12****Graduation (41 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Professional Firefighter (EP) Diploma

### Overview and Award Outcomes

#### Overview

The Professional Firefighter diploma is designed to provide students an academic path of study to progress in their chosen field. This award expands on the initial firefighter training with apparatus operations and Emergency Medical Technician. By integrating the fire science component students will examine how to improve themselves, their organization, and their communities through topics such as health and safety, fire prevention, building construction, and fire protection systems. Students will also have the opportunity to learn more about the history and culture of the fire service including where it came from, when and how it has changed, why it changed, and where it is going.

#### Award Outcomes

Identify the dangers associated with various emergency situations and apply the proper safety procedures for responders and the public

Demonstrate firefighting and hazardous materials response skills

Utilize personnel, apparatus, equipment, and extinguishing agents on the fire ground

Apply knowledge of hydraulic principles for water supply and fire suppression

Identify and differentiate the various forms and stages of fire and correlate appropriate prevention, mitigation, and response strategies

Identify and apply the components of the incident management system

Describe the historical development of fire protection and response from its origins through contemporary times

Describe the legal and regulatory duties and responsibilities of the fire department as a public organization

Identify various classifications of building construction and how each is impacted by fire

Interpret professionally recognized standards, rules, and behaviors and apply them to fire department operations

Function as an emergency medical technician at emergency scenes and integrate with other medical providers as part of the larger emergency medical services system

Demonstrate effective oral and written communication

#### Career Opportunities

Students who complete this diploma will have the knowledge and skills necessary to serve as a lead firefighter, apparatus operator, and apply for promotional opportunities.

#### Program Requirements

##### Technical Studies Required 41 Credits

EMSV1050	Emergency Medical Responder (First Responder)	3
EMSV1100	Emergency Medical Technician - Basic	6
FRPT1101	Fire Fighter I	4
FRPT1105	Fire Fighter II	2
FRPT1137	Introduction to Fire and Emergency Services	3
FRPT1156	Fire Protection Systems	3
FRPT1161	Building Construction for Emergency Services	3
FRPT1166	Apparatus Operator	1
FRPT1176	Hazardous Materials First Responder Operational	2
FRPT1250	Incident Command for Emergency Services	3
FRPT1260	Fire Behavior and Combustion	3
FRPT1265	Principles of Emergency Services Safety and Survival	3
FRPT1270	Introduction to Fire Prevention	3
FRPT1285	Fire Protection Hydraulics and Water Supply	2

##### General Education Required 6 Credits

ENGL1070	Technical Writing or	3
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ENGL1100	Writing and Research	4
	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3

**General Education Elective 0 Credits****Technical Studies Elective 0 Credits****Total Diploma Credits 47****Semester Sequence****Offered at Eden Prairie Only****First Semester**

EMSV1050	Emergency Medical Responder (First Responder)	3
FRPT1101	Fire Fighter I	4
FRPT1105	Fire Fighter II	2
FRPT1166	Apparatus Operator	1
FRPT1176	Hazardous Materials First Responder Operational	2
FRPT1250	Incident Command for Emergency Services	3
FRPT1270	Introduction to Fire Prevention	3

**Total Credits 18****Second Semester**

EMSV1100	Emergency Medical Technician - Basic	6
COMM1250	Interpersonal Communication	3
	or	
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
	or	
ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4

**Total Credits 12****Third Semester**

FRPT1137	Introduction to Fire and Emergency Services	3
FRPT1156	Fire Protection Systems	3
FRPT1161	Building Construction for Emergency Services	3
FRPT1260	Fire Behavior and Combustion	3
FRPT1265	Principles of Emergency Services Safety and Survival	3
FRPT1285	Fire Protection Hydraulics and Water Supply	2

**Total Credits 17****Graduation (44 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Emergency Services Training Officer (EP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

This certificate is designed to provide individuals with some of the advanced skills necessary to oversee a classroom or practical setting. Student will learn the role of the instructor, to identify various learning styles, plan a lesson, develop instructional materials, and evaluate student learning. Courses will teach students to apply these concepts when providing instruction to diverse groups and organizations. Students will be certified as American Heart Association BLS Instructors and courses follow the DOT/NHTSA National Guidelines for Education of EMS Instructors as well as NFPA 1041 Standard for Fire and Emergency Services Instructor.

#### Award Outcomes

Function as an emergency medical technician at emergency scenes and integrate with other medical providers as part of the larger emergency medical services system  
 Identify various elements, methods and resources of effective teaching and learning and utilize them in planning and delivering instruction  
 Interpret professionally recognized standards, rules, and behaviors as they relate to emergency services and education  
 Establish, implement, and maintain life safety education and youth fire setting prevention programs

#### Career Opportunities

This certificate prepares students to specialize their work in organizations providing education and training. Students will be able to provide medical training and continuing education up to EMT. Titles may include Firefighter, Fire Officer, EMS Instructor, Fire Instructor, Academy Cadre, Public Safety Education Specialist, Professional Trainer, Manager, CPR Instructor, or Training Officer. Students may use this certificate to advance to even higher positions such as a chief of training.

#### Program Requirements

##### Technical Studies Required 21 Credits

EMSV1050	Emergency Medical Responder (First Responder)	3
EMSV1100	Emergency Medical Technician - Basic	6
EMSV1140	CPR Instructor	1
FRPT1250	Incident Command for Emergency Services	3
FRPT1290	Emergency Services Instructor	4
FRPT2270	Fire and Life Safety Education	4

##### General Education Required 3 Credits

	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Advanced Technical Certificate Credits 24

#### Semester Sequence

##### Offered at Eden Prairie Only

##### First Semester

EMSV1050	Emergency Medical Responder (First Responder)	3
FRPT1250	Incident Command for Emergency Services	3

	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3

**Total Credits 9****Second Semester**

EMSV1100	Emergency Medical Technician - Basic	6
EMSV1140	CPR Instructor	1
FRPT1290	Emergency Services Instructor	4
FRPT2270	Fire and Life Safety Education	4

**Total Credits 15****Graduation (24 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

12/27/2022 : BP / EP 7435

## Fire Investigation (EP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

The Fire Investigation certificate includes training in various categories of fire hazards, fuel and oxygen supply, hazards, and analysis and identification of heat sources. Topics including the cause and origin of fires, fire chemistry, fire behavior, structural fire patterns, signs of arson, and roles and responsibilities of involved parties will be covered. This certificate will also include the study of building construction and its effects on fire conditions, address speaking to the public and interviewing parties, and how to professionally document fire scenes. This certificate will assist established career, industrial fire protection, paid-on-call, or volunteer firefighters and emergency service personnel in promotional and career opportunities.

#### Award Outcomes

Perform the duties of a fire investigator

Demonstrate an understanding of the impact of fire growth and development on fire investigations

Explain the interaction between public safety organizations, the courts, corrections, and the community in the legal process

Identify, collect, transport, preserve, and explain the evidentiary value of physical evidence

Establish, implement, and maintain life safety education and youth fire setting prevention programs

#### Career Opportunities

Completion of this certificate provides the firefighters, building officials, insurance personnel, electrical engineers and lawyers the knowledge needed to perform fire investigations.

#### Program Requirements

##### Technical Studies Required 19 Credits

FRPT1126	Introduction to Fire Investigation	3
FRPT1161	Building Construction for Emergency Services	3
FRPT1260	Fire Behavior and Combustion	3
FRPT2121	Advanced Fire Investigation	3
FRPT2260	Legal Aspects of Emergency Services	3
FRPT2270	Fire and Life Safety Education	4

##### General Education Required 6 Credits

BIOL1300	Introduction to Forensic Science	3
SOCI1500	Introduction to Criminal Justice	3

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Advanced Technical Certificate Credits 25

#### Semester Sequence

##### Offered at Eden Prairie Only

##### First Semester

FRPT1126	Introduction to Fire Investigation	3
FRPT1161	Building Construction for Emergency Services	3
FRPT1260	Fire Behavior and Combustion	3
BIOL1300	Introduction to Forensic Science	3

##### Total Credits 12

##### Second Semester

FRPT2121	Advanced Fire Investigation	3
FRPT2260	Legal Aspects of Emergency Services	3

FRPT2270	Fire and Life Safety Education	4
SOCI1500	Introduction to Criminal Justice	3

**Total Credits 13****Graduation (25 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

12/27/2022 : BP / EP 7437

## Fire Prevention and Inspection (EP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

The Fire Prevention and Inspection certificate provides students with the knowledge necessary to conduct fire prevention and inspection activities within the fire protection community and related industries. These roles may be additional duties for firefighters, stand-alone positions, or promotional opportunities. This certificate provides the knowledge and skills often required for hiring or promotional consideration. Students will study a wide variety of topics including; fire prevention and safety, public education, building construction, building and fire codes, and fire characteristics.

#### Award Outcomes

Perform fire prevention, inspection, and public education activities

Identify the various forms and stages of fire and correlate appropriate prevention, mitigation, and response strategies

Demonstrate knowledge of building and fire codes

Utilize knowledge of building construction principles, fire protection systems and fire prevention codes to affect a safe community

Establish, implement, and maintain life safety education and youth fire setting prevention programs

#### Career Opportunities

Completion of this certificate provides the firefighters, building officials, insurance personnel, electrical engineers and lawyers the knowledge needed to perform fire prevention and inspection work.

#### Program Requirements

##### Technical Studies Required 16 Credits

FRPT1156	Fire Protection Systems	3
FRPT1161	Building Construction for Emergency Services	3
FRPT1270	Introduction to Fire Prevention	3
FRPT2270	Fire and Life Safety Education	4
FRPT2275	Fire Inspection and Code Enforcement	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Advanced Technical Certificate Credits 16

#### Semester Sequence

##### Offered at Eden Prairie Only

##### First Semester

FRPT1156	Fire Protection Systems	3
FRPT1161	Building Construction for Emergency Services	3
FRPT1270	Introduction to Fire Prevention	3

##### Total Credits 9

##### Second Semester

FRPT2270	Fire and Life Safety Education	4
FRPT2275	Fire Inspection and Code Enforcement	3

##### Total Credits 7

#### Graduation (16 Credits)

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is

subject to change without notice.

12/27/2022 : BP / EP 7439

## Hazardous Materials Management (EP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

This certificate prepares students, their fellow responders and the public from exposure in a hazardous materials incident. Students will learn how to identify the presence of hazardous materials, the proper protective clothing to use, how to decontaminate properly, how to establish an Incident Command System and the proper standard operating procedures to maintain safety at the incident scene. Students will also learn physical prevention, response, and mitigation measures.

#### Award Outcomes

Integrate the incident command system and its component parts into daily work assignments and emergency response settings  
 Use the nationally recognized standards and behaviors for the response to hazardous materials releases and emergencies  
 Identify the dangers associated with various hazardous materials and apply the proper safety measures for responders and the public  
 Categorize the chemical/physical properties of hazardous materials

#### Career Opportunities

First responders serving on hazardous material response teams, safety directors, supervisors, management, environmental technicians, people involved in the care, transport and clean-up of hazardous materials, emergency response teams, and regulatory personnel.

#### Program Requirements

##### Technical Studies Required 15 Credits

FRPT1061	Occupational Safety and Health for Emergency Services	3
FRPT1176	Hazardous Materials First Responder Operational	2
FRPT1181	Hazardous Materials Technician	1
FRPT1250	Incident Command for Emergency Services	3
FRPT1265	Principles of Emergency Services Safety and Survival	3
FRPT1280	Hazardous Materials Chemistry	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 1 Credit

Any FRPT, EMSV, LAWE, or PWRK course that is not required for this award may be used as an elective.

##### Total Advanced Technical Certificate Credits 16

#### Semester Sequence

##### Offered at Eden Prairie Only

##### First Semester

FRPT1176	Hazardous Materials First Responder Operational	2
FRPT1250	Incident Command for Emergency Services	3
FRPT1265	Principles of Emergency Services Safety and Survival	3

**Total Credits 8****Second Semester**

FRPT1061	Occupational Safety and Health for Emergency Services	3
FRPT1181	Hazardous Materials Technician	1
FRPT1280	Hazardous Materials Chemistry	3

**Total Credits 8****Graduation (16 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

12/27/2022 : BP / EP 7445

## Dispatching Concepts (EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

This certificate is designed to prepare students for a career as an emergency dispatcher. The certificate will introduce students to all the different segments of public safety and the needs of each as it relates to communication. It will introduce the students to the knowledge, skills, and abilities needed to serve as a dispatcher. Students will be introduced to the types of technology that they will encounter in their careers.

#### Award Outcomes

Demonstrate the critical thinking, problem solving and communication skills necessary to be a successful dispatcher  
 Identify the components of the incident management system and integrate into daily work assignments  
 Define the duties of a public safety dispatcher and explain the vital role dispatchers have in emergency response  
 Explain the unique and varying roles, training, subcultures, and historical development, of public safety agencies  
 Determine the appropriate public service entity to respond to specific emergencies and what information would be needed for a safe and efficient response

#### Career Opportunities

The student will have the required knowledge and skills to be employed as an entry level 911 Dispatcher, Call Taker, Communications Officer, Communications Operator, Communications Specialist, Medical Dispatcher, Emergency Communications Operator (ECO), Police Dispatcher, Public Safety Dispatcher, or Telecommunicator throughout Minnesota and on a national level.

#### Program Requirements

##### Technical Studies Required 9 Credits

FRPT1137	Introduction to Fire and Emergency Services	3
FRPT1250	Incident Command for Emergency Services	3
FRPT1275	Introduction to Emergency Communication Systems	3

##### General Education Required 6 Credits

COMM1250	Interpersonal Communication	3
SOCI1500	Introduction to Criminal Justice	3

##### General Education Elective 0 Credits

##### Technical Studies Elective 1 Credit

	Choose one of the following:	
EMSV1000	Introduction to EMS Systems	1
EMSV1050	Emergency Medical Responder (First Responder)	3
EMSV1100	Emergency Medical Technician - Basic	6

#### Total Occupational Certificate Credits 16

#### Semester Sequence

##### Offered at Eden Prairie Only

##### First Semester

FRPT1137	Introduction to Fire and Emergency Services	3
FRPT1250	Incident Command for Emergency Services	3
COMM1250	Interpersonal Communication	3

**Total Credits 9****Second Semester**

FRPT1275	Introduction to Emergency Communication Systems	3
SOCI1500	Introduction to Criminal Justice	3
	Choose one of the following:	
EMSV1000	Introduction to EMS Systems	1
EMSV1050	Emergency Medical Responder (First Responder)	3
EMSV1100	Emergency Medical Technician - Basic	6

**Total Credits 7****Graduation (16 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

12/27/2022 : BP / EP 7445

## Emergency Management Principles (EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

The Emergency Management Principles Certificate encompasses the foundational knowledge necessary for the student to address successfully the threats or hazards facing organizations today. Students within the certificate examine issues that arise prior to, during, and after a disaster or emergency and develop disaster relief plans for local, municipal, and government agencies. This program is designed for students seeking entry-level exposure to the emergency management field, as well as for professionals in industries such as fire science, homeland security, and emergency response administration who are seeking to bolster their emergency management background.

After successfully completing this award, students will have completed the required prerequisite training for the Minnesota Emergency Manager and Critical Infrastructure Planner certifications through the Minnesota Department of Homeland Security and various prerequisites to attend training at the national level through the National Domestic Preparedness Consortium. Additionally, students who complete the Federal Emergency Management Agency's Professional Development Series will earn a certificate from FEMA.

#### Award Outcomes

Display a core understanding of emergency management theory and concepts  
 Identify the components of the incident management system and integrate into daily work assignments and emergency operations  
 Demonstrate principles and best practices in incident management  
 Explain the theory and history of critical infrastructure and homeland security and apply lessons learned to modern problem

#### Career Opportunities

The student will have baseline knowledge to be employed in an entry level role as an emergency manager within public and private organizations.

#### Program Requirements

##### Technical Studies Required 12 Credits

FRPT1250	Incident Command for Emergency Services	3
FRPT1255	Introduction to Emergency Management	3
FRPT2250	Incident Command for Emergency Managers	3
FRPT2255	Introduction to Homeland Security	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 4 Credits

Any FRPT, EMSV, LAWE, or PWRK course that is not required for this award may be used as an elective.

##### Total Occupational Certificate Credits 16

#### Semester Sequence

##### Offered at Eden Prairie Only

##### First Semester

FRPT1250	Incident Command for Emergency Services	3
FRPT1255	Introduction to Emergency Management	3
	Technical Studies Electives	2

##### Total Credits 8

##### Second Semester

FRPT2250	Incident Command for Emergency Managers	3
FRPT2255	Introduction to Homeland Security	3
	Technical Studies Electives	2

**Total Credits 8****Technical Studies Electives**

Any EMSV, FRPT, LAWE, or PWRK course that is not required for this award may be used as an elective.

**Choose a Total of: 4 Credits****Graduation (16 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

12/27/2022 : BP / EP 7433

## Initial Firefighter (EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

This certificate will provide the student with the minimum required entry level skills to become employed as a firefighter. Students learn firefighter techniques, apparatus operations, company functions, hazardous materials functions and emergency medical procedures. Team work is emphasized throughout the program.

The courses meet the National Fire Protection Associations standard 1001 for entry level firefighter. Completion of this certificate will make the student eligible to take the Minnesota Fire Service Certification Board exams for certification at the Firefighter 1 and 2 certification levels.

Student must be 18 years of age or meet the requirements for eligibility under Hennepin Technical College's Post-Secondary Enrollment Options (PSEO) standards.

#### Award Outcomes

Identify the dangers associated with various emergency situations and apply the proper safety procedures for responders and the public

Demonstrate firefighting and hazardous materials response skills

Utilize personnel, apparatus, equipment, and extinguishing agents on the fire ground

Identify and apply the components of the incident management system

Function as an emergency medical responder at emergency scenes and integrate with other medical providers as part of the larger emergency medical services system

#### Career Opportunities

This certificate completes the minimum job entry requirements as a firefighter for most fire departments. Note that while Emergency Medical Response may be the minimum standard of medical training for some departments, many departments require the next higher level of medical certification as an Emergency Medical Technician.

#### Program Requirements

##### Technical Studies Required 14 Credits

EMSV1050	Emergency Medical Responder (First Responder)	3
FRPT1101	Fire Fighter I	4
FRPT1105	Fire Fighter II	2
FRPT1176	Hazardous Materials First Responder Operational	2
FRPT1250	Incident Command for Emergency Services	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 2 Credits

Any FRPT or EMSV course that is not required for this award may be used as an elective.

##### Total Occupational Certificate Credits 16

#### Semester Sequence

##### Offered at Eden Prairie Only

##### First Semester

EMSV1050	Emergency Medical Responder (First	3
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	Responder)	
FRPT1101	Fire Fighter I	4
FRPT1105	Fire Fighter II	2
FRPT1176	Hazardous Materials First Responder	2
	Operational	
FRPT1250	Incident Command for Emergency Services	3
	Technical Studies Electives	2

**Total Credits 16****Technical Studies Electives**

Any FRPT or EMSV course that is not required for this award may be used as an elective.

**Choose a Total of: 2 Credits****Graduation (16 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

12/27/2022 : BP / EP 7443

**Law Enforcement**

## Peace Officer and Public Safety (BP) Associate of Science Degree

### Overview and Award Outcomes

#### Overview

Hennepin Technical College's Peace Officer and Public Safety A.S. Degree focuses on cultural competency as essential for police officers to build mutual trust and respect with communities of diverse backgrounds and cultural differences. Embedded throughout the curriculum are learning objectives that will increase the student's ability to interact effectively with people of diverse backgrounds. The Peace Officer and Public Safety curriculum will include HTC Learner Outcomes critical thinking and problem solving, and oral and written communication skills, as well as HTC Learner Values cultural and global awareness, and ethical and social responsibility. Future employers will value Hennepin Technical College Peace Officer and Public Safety graduates for their knowledge and experience with diverse communities and the various populations within those communities, their strong tactical skills, and exceptional interpersonal communication and critical thinking skills.

Hennepin Technical College is certified as a Professional Peace Officer Education (PPOE) program. The Peace Officer and Public Safety A.S. degree program is a Minnesota Board of Peace Officers Standards and Training (POST) approved program and upon completion of the A.S. degree provides students the opportunity to take the POST eligibility test for licensure.

#### Award Outcomes

Demonstrate the skills required to perform the duties of a peace officer  
 Develop capacity for self-awareness, empathy, and compassion in conflict management and de-escalation situations specifically with diverse communities  
 Recognize baseline levels of understanding of individual cultural competencies  
 Identify implicit biases and how bias affects critical thinking in crisis intervention situations specifically with diverse communities  
 Recognize the beliefs, practices, and needs of diverse communities during community contact, arrests and high-stress situations  
 Demonstrate an ability to adapt to the needs of diverse communities during public contact, arrests and high-stress situations  
 Communicate effectively with diverse communities  
 Composing accurate and detailed police reports  
 Communicating effectively with victims, witnesses, and suspects from diverse communities  
 Explain core ethical principles  
 Identifying best practices regarding physical fitness and mental health for peace officers  
 Explaining the differences between the adult and juvenile justice system  
 Explaining the evolution of interaction between law enforcement and society  
 Explaining how the U.S. Constitution, Bill of Rights, additional Constitutional Amendments, and State Constitutions protect citizens and the effects on law enforcement policies and procedures  
 Identifying local, state, tribal, and federal laws  
 Explaining implicit bias, procedural justice, and de-escalation  
 Explaining the historical evolution of police and the criminal justice system

#### Career Opportunities

Upon successful completion of the Associates of Science degree and passing the POST licensure test, individuals can seek employment as a peace officer with any local, county, or state agency.

#### Program Requirements

##### Technical Studies Required 37 Credits

EMSV1050	Core Courses Emergency Medical Responder (First Responder)	3
LAW1200	Equity in Policing	3
LAW1205	Physical Fitness for Peace Officers	1
LAW2225	Criminal Investigation	3
LAW2230	Legal Issues	3
LAW2231	MN Criminal and Traffic Codes	3
LAW2235	Police Report Writing/Interview	2
LAW2241	Crisis Intervention and Human Behavior	3

LAW2265	Ethics and Communications	3
LAW2325	Capstone	1
	Skills	
LAW2262	In Progress Response	3
LAW2276	Traffic	2
LAW2281	Defensive Tactics	3
LAW2285	Crime Scene and Evidence	1
LAW2291	Firearms	3
LAW2300	Tactical Driving for Law Enforcement Students	0

**General Education Required 31 Credits**

COMM1250	Interpersonal Communication	3
ENGL1100	Writing and Research	4
PHIL1100	Critical Thinking for College Success	3
PHIL1200	Ethics	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI2400	Juvenile Justice	3

**General Education Elective 0 Credits****Technical Studies Elective 0 Credits****Total Associate of Science Degree Credits 68****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

LAW1200	Equity in Policing	3
ENGL1100	Writing and Research	4
SOCI1100	Introduction to Sociology	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3

**Total Credits 16****Second Semester**

LAW2230	Legal Issues	3
LAW2235	Police Report Writing/Interview	2
COMM1250	Interpersonal Communication	3
SOCI1200	Marriage and Family	3
SOCI2400	Juvenile Justice	3

**Total Credits 14****Third Semester**

LAW1205	Physical Fitness for Peace Officers	1
LAW2231	MN Criminal and Traffic Codes	3
LAW2241	Crisis Intervention and Human Behavior	3
PHIL1200	Ethics	3
PSYC1300	Abnormal Psychology	3

**Total Credits 13**

**Fourth Semester**

LAW2225	Criminal Investigation	3
LAW2265	Ethics and Communications	3
LAW2325	Capstone	1
EMSV1050	Emergency Medical Responder (First Responder)	3
PHIL1100	Critical Thinking for College Success	3

**Total Credits 13**

**Summer Semester**

LAW2262	In Progress Response	3
LAW2276	Traffic	2
LAW2281	Defensive Tactics	3
LAW2285	Crime Scene and Evidence	1
LAW2291	Firearms	3
LAW2300	Tactical Driving for Law Enforcement Students	0

**Total Credits 12**

**Graduation (68 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Law Enforcement (BP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

The law enforcement training program at Hennepin Technical College is accredited by the Minnesota Peace Officer Standards and Training Board (POST). The Law Enforcement certificate program is designed to prepare students to become professional law enforcement officers who have the ability to think clearly, apply communication and human behavior principles, and effectively use hands on skills as the situation requires. This certificate program provides the final skills component of the law enforcement curriculum mandated by the POST Board.

#### Award Outcomes

Identify the skills required to perform the duties of a police officer  
 Utilize command presence and officer safety techniques  
 Apply tactics to control subjects in field encounter situations  
 Justify lawful use of force with applicable Minnesota state statutes, Federal Case law and established Use of Force continuum  
 Demonstrate proficiency with hand guns and long guns  
 Employ tactics and procedures to detain and control suspects  
 Demonstrate concepts and techniques to conduct vehicle contacts  
 Demonstrate emergency vehicle operations  
 Identify federal and state statutes pertaining to the duties and responsibilities of a police officer  
 Distinguish among diverse groups which make up Minnesota communities  
 Assess methods to meet the needs of domestic needs victims  
 Express core ethical principles  
 Compose police reports  
 Describe crime scene techniques  
 Demonstrate officer interactions with crime victims  
 Articulate different approaches to persons and situations involving crisis  
 Identify the importance of Blood Borne Pathogens, Hazmat, and Fire investigations as applied to law enforcement

#### Career Opportunities

Upon successful completion of the program the student will be eligible to take the Minnesota State Peace Officer License Examination. Completion of this Examination is required in order to obtain entry law enforcement positions with state, county, or local agencies.

#### Program Requirements

##### Technical Studies Required 22 Credits

LAW2225	Criminal Investigation	3
LAW2230	Legal Issues	3
LAW2231	MN Criminal and Traffic Codes	3
LAW2235	Police Report Writing/Interview	2
LAW2241	Crisis Intervention and Human Behavior	3
LAW2261	In Progress Response	2
LAW2275	Traffic	1
LAW2280	Defensive Tactics	2
LAW2285	Crime Scene and Evidence	1
LAW2290	Firearms	2
LAW2300	Tactical Driving for Law Enforcement Students	0

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Advanced Technical Certificate Credits 22

##### Semester Sequence

### Offered at Brooklyn Park Only

#### First Semester

LAWE2225	Criminal Investigation	3
LAWE2230	Legal Issues	3
LAWE2231	MN Criminal and Traffic Codes	3
LAWE2235	Police Report Writing/Interview	2
LAWE2241	Crisis Intervention and Human Behavior	3

#### Total Credits 14

#### Second Semester

LAWE2261	In Progress Response	2
LAWE2275	Traffic	1
LAWE2280	Defensive Tactics	2
LAWE2285	Crime Scene and Evidence	1
LAWE2290	Firearms	2
LAWE2300	Tactical Driving for Law Enforcement Students	0

#### Total Credits 8

#### Graduation (22 Credits)

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice. This listing is to be used strictly as an advising tool.

8/31/2022 : BP 8002 / EP

## Entertainment

### Music Business and Entrepreneurship

## Music Business and Entrepreneurship (BP/EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

The Music Business and Entrepreneurship (MUBE) degree is designed for students who are interested in learning to develop successful and sustainable careers in a rapidly changing artistic environment. Coursework will promote the development of the business and entrepreneurial mindset critical to the creative musician. The program utilizes industry-specific methodologies to help students develop entrepreneurial, creative, and small-business skills. Courses for the program are delivered in a mix of classroom and online formats.

#### Award Outcomes

Solve music business problems using critical thinking and decision making techniques  
 Demonstrate an understanding of essential financial skills and industry revenue streams in creative ventures  
 Analyze music industry trends and consumer behavior  
 Develop a business plan for a new music venture  
 Demonstrate collaboration skills necessary in creative environments  
 Practice inclusive relationship skills with diverse populations throughout the music industry  
 Demonstrate oral and written communications skills necessary in creative environments

#### Career Opportunities

Starting and managing a music-related business is a promising career for many musicians and artists. Minnesota has a rich history in the music industry, and the allure of entrepreneurship is strong. In addition to entrepreneur opportunities, and depending on qualifications and experience, numerous positions are also available to graduates such as music industry producer, artist manager, music marketing representative, social media marketing, music entrepreneur, music, copyright data analyst, promotions coordinator, social media marketing, media sales, and venue manager.

### Program Requirements

#### Technical Studies Required 45 Credits

MUBE1000	Introduction to Music Business and Entrepreneurship	3
MUBE1005	Musicianship I	3
MUBE1010	Technology Tools for the Music Entrepreneur	4
MUBE2000	Marketing and Monetization	3
MUBE2005	Musicianship II	3
MUBE2010	Creation and Copyright	3
MUBE2020	Music Business and Entrepreneurship: Capstone	4
MMVP1640	Social Media Production I	2
MMVP1700	DSLR Video Production	3
MGDP1250	Web Design & Development I	3
MGDP1645	Social Media Production II	2
ACCT1000	Introduction to Accounting	3
BUSN1020	Introduction to Selling	3
BUSN1140	Business Law	3
BUSN2075	Digital Marketing	3

#### General Education Required 15 Credits

COMM1250	Interpersonal Communication or	3
ENGL1100	Writing and Research	4
ECON1200	Principles of Microeconomics	3
MUSC1010	Influence of Pop/Rock Music or	3
MUSC1020	Class Guitar	3

MUSC1015	World Music	3
PHIL1100	Critical Thinking for College Success	3

**General Education Elective 0 Credits****Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 60****Semester Sequence - Full-Time****Offered at Brooklyn Park and Eden Prairie****First Semester**

MUBE1000	Introduction to Music Business and Entrepreneurship	3
MUBE1005	Musicianship I	3
MMVP1640	Social Media Production I	2
BUSN1020	Introduction to Selling	3
COMM1250	Interpersonal Communication	3
ENGL1100	or Writing and Research	4

**Total Credits 14****Second Semester**

MUBE1010	Technology Tools for the Music Entrepreneur	4
MUBE2010	Creation and Copyright	3
MGDP1645	Social Media Production II	2
ACCT1000	Introduction to Accounting	3
PHIL1100	Critical Thinking for College Success	3

**Total Credits 15****Third Semester**

MUBE2005	Musicianship II	3
MGDP1250	Web Design & Development I	3
BUSN1140	Business Law	3
ECON1200	Principles of Microeconomics	3
MUSC1010	Influence of Pop/Rock Music	3
MUSC1020	or Class Guitar	3

**Total Credits 15****Fourth Semester**

MUBE2000	Marketing and Monetization	3
MUBE2020	Music Business and Entrepreneurship: Capstone	4
MMVP1700	DSLR Video Production	3
BUSN2075	Digital Marketing	3
MUSC1015	World Music	3

**Total Credits 16****Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

1/14/2022 : BP 1604 / EP 1605

## Music Business and Entrepreneurship (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

The Music Business and Entrepreneurship (MUBE) diploma is designed for students who are interested in creating successful and sustainable careers in a rapidly changing artistic environment. Course work promotes the development of the business and entrepreneurial mindset critical to the creative musician. The program utilizes industry-specific methodologies to help students develop entrepreneurial, creative, and small-business skills. Courses for the program are delivered in a mix of classroom and online formats.

#### Award Outcomes

Solve music business problems using critical thinking and decision making techniques  
 Demonstrate an understanding of essential financial skills and industry revenue streams in creative ventures  
 Analyze music industry trends and consumer behavior  
 Develop a business plan for a new music venture  
 Demonstrate collaboration skills necessary in creative environments  
 Practice inclusive relationship skills with diverse populations throughout the music industry

#### Career Opportunities

Starting and managing a music-related business is a promising career for many musicians and artists. Minnesota has a rich history in the music industry, and the allure of entrepreneurship is strong. In addition to entrepreneurial opportunities, and depending on qualifications and experience, numerous positions are also available to graduates such as music industry producer, artist manager, music marketing representative, social media marketing, music entrepreneur, music copyright data analyst, promotions coordinator, social media marketing, media sales, and venue manager.

### Program Requirements

#### Technical Studies Required 42 Credits

MUBE1000	Introduction to Music Business and Entrepreneurship	3
MUBE1005	Musicianship I	3
MUBE1010	Technology Tools for the Music Entrepreneur	4
MUBE2000	Marketing and Monetization	3
MUBE2005	Musicianship II	3
MUBE2010	Creation and Copyright	3
MUBE2020	Music Business and Entrepreneurship: Capstone	4
MMVP1640	Social Media Production I	2
MMVP1700	DSLR Video Production	3
MGDP1645	Social Media Production II	2
ACCT1000	Introduction to Accounting	3
BUSN1020	Introduction to Selling	3
BUSN1140	Business Law	3
BUSN2075	Digital Marketing	3

#### General Education Required 3 Credits

MUSC1010	Influence of Pop/Rock Music or	3
MUSC1015	World Music or	3
MUSC1020	Class Guitar	3

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Associate in Applied Science Degree Credits 45

#### Semester Sequence - Full-Time

**Offered at Brooklyn Park and Eden Prairie****First Semester**

MUBE1000	Introduction to Music Business and Entrepreneurship	3
MUBE1005	Musicianship I	3
MMVP1640	Social Media Production I	2
BUSN1020	Introduction to Selling	3

**Total Credits 11****Second Semester**

MUBE1010	Technology Tools for the Music Entrepreneur	4
MUBE2010	Creation and Copyright	3
MGDP1645	Social Media Production II	2
ACCT1000	Introduction to Accounting	3

**Total Credits 12****Third Semester**

MUBE2005	Musicianship II	3
BUSN1140	Business Law	3
MUSC1010	Influence of Pop/Rock Music or	3
MUSC1015	World Music or	3
MUSC1020	Class Guitar	3

**Total Credits 9****Fourth Semester**

MUBE2000	Marketing and Monetization	3
MUBE2020	Music Business and Entrepreneurship: Capstone	4
MMVP1700	DSLR Video Production	3
BUSN2075	Digital Marketing	3

**Total Credits 13****Graduation (45 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Music Business and Entrepreneurship (BP/EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

The Music Business and Entrepreneurship (MUBE) certificate prepares students who seek to supplement their music industry experience and who are interested immediate entry-level employment. Coursework in the certificate utilizes industry-specific methodologies to help students develop entrepreneurial, creative, and small-business skills.

#### Award Outcomes

Solve music business problems using critical thinking and decision making techniques  
 Demonstrate an understanding of essential financial skills and industry revenue streams in creative ventures  
 Analyze music industry trends and consumer behavior  
 Develop a business plan for a new music venture

#### Career Opportunities

Starting and managing a music-related business is a promising career for many musicians and artists. Minnesota has a rich history in the music industry, and the allure of entrepreneurship is strong. In addition to entrepreneurial opportunities, and depending on qualifications and experience, numerous positions are also available to students who complete the certificate, such as music marketing representative, social media marketing, music entrepreneur, promotions coordinator, and media sales.

### Program Requirements

#### Technical Studies Required 23 Credits

MUBE1000	Introduction to Music Business and Entrepreneurship	3
MUBE1005	Musicianship I	3
MUBE1010	Technology Tools for the Music Entrepreneur	4
MUBE2000	Marketing and Monetization	3
MUBE2005	Musicianship II	3
MUBE2010	Creation and Copyright	3
MUBE2020	Music Business and Entrepreneurship: Capstone	4

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Associate in Applied Science Degree Credits 23

#### Semester Sequence - Full-Time

#### Offered at Brooklyn Park and Eden Prairie

#### First Semester

MUBE1000	Introduction to Music Business and Entrepreneurship	3
MUBE1005	Musicianship I	3
MUBE1010	Technology Tools for the Music Entrepreneur	4
MUBE2010	Creation and Copyright	3

#### Total Credits 13

#### Second Semester

MUBE2000	Marketing and Monetization	3
MUBE2005	Musicianship II	3
MUBE2020	Music Business and Entrepreneurship: Capstone	4

**Total Credits 10****Graduation (23 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

1/14/2022 : BP 1608 / EP 1609

**Semester Sequence - Part-Time****Offered Brooklyn Park and Eden Prairie****First Semester**

MUBE1000	Introduction to Music Business and Entrepreneurship	3
MUBE1005	Musicianship I	3

**Total Credits 6****Second Semester**

MUBE1010	Technology Tools for the Music Entrepreneur	4
MUBE2010	Creation and Copyright	3

**Total Credits 7****Third Semester**

MUBE2005	Musicianship II	3
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**Total Credits 3****Fourth Semester**

MUBE2000	Marketing and Monetization	3
MUBE2020	Music Business and Entrepreneurship: Capstone	4

**Total Credits 7****Graduation (23 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

1/14/2022 : BP 1608 / EP 1609

# Health

## Dental Assistant

## Dental Assistant (BP/EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

The Dental Assistant is an important member of a professional health team. As a Dental Assistant, the student will perform many chairside procedures, assist the dentist during patient treatment and complete records. The assistant must also be competent in the knowledge and skill required for business office and laboratory procedures. Upon completion of this program, the dental assistant graduate will be eligible to take the Minnesota State Board of Dentistry's Licensure Exam and the Dental Assisting National board exams. Passing this exam allows a dental assistant to perform the expanded functions on patients.

Personal qualities considered essential for this occupation are the ability to work well with others, the desire to be a part of a professional team, manual dexterity, good communication skills, ability to follow direct supervision and to be sensitive to others' needs.

The Dental Assistant program at Hennepin Technical College is approved by the Minnesota Board of Dentistry, [www.dentalboard.state.mn.us](http://www.dentalboard.state.mn.us).

The program in Dental Assisting is accredited by the Commission on Dental Accreditation and has been granted the accreditation status of Approval without Reporting Requirements. The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at (312) 440-4653 or at 211 East Chicago Avenue, Chicago, IL 60611-2678. The Commission's web address is: <http://www.ada.org/en/coda>.

The A.A.S. degree plan is designed for students who are interested in continuing their educational career.

Information is available thru the HTC web site and dental assistant program counselors which state the risks of entering this profession in regards to bloodborne pathogens and disease transmission, including needlesticks.

Prerequisite: Pre-Dental Health Requirements (Mantoux test and Hepatitis B vaccine) CPLT1100, COMM1250 or COMM1260, DNTL1121, ENGL1100 or ENGL1250, EMSV1020 or currently certified in CPR for the Healthcare Provider.

#### Award Outcomes

Demonstrate an understanding of dental sciences  
 Facilitate effective communication with patients and dental team members  
 Perform clinical, laboratory and administrative procedures in various dental environments  
 Apply current concepts of infection control and occupational safety  
 Demonstrate the legal and ethical Minnesota Board of Dentistry statutes  
 Apply critical thinking and problem solving

#### Career Opportunities

Dental Assistants are employed in private and group practices, government public health clinics, dental sales, insurance companies, educational facilities, and the armed forces.

#### Program Requirements

##### Technical Studies Required 42 Credits

DNTL1000	Dental Team/Practice Management	2
DNTL1121	Dental Science	4
DNTL1140	Dental Materials	3
DNTL1160	Preclinical Chairside Assisting	3
DNTL1180	Chairside Assisting I	4
DNTL1200	Dental Health	2
DNTL1220	Chairside Assisting II	4
DNTL1241	Dental Radiology	4
DNTL1261	Expanded Functions	7
DNTL1305	Externship Seminar	1
DNTL1321	Clinical Externship I	4
DNTL1325	Clinical Externship II	4

##### General Education Required 10 Credits

COMM1250	Interpersonal Communication	3
	or	
COMM1260	Small Group Communication	3

ENGL1100	Writing and Research	4
	or	
ENGL1250	Short Form Composition and Reporting	4
PHIL1200	Ethics	3
	or	
PHIL1400	Medical Ethics	4

**General Education Elective 8 Credits**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 60****Semester Sequence****Offered at Brooklyn Park and Eden Prairie****Pre-Dental Assistant Requirements**

All Pre-Dental courses must be completed with a grade of "C" or better.

Score of 70% on Computer Literacy Basic Test

or

CPLT1100	Computer Essentials	3
EMSV1020	CPR/First Aid	1
	or	
	Current CPR for Health Care Provider or Professional Rescuer	
COMM1250	Interpersonal Communication	3
	or	
COMM1260	Small Group Communication	3
DNTL1121	Dental Science (may be repeated only once)	4
ENGL1100	Writing and Research	4
	or	
ENGL1250	Short Form Composition and Reporting	4

**Total Credits 11****Students are required to complete the following prior to program application:**

- \* Hepatitis B Vaccination (2 vaccinations of a series of 3 must be completed)
- \* Tetanus vaccination (TDAP) (within last 10 yrs)
- \* High School Diploma or GED Required

**REQUIRED within two weeks after beginning the program:**

- \*Mantoux (PPD Test)
- \* Background study through the MN Department of Human Services 651-431-2000. Contact DHS with questions.

**First Semester**

DNTL1140	Dental Materials	3
DNTL1160	Preclinical Chairside Assisting	3
DNTL1180	Chairside Assisting I	4
DNTL1200	Dental Health	2
DNTL1241	Dental Radiology	4

**Total Credits 16****Second Semester**

DNTL1000	Dental Team/Practice Management	2
DNTL1220	Chairside Assisting II	4

DNTL1261	Expanded Functions	7
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**Total Credits 13****Summer Semester**

DNTL1305	Externship Seminar	1
DNTL1321	Clinical Externship I	4
DNTL1325	Clinical Externship II	4

**Total Credits 9****Additional Required General Education Courses**

PHIL1200	Ethics	3
	or	
PHIL1400	Medical Ethics	4
	General Education Electives	8

**Total Credits 11****General Education Electives**

A complete list of Minnesota Transfer Curriculum (MnTC) courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Total Credits 8****General Information**

- The Dental Assistant program at Hennepin Technical College is approved by the Minnesota Board of Dentistry, [www.dentalboard.state.mn.us](http://www.dentalboard.state.mn.us).
- The program in Dental Assisting is accredited by the Commission on Dental Accreditation and has been granted the accreditation status of Approval without Reporting Requirements. The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at (312) 440-4653 or at 211 East Chicago Avenue, Chicago, IL 60611-2678. The Commission's web address is: <http://www.ada.org/en/coda>.
- All Dental Assistant students must earn a C or better in all DNTL (Dental Assistant) courses to continue in the Dental program. In the event that a student earns a D, F or W grade in a DNTL course, the student may repeat that course only one time the next semester that the course is offered.
- Current certification in CPR is mandatory throughout the entire program, including externship. Proof of current CPR certification is also required in order to take the Dental Assistant National Board (DANB) examination.
- Students who have earned their Dental Assisting diploma or degree are eligible to take the Dental Assistant National Board (DANB) and the Minnesota State Licensure Exam. Successful completion of the Minnesota State Licensure Exam allows the individual to practice as a Licensed Dental Assistant (LDA).
- A written notification is required from a physician/obstetrician for a pregnant student to continue enrollment in DNTL1241 Dental Radiology, DNTL1261 Expanded Functions, DNTL1321 Clinical Externship I, and DNTL1325 Clinical Externship II.
- Information is available on the HTC website and from the Enrollment Advisors, HTC Counselors, and the dental assistant program faculty which state the risks of entering this profession in regard to bloodborne pathogens and disease transmission, including needlesticks.

**Criminal Background Studies**

Minnesota law requires that any person who provides services that involve direct contact with children, patients, and residents at a health or child care facility licensed by the State of Minnesota must have a background study conducted by the state. Individuals with specified felony convictions are prohibited from having direct contact with children, patients, and residents of licensed facilities. Anyone refusing to cooperate in the criminal background study cannot participate in coursework that requires direct contact with children, patients or residents. Students who are disqualified from having direct patient/resident/child contact will not be able to participate in coursework which includes a practical experience. Therefore, completion of coursework for the program major will not be possible without documentation of a cleared background study.

**Additional Program Costs**

Books - \$450

Program Kit (Typodonts) - \$950 + tax

Scrub uniforms, lab coat, white shoes - \$125  
Membership in ADAA and Liability Insurance - \$45  
Student name tag - \$10  
MN Jurisprudence Exam - \$60  
MN Licensure Exam (DASLE) - \$70  
Board of Dentistry Application - \$123  
Dental Assistant National Board (DANB) - \$450  
Approx. Total for Additional Program Costs - \$2,033

**Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/6/2022 : BP 7608 / EP 7609

## Dental Assistant (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

The Dental Assistant is an important member of a professional health team. As a Dental Assistant, the student will perform many chairside procedures, assist the dentist during patient treatment and complete records. The assistant must also be competent in the knowledge and skill required for business office and laboratory procedures. Upon completion of this program, the dental assistant graduate will be eligible to take the Minnesota State Board of Dentistry's Licensure Exam and the Dental Assisting National Board exam. Passing these exams will allow a dental assistant to perform the MN expanded functions on patients.

Personal qualities considered essential for this occupation are the ability to work well with others, the desire to be a part of a professional team, manual dexterity, good communication skills, ability to follow direct supervision and to be sensitive to others' needs.

The Dental Assistant program at Hennepin Technical College is approved by the Minnesota Board of Dentistry, [www.dentalboard.state.mn.us](http://www.dentalboard.state.mn.us).

The program in Dental Assisting is accredited by the Commission on Dental Accreditation and has been granted the accreditation status of Approval without Reporting Requirements. The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at (312) 440-4653 or at 211 East Chicago Avenue, Chicago, IL 60611-2678. The Commission's web address is: <http://www.ada.org/en/coda>.

Information is available thru the HTC web site and dental assistant program counselors which state the risks of entering this profession in regards to bloodborne pathogens and disease transmission, including needlesticks.

Prerequisite: Pre-Dental Health Requirements (Mantoux test and Hepatitis B vaccine) CPLT1100, COMM1250 or COMM1260, DNTL1121, ENGL1100 or ENGL1250, EMSV1020 or currently certified in CPR for the Healthcare Provider.

#### Award Outcomes

Demonstrate an understanding of dental sciences  
 Facilitate effective communication with patients and dental team members  
 Perform clinical, laboratory and administrative procedures in various dental environments  
 Apply current concepts of infection control and occupational safety  
 Demonstrate the legal and ethical Minnesota Board of Dentistry statutes

#### Career Opportunities

Dental Assistants are employed in private and group practices, government public health clinics, dental sales, insurance companies, educational facilities, and the armed forces.

#### Program Requirements

##### Technical Studies Required 42 Credits

DNTL1000	Dental Team/Practice Management	2
DNTL1121	Dental Science	4
DNTL1140	Dental Materials	3
DNTL1160	Preclinical Chairside Assisting	3
DNTL1180	Chairside Assisting I	4
DNTL1200	Dental Health	2
DNTL1220	Chairside Assisting II	4
DNTL1241	Dental Radiology	4
DNTL1261	Expanded Functions	7
DNTL1305	Externship Seminar	1
DNTL1321	Clinical Externship I	4
DNTL1325	Clinical Externship II	4

##### General Education Required 7 Credits

COMM1250	Interpersonal Communication	3
	or	
COMM1260	Small Group Communication	3
ENGL1100	Writing and Research	4
	or	

ENGL1250	Short Form Composition and Reporting	4
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**General Education Elective 0 Credits****Technical Studies Elective 0 Credits****Total Diploma Credits 49****Semester Sequence****Offered at Brooklyn Park and Eden Prairie****Pre-Dental Assistant Requirements**

All Pre-Dental courses must be completed with a grade of "C" or better.

Score of 70% on Computer Literacy Basic Test

or

CPLT1100	Computer Essentials	3
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EMSV1020	CPR/First Aid	1
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or

Current CPR for Health Care Provider or

Professional Rescuer

COMM1250	Interpersonal Communication	3
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or

COMM1260	Small Group Communication	3
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DNTL1121	Dental Science	4
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(may be repeated only once)

ENGL1100	Writing and Research	4
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or

ENGL1250	Short Form Composition and Reporting	4
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**Total Credits 11****Students are required to complete the following prior to program application:**

\* Hepatitis B Vaccination (2 vaccinations of a series of 3 must be completed)

\* Tetanus vaccination (TDAP) (within last 10 yrs)

\* High School Diploma or GED Required

**REQUIRED within two weeks after beginning the program:**

\* Mantoux (PPD Test)

\* Background study through the MN Department of Human Services, 651-431-2000. Contact DHS with questions.

**First Semester**

DNTL1140	Dental Materials	3
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DNTL1160	Preclinical Chairside Assisting	3
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DNTL1180	Chairside Assisting I	4
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DNTL1200	Dental Health	2
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DNTL1241	Dental Radiology	4
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**Total Credits 16****Second Semester**

DNTL1000	Dental Team/Practice Management	2
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DNTL1220	Chairside Assisting II	4
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DNTL1261	Expanded Functions	7
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**Total Credits 13****Summer Semester**

DNTL1305	Externship Seminar	1
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DNTL1321	Clinical Externship I	4
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DNTL1325	Clinical Externship II	4
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## **Total Credits 9**

### **General Information**

- The Dental Assistant program at Hennepin Technical College is approved by the Minnesota Board of Dentistry, [www.dentalboard.state.mn.us](http://www.dentalboard.state.mn.us).
- The program in Dental Assisting is accredited by the Commission on Dental Accreditation and has been granted the accreditation status of Approval without Reporting Requirements. The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at (312) 440-4653 or at 211 East Chicago Avenue, Chicago, IL 60611-2678. The Commission's web address is: <http://www.ada.org/en/coda>.
- All Dental Assistant students must earn a C or better in all DNTL (Dental Assistant) courses to continue in the Dental program. In the event that a student earns a D, F or W grade in a DNTL course, the student may repeat that course only one time the next semester that the course is offered.
- Current certification in CPR is mandatory throughout the entire program, including externship. Proof of current CPR certification is also required in order to take the Dental Assistant National Board (DANB) examination.
- Students who have earned their Dental Assisting diploma or degree are eligible to take the Dental Assistant National Board (DANB) and the Minnesota State Licensure Exam. Successful completion of the Minnesota State Licensure Exam allows the individual to practice as a Licensed Dental Assistant (LDA).
- A written notification is required from a physician/obstetrician for a pregnant student to continue enrollment in DNTL1241 Dental Radiology, DNTL1261 Expanded Functions, DNTL1321 Clinical Externship I, and DNTL1325 Clinical Externship II.
- Information is available on the HTC website and from the Enrollment Advisors, HTC Counselors, and the dental assistant program faculty which state the risks of entering this profession in regard to bloodborne pathogens and disease transmission, including needlesticks.

### **Criminal Background Studies**

Minnesota law requires that any person who provides services that involve direct contact with children, patients, and residents at a health or child care facility licensed by the State of Minnesota must have a background study conducted by the state. Individuals with specified felony convictions are prohibited from having direct contact with children, patients, and residents of licensed facilities. Anyone refusing to cooperate in the criminal background study cannot participate in coursework that requires direct contact with children, patients or residents. Students who are disqualified from having direct patient/resident/child contact will not be able to participate in coursework which includes a practical experience. Therefore, completion of coursework for the program major will not be possible without documentation of a cleared background study.

### **Additional Program Costs**

Books - \$450  
Program Kit (Typodonts) - \$950 + tax  
Scrub uniforms, lab coat, white shoes - \$125  
Membership in ADAA and Liability Insurance - \$45  
Student name tag - \$10  
MN Jurisprudence Exam - \$60  
MN Licensure Exam (DASLE) - \$70  
Board of Dentistry Application - \$123  
Dental Assistant National Board (DANB) - \$450  
Approx. Total for Additional Program Costs - \$2,033

### **Graduation (49 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/6/2022 : BP 7610 / EP 7611

## **Health Science (Broad Field)**

## Health Science (Broad Field) (BP/EP) Associate of Science Degree

### Overview and Award Outcomes

#### Overview

This AS degree provides students a broad base of general education coursework relevant to the field of health sciences. Students who have chosen a career path or have not yet decided upon a specific course of study may elect to complete the foundational coursework in the health sciences coupled with a range of general education courses. The degree is designed to transfer to all MnSCU system universities offering related baccalaureate programs through a statewide articulation agreement. Students are encouraged to consult with both Hennepin Technical College and transfer university counselors/advisors early and often, for guidance and planning regarding the requirements of the various health sciences baccalaureate programs to facilitate the most efficient transition and transfer.

#### Award Outcomes

Develop as writers and speakers who use the English language effectively and who read, write, speak and listen critically  
 Apply mathematical, scientific and logical modes of thinking  
 Develop the ability to use technology to improve and facilitate their learning  
 Explain processes of humans and other biological systems  
 Demonstrate safe, environmentally responsible procedures in varied situations  
 Expand their ability to identify, discuss and reflect upon social, ethical and behavioral issues  
 Extend their awareness of cultural, global and environmental topics

#### Career Opportunities

Obtaining a Health Science Broad Field degree at HTC opens the door to transfer opportunities in your program of study and others as well: Allied Health Biology; Athletic Training; Cardiopulmonary Rehabilitation; Communication Disorders; Community Health; Corrections; Dietetics; Exercise Science; Foods and Nutrition; Health Education; Health, Exercise and Rehabilitative Services; Health Promotion; Health Science; Movement Sciences; Nursing (limited seats available on a competitive basis); Psychology; Social Work; and Therapeutic Recreation.

### Program Requirements

#### Technical Studies Required 0 Credits

#### General Education Required 55 Credits

#### Science Core Courses

BIOL1100	Nutrition and Health	3
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
CHEM1000	Introduction to Chemistry	4
	or	
CHEM1100	General, Organic, and Biological Chemistry Foundations	4

#### General Education Core Courses

COMM1200	Intercultural Communication	3
	or	
COMM1250	Interpersonal Communication	3
ENGL1100	Writing and Research	4
MATH1250	Introduction to Statistics	3
MATH1400	College Algebra	4
PHIL1200	Ethics	3
	or	
PHIL1400	Medical Ethics	4
PSYC1000	General Psychology	3

PSYC1200	Psychology Throughout the Lifespan	3
SOCI1100	Introduction to Sociology	3
	Choose one course from MnTC Goal Area 1 (Communication)	3
	Choose 3 credits from MnTC Goal Area 6	3

**General Education Elective 0 Credits****Technical Studies Elective 5 Credits**

Technical Studies Courses may be used to satisfy elective credits

OR

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Total Associate of Science Degree Credits 60****Semester Sequence****Offered at Brooklyn Park and Eden Prairie****First Semester**

BIOL2005	General Biology I	4
ENGL1100	Writing and Research	4
MATH1400	College Algebra	4
SOCI1100	Introduction to Sociology	3

**Total Credits 15****Second Semester**

BIOL2125	Anatomy and Physiology I	4
MATH1250	Introduction to Statistics	3
PHIL1200	Ethics	3
	or	
PHIL1400	Medical Ethics	4
PSYC1000	General Psychology	3

**Total Credits 13****Third Semester**

BIOL2225	Anatomy and Physiology II	4
CHEM1000	Introduction to Chemistry	4
	or	
CHEM1100	General, Organic, and Biological Chemistry Foundations	4
COMM1200	Intercultural Communication	3
	or	
COMM1250	Interpersonal Communication	3
	Choose 3 credits from MnTC Goal Area 6	3

**Total Credits 14****Fourth Semester**

BIOL1100	Nutrition and Health	3
BIOL2235	Microbiology	4
PSYC1200	Psychology Throughout the Lifespan	3
	Choose 3 credits from MnTC Goal Area 1	3
	Technical Studies Electives	5
	or	
	General Education Electives	5

**Total Credits 18****MnTC Goal Area 1**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

COMM1200	Intercultural Communication	3
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
ENGL1070	Technical Writing	3
ENGL1100	Writing and Research	4
ENGL1250	Short Form Composition and Reporting	4
ENGL1300	Introduction to Creative Writing	3

**Choose a Total of: 3 Credits****MnTC Goal Area 6**

ARTS1000	Elements of Design	3
ARTS1005	Art and Social Justice	3
ARTS1050	Introduction to Art	3
ENGL1060	Food in Literature and Film	3
ENGL1300	Introduction to Creative Writing	3
MUSC1010	Influence of Pop/Rock Music	3
MUSC1015	World Music	3
MUSC1020	Class Guitar	3
PHIL1200	Ethics	3
PHIL1400	Medical Ethics	4
PHIL1500	World Religions	3

**Choose a Total of: 3 Credits****Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/6/2022 : BP 8702 / EP 8703

**Health Unit Coordinator & Nursing Station**

## Health Unit Coordinator (BP/EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

The Health Unit Coordinator (HUC) Certificate concentrates on coursework directly related to working on the nursing unit in health care facilities. The Health Unit Coordinator is an important member of the professional health care team. HUC's provide a crucial role in disseminating communication throughout the nursing unit and assisting the nursing staff by performing non-clinical duties, as directed.

The professional responsibilities of Health Unit Coordinators include answering the telephone and intercom, initiating records for new patients, performing patient admission, transfer and discharge procedures, operating unit equipment, ordering daily diets and laboratory tests, scheduling diagnostic studies, recording patient data for departmental records into the patient's record and ordering of unit supplies. In the work place, the HUC communicates with various departments within the facility via the telephone, fax machine, pagers, pneumatic tube systems and computers.

This program will consist of an internship at a local health care facility. Required coursework will focus on HUC practices and procedures, health care core concepts, computer operations, communication skills and medical terminology. Graduates are eligible to sit for the National Association of Health Unit Coordinators (NAHUC) certification exam.

Personal qualities considered essential for this occupation are the ability to detail oriented with a high degree of accuracy while managing the workload in a very busy environment. The HUC should be able to solve problems logically and critically, be self-motivated, conscientious and demonstrate good customer service skills. Health Unit Coordinators are expected to protect the confidentiality of patient information, demonstrate a high degree of ethics, and exhibit professionalism.

Prerequisite: Student must achieve a score of 78 or above on the reading assessment test or successfully complete ENGL0921 prior to entering the Health Unit Coordinator Program. A score of 74 or above on the writing test is recommended.

Students are required to maintain a "C" (80%) or above in all Health Unit Coordinator courses to remain in the program.

#### Award Outcomes

Demonstrate knowledge of medical terms needed to perform job duties  
 Differentiate between hospital departments  
 Exhibit professionalism  
 Utilize computer software effectively  
 Demonstrate skills and knowledge needed to process physician orders  
 Demonstrate customer service and telephone etiquette skills  
 Function as a member of the health care team  
 Operate unit equipment  
 Manage clerical duties on the nursing unit  
 Understand HIPAA and patient confidentiality requirements

#### Career Opportunities

At the completion of the HUC Certificate the graduate may be employed in a hospital, extended care facility or medical office or other health care setting.

#### Program Requirements

##### Technical Studies Required 14 Credits

HLUC1002	Health Unit Coordinator Fundamentals	4
HLUC1020	Medical Terminology	2
HLUC1061	Diagnostic and Therapeutic Procedures	3
HLUC1101	Processing Physician's Orders	2
HLUC1200	Health Unit Coordinator Internship	3

##### General Education Required 3 Credits

CPLT1100	Computer Essentials	3
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##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 17

## Semester Sequence

### Offered at Brooklyn Park and Eden Prairie

Student must achieve a score of 78 or above on the reading assessment test or successfully complete ENGL0921 prior to entering the Health Unit Coordinator Program. A score of 74 or above on the writing test is recommended.

Students are required to maintain a "C" (80%) or above in all Health Unit Coordinator courses in the program.

#### First Semester

HLUC1002	Health Unit Coordinator Fundamentals	4
HLUC1020	Medical Terminology	2
HLUC1061	Diagnostic and Therapeutic Procedures	3
HLUC1101	Processing Physician's Orders	2
HLUC1200	Health Unit Coordinator Internship	3
CPLT1100	Computer Essentials	3

**Total Credits 17**

### Graduation (17 Credits)

#### Criminal Background Studies:

Minnesota law requires that any person who provides services that involve direct contact with children, patients, and residents at a health or child care facility licensed by the State of Minnesota must have a background study conducted by the state. Individuals with specified felony convictions are prohibited from having direct contact with children, patients, and residents of licensed facilities. Anyone refusing to cooperate in the criminal background study cannot participate in coursework that requires direct contact with children, patients or residents. Students who are disqualified from having direct patient/resident/child contact will not be able to participate in coursework which includes a practical experience. Therefore, completion of coursework for the program major will not be possible without documentation of a cleared background study.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/22/2022 : BP 7306 / EP 7307

## Nursing Station Technician (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

The Nursing Station Technician diploma program is designed for Health Unit Coordinator (HUC) students who wish to obtain the skills necessary to assist nurses with hands on patient care and/or advanced administrative duties. A Nursing Station Technician (NST) is responsible for coordination of communications and procedures to the nursing unit, processing admissions, discharge and transfers, transcribing orders and updating patient records. NST's work under the direction of a nurse to assist in delivery of patient care including personal hygiene, clients nutritional requirements, daily activities, monitoring of patient vital signs, transporting patients and equipment, setting up and maintaining patient rooms, reordering and stocking supplies.

The Nursing Station Technician is an important member of the professional health care team. NST's provide a crucial role in disseminating communication throughout the nursing unit and assisting the nursing staff. The professional responsibilities include answering the telephone and intercom, initiating records for new patients, performing patient admission, transfer and discharge procedures, operating unit equipment, ordering daily diets and laboratory tests, scheduling diagnostic studies, recording patient data from departmental records into the patient's record and ordering of unit supplies. In the work place, the NST communicates with various departments within the facility via the telephone, fax machine, pagers, pneumatic tube systems and computers

This program will include two clinical experiences. Required coursework will focus on practices and procedures, health care core concepts, processing of physician's orders, communication skill development, team building skill development, medical terminology and Nursing Assistant skills.

Personal qualities considered essential for this occupation are the ability to be detail oriented with a high degree of accuracy while managing the workload in a very busy environment. The NST should be able to solve problems logically and critically, be self-motivated, conscientious, flexible, and demonstrate good customer service skills. Health care workers are expected to protect the confidentiality of patient information, demonstrate a high degree of ethics, and exhibit professionalism.

#### Award Outcomes

- Manage clerical duties on the nursing unit
- Demonstrate team building and effective communication skills
- Function as a member of the health care team
- Demonstrate knowledge of medical terms needed to perform job duties
- Operate unit equipment
- Utilize computer software effectively
- Exhibit professionalism
- Differentiate between hospital departments
- Perform patient care duties safely and effectively
- Demonstrate skills and knowledge needed to process physician orders
- Understand HIPAA and patient confidentiality requirements

#### Career Opportunities

Positions are available as Health Unit Coordinators (HUC), Patient Care Technicians (PCT), Nursing Station Technician (NST) and Unit Coordinators (UC) in hospitals, nursing homes, clinics, doctor's offices, insurance companies and other healthcare settings. Graduates are eligible to sit for the National Association of Health Unit Coordinators (NAHUC) certification exam and the Nursing Assistant state examination.

#### Program Requirements

##### Technical Studies Required 27 Credits

HLUC1002	Health Unit Coordinator Fundamentals	4
HLUC1020	Medical Terminology	2
HLUC1061	Diagnostic and Therapeutic Procedures	3
HLUC1101	Processing Physician's Orders	2
HLUC1200	Health Unit Coordinator Internship	3
HLTH2001	Nutrition and Health	2
EMSV1020	CPR/First Aid	1
EMSV1136	Understanding EKGs	2
EMSV1155	Phlebotomy Techniques	3
NAHA1002	Nursing Assistant/Home Health Aide	5

**General Education Required 9 Credits**

CPLT1100	Computer Essentials	3
COMM1250	Interpersonal Communication	3
PSYC1200	Psychology Throughout the Lifespan	3

**General Education Elective 0 Credits****Technical Studies Elective 0 Credits****Total Diploma Credits 36****Semester Sequence****Offered at Brooklyn Park and Eden Prairie****First Semester**

HLUC1002	Health Unit Coordinator Fundamentals	4
HLUC1020	Medical Terminology	2
HLUC1061	Diagnostic and Therapeutic Procedures	3
HLUC1101	Processing Physician's Orders	2
HLUC1200	Health Unit Coordinator Internship	3
EMSV1136	Understanding EKGs	2

**Total Credits 16****Second Semester**

EMSV1155	Phlebotomy Techniques	3
HLTH2001	Nutrition and Health	2
NAHA1002	Nursing Assistant/Home Health Aide	5
COMM1250	Interpersonal Communication	3
PSYC1200	Psychology Throughout the Lifespan	3

**Total Credits 16****Summer Semester**

CPLT1100	Computer Essentials	3
EMSV1020	CPR/First Aid	1

**Total Credits 4****Graduation (36 Credits)****Criminal Background Studies:**

Minnesota law requires that any person who provides services that involve direct contact with children, patients, and residents at a health or child care facility licensed by the State of Minnesota must have a background study conducted by the state. Individuals with specified felony convictions are prohibited from having direct contact with children, patients, and residents of licensed facilities. Anyone refusing to cooperate in the criminal background study cannot participate in coursework that requires direct contact with children, patients or residents. Students who are disqualified from having direct patient/resident/child contact will not be able to participate in coursework which includes a practical experience. Therefore, completion of coursework for the program major will not be possible without documentation of a cleared background study.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/22/2022 : BP 7308 / EP 7309

**Medical Assistant**

## Medical Assistant (EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

Medical Assistants are an integral part of the health care team. The Medical Assistant program prepares you to be a multi-skilled professional who assists in patient care management. The program focus is to ensure development of the critical skills needed to perform clinical, laboratory, and administrative duties. In the ambulatory care setting medical assistants collect patient data, collect and prepare laboratory specimens, and provide patient education related to procedures, medications and diet.

Prerequisite: 8-hour CPR course for Health Care Providers offered by the American Heart Association or 8-hour CPR/AED for the Professional Rescuer course offered by the American Red Cross or EMSV1020, BIOL1400 or HLTH1010, ENGL1250, COMM1200 or COMM1250 or COMM1260, HLUC1020 and qualifying score reading, writing, math, computer literacy and keyboarding assessment tests.

#### Award Outcomes

Analyze Medical Assistant Knowledge to deliver quality health care to the patient in the ambulatory care setting  
 Complete Required American Association Medical Assistant Competencies  
 Demonstrate the role and responsibilities of the medical assistant as a member of the health care team  
 Apply accurate oral and written communication skills  
 Utilize effective critical thinking skills  
 Value legal and ethical obligations within the medical assistant scope of practice

#### Career Opportunities

By the year 2020, one out of four Americans will be age 65 or older. With both an aging population and workforce, the demand for health care professionals will continue to increase. As professionals with knowledge in three areas of patient care (clinical, laboratory and administrative procedures), Medical Assistants are in high demand throughout the health care industry. The program can also serve as a stepping stone to other health care careers, such as Emergency Medical Technician, Licensed Practical Nurse, Registered Nurse, and physician's assistant, which all require further training.

### Program Requirements

#### Technical Studies Required 44 Credits

BIOL1400	Human Biology	4
	or	
HLTH1010	Anatomy and Physiology	4
HLTH1020	Disease Conditions	3
HLUC1020	Medical Terminology	2
MAST1015	Medical Assistant Administrative I	3
MAST1020	Lab I	4
MAST1030	Clinical Procedures I	4
MAST1045	Pharmacology	3
MAST1060	Documentation for Health Care Professionals	2
	or	
MAST2000	Fundamentals of Radiographic Imaging	2
	or	
HLTH1000	Introduction to Health Careers	3
	or	
HLTH2001	Nutrition and Health	2
MAST2015	Medical Assistant Administrative II	3
MAST2022	Lab II	5
MAST2035	Clinical Procedures II	5
MAST2041	Practicum	6

#### General Education Required 16 Credits

COMM1200	Intercultural Communication	3
	or	
COMM1250	Interpersonal Communication	3

COMM1260	or Small Group Communication	3
ENGL1250	Short Form Composition and Reporting	4
PHIL1200	Ethics	3
PHIL1400	or Medical Ethics	4
PSYC1200	Psychology Throughout the Lifespan	3
	Choose one course from MnTC Goal Area 2	3

**General Education Elective 0 Credits****Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 60****Semester Sequence - Full-Time****Offered at Eden Prairie Only****Pre-Medical Assistant Requirements**

All Pre-Medical Assistant courses must be completed with a "C" or better.

Accuplacer Computer Literacy Test Score of  
70%+

CPLT1100	or Computer Essentials	3
	Keyboarding score of 25 nwpm	
CPLT1000	or Computer Keyboarding	2
EMSV1020	CPR/First Aid	1
	or Current CPR for Health Care Provider or Professional Rescuer	
	Score of 252+ on Arithmetic Accuplacer	
MATH0910	or Math Pathways Plus for College and Careers	4
MATH0920	or Math Pathways for College and Careers	3
BIOL1400	Human Biology	4
HLTH1010	or Anatomy and Physiology	4
	Choose one of the following COMM Courses:	
COMM1200	Intercultural Communication	3
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
	Choose 3 credits from MnTC Goal Area 2	3
ENGL1250	Short Form Composition and Reporting	4
HLUC1020	Medical Terminology	2

**Total Credits 16**

\* Students must have a cleared criminal background study. Contact MN Department of Human Services, 651-431-2000, with questions.

\*Completed immunization form.

### First Semester

HLTH1020	Disease Conditions	3
MAST1015	Medical Assistant Administrative I	3
MAST1020	Lab I	4
MAST1030	Clinical Procedures I	4

### Total Credits 14

### Second Semester

MAST1045	Pharmacology	3
MAST2015	Medical Assistant Administrative II	3
MAST2022	Lab II	5
MAST2035	Clinical Procedures II	5

### Total Credits 16

### Summer Semester

PHIL1200	Ethics	3
	or	
PHIL1400	Medical Ethics (recommended)	4
PSYC1200	Psychology Throughout the Lifespan	3

### Total Credits 6

### Third Semester

HLTH1000	Introduction to Health Careers	3
	or	
HLTH2001	Nutrition and Health	2
	or	
MAST1060	Documentation for Health Care Professionals	2
	or	
MAST2000	Fundamentals of Radiographic Imaging	2
MAST2041	Practicum	6

(Only online courses can be taken during this semester.)

### Total Credits 8

### General Information

- The Hennepin Technical College Medical Assistant Program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), 25400 US Highway 19 North, Suite 158, Clearwater, FL 33763, P: 727-210-2350, F: 727-210-2354, E: mail@caahep.org, upon the recommendation of the Medical Assistant Education Review Board (MAERB).
- HTC's Medical Assistant Program expectations are to prepare competent entry level Medical Assistants in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains.
- All Medical Assistant students must earn a grade of C in all MAST courses to continue. If a student earns less than a C in a MAST course or drops a course (earning a W), the course may be repeated one time only.
- Current CPR for Health Care Provider, Professional Rescuer or EMSV1020 CPR/First Aide required before enrolling in MAST2041 Practicum.
- Students are required to complete a 240-hour **unpaid** practicum.
- The approximate books and supplies cost for MAST is \$1,800.
- Students must complete the Medical Assistant program in 4 years. The 4-year timeline begins with the first semester MAST courses.
- Grading scale used in MAST courses:  
93-100% = A

86-92%	= B
80-85%	= C
75-79%	= D
< 74%	= F

### Criminal Background Studies

Minnesota law requires that any person who provides services that involve direct contact with children, patients, and residents at a health or child care facility licensed by the State of Minnesota must have a background study conducted by the state. Individuals with specified felony convictions are prohibited from having direct contact with children, patients, and residents of licensed facilities. Anyone refusing to cooperate in the criminal background study cannot participate in coursework that requires direct contact with children, patients or residents. Students who are disqualified from having direct patient/resident/child contact will not be able to participate in coursework which includes a practical experience. Therefore, completion of coursework for the program major will not be possible without documentation of a cleared background study.

### MnTC Goal Area 2

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3
MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

### Choose a Total of: 3 Credits

### Graduation (60 Credits)

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/1/2022 : BP / EP 7809

### Semester Sequence - Part-Time

### Offered at Eden Prairie Only

### Pre-Medical Assistant Requirements

All Pre-Medical Assistant courses must be completed with a "C" or better.

	Accuplacer Computer Literacy Test Score of 70%+	
	or	
CPLT1100	Computer Essentials	3
	Keyboarding score of 25 nwpm	
	or	
CPLT1000	Computer Keyboarding	2
EMSV1020	CPR/First Aid	1
	or	
	Current CPR for Health Care Provider or Professional Rescuer	

	Score of 252+ on Arithmetic Accuplacer or	
MATH0910	Math Pathways Plus for College and Careers	4
	or	
MATH0920	Math Pathways for College and Careers	3
BIOL1400	Human Biology	4
	or	
HLTH1010	Anatomy and Physiology	4
	Choose one of the following COMM Courses:	
COMM1200	Intercultural Communication	3
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
	Choose 3 credits from MnTC Goal Area 2	3
ENGL1250	Short Form Composition and Reporting	4
HLUC1020	Medical Terminology	2

**Total Credits 16**

\* Students must have a cleared criminal background study. Contact MN Department of Human Services, 651-431-2000, with questions.

\*Completed immunization form.

**First Semester**

HLTH1020	Disease Conditions	3
MAST1015	Medical Assistant Administrative I	3

**Total Credits 6****Second Semester**

MAST1045	Pharmacology	3
MAST2015	Medical Assistant Administrative II	3

**Total Credits 6****Summer Semester**

PHIL1200	Ethics	3
	or	
PHIL1400	Medical Ethics (recommended)	4
PSYC1200	Psychology Throughout the Lifespan	3

**Total Credits 6****Third Semester**

MAST1020	Lab I	4
MAST1030	Clinical Procedures I	4

**Total Credits 8****Fourth Semester**

MAST2022	Lab II	5
MAST2035	Clinical Procedures II	5

**Total Credits 10****Fifth Semester**

MAST1060	Documentation for Health Care Professionals	2
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MAST2000	or Fundamentals of Radiographic Imaging	2
HLTH1000	or Introduction to Health Careers	3
HLTH2001	or Nutrition and Health	2
MAST2041	Practicum	6

(Only online courses can be taken during this semester.)

## Total Credits 8

### General Information

- The Hennepin Technical College Medical Assistant Program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), 25400 US Highway 19 North, Suite 158, Clearwater, FL 33763, P: 727-210-2350, F: 727-210-2354, E: mail@caahep.org, upon the recommendation of the Medical Assistant Education Review Board (MAERB).
- The HTC's Medical Assistant Program expectations are to prepare competent entry level Medical Assistants in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains.
- All Medical Assistant students must earn a grade of C in all MAST courses to continue. If a student earns less than a C in a MAST course or drops a course (earning a W), the course may be repeated one time only. • Current CPR for Health Care Provider, Professional Rescuer or EMSV1020 CPR/First Aide required before enrolling in MAST2041 Practicum.
- Students are required to complete a 240-hour **unpaid** practicum.
- The approximate books and supplies cost for MAST is \$1,800.
- Students must complete the Medical Assistant program in 4 years. The 4-year timeline begins with the first semester MAST courses.
- Grading scale used in MAST courses:

93-100% = A

86-92% = B

80-85% = C

75-79% = D

< 74% = F

### Criminal Background Studies

Minnesota law requires that any person who provides services that involve direct contact with children, patients, and residents at a health or child care facility licensed by the State of Minnesota must have a background study conducted by the state. Individuals with specified felony convictions are prohibited from having direct contact with children, patients, and residents of licensed facilities. Anyone refusing to cooperate in the criminal background study cannot participate in coursework that requires direct contact with children, patients or residents. Students who are disqualified from having direct patient/resident/child contact will not be able to participate in coursework which includes a practical experience. Therefore, completion of coursework for the program major will not be possible without documentation of a cleared background study.

### MnTC Goal Area 2

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3
MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3

PHYS1010	Introductory Physics II	3
SOC11100	Introduction to Sociology	3

**Choose a Total of: 3 Credits**

**Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/2/2022 : BP / EP 7809

## Medical Assistant (EP) Diploma

### Overview and Award Outcomes

#### Overview

Medical Assistants are an integral part of the health care team. The Medical Assistant program prepares you to be a multi-skilled professional who assists in patient care management. The program focus is to ensure development of the critical skills needed to perform clinical, laboratory, and administrative duties. In the ambulatory care setting medical assistants collect patient data, collect and prepare laboratory specimens, and provide patient education related to procedures, medications and diet.

#### Award Outcomes

Analyze Medical Assistant Knowledge to deliver quality health care to the patient in the ambulatory care setting

Complete Required American Association Medical Assistant Competencies

Demonstrate the role and responsibilities of the medical assistant as a member of the health care team

Apply accurate oral and written communication skills

Utilize effective critical thinking skills

Demonstrate legal and ethical obligations within the medical assistant Scope of Practice

#### Career Opportunities

By the year 2020, one out of four Americans will be age 65 or older. With both an aging population and workforce, the demand for health care professionals will continue to increase. As professionals with knowledge in three areas of patient care (clinical, laboratory and administrative procedures), Medical Assistants are in high demand throughout the health care industry. The program can also serve as a stepping stone to other health care careers, such as Emergency Medical Technician, Licensed Practical Nurse, Registered Nurse, and physician's assistant, which all require further training.

#### Program Requirements

##### Technical Studies Required 36 Credits

BIOL1400	Human Biology	4
	or	
HLTH1010	Anatomy and Physiology	4
HLUC1020	Medical Terminology	2
MAST1015	Medical Assistant Administrative I	3
MAST1020	Lab I	4
MAST1030	Clinical Procedures I	4
MAST2015	Medical Assistant Administrative II	3
MAST2022	Lab II	5
MAST2035	Clinical Procedures II	5
MAST2041	Practicum	6

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Associate in Applied Science Degree Credits 36

#### Semester Sequence

##### Offered at Eden Prairie Only

##### First Semester

BIOL1400	Human Biology	4
	or	
HLTH1010	Anatomy and Physiology	4
MAST1015	Medical Assistant Administrative I	3
MAST1020	Lab I	4

MAST1030	Clinical Procedures I	4
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**Total Credits 15****Second Semester**

HLUC1020	Medical Terminology	2
MAST2015	Medical Assistant Administrative II	3
MAST2022	Lab II	5
MAST2035	Clinical Procedures II	5

**Total Credits 15****Third Semester**

MAST2041	Practicum	6
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**Total Credits 6****General Information**

- The Hennepin Technical College Medical Assistant Program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), 25400 US Highway 19 North, Suite 158, Clearwater, FL 33763, P: 727-210-2350, F: 727-210-2354, E: mail@caahep.org, upon the recommendation of the Medical Assistant Education Review Board (MAERB).

- HTC's Medical Assistant Program expectations are to prepare competent entry level Medical Assistants in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains.

- All Medical Assistant students must earn a grade of C in all MAST courses to continue. If a student earns less than a C in a MAST course or drops a course (earning a W), the course may be repeated one time only.

- Current CPR for Health Care Provider, Professional Rescuer or EMSV1020 CPR/First Aide required before enrolling in MAST2041 Practicum.

- Students are required to complete a 240-hour **unpaid** practicum.

- The approximate books and supplies cost for MAST is \$1,000.

- Students must complete the Medical Assistant program in 4 years. The 4-year timeline begins with the first semester MAST courses. This can stay the same not unless it's a FA reason? Then I believe it goes to 2 years

- Grading scale used in MAST courses:

93-100% = A

86-92% = B

80-85% = C

75-79% = D

&lt; 74% = F

**Criminal Background Studies**

Minnesota law requires that any person who provides services that involve direct contact with children, patients, and residents at a health or child care facility licensed by the State of Minnesota must have a background study conducted by the state. Individuals with specified felony convictions are prohibited from having direct contact with children, patients, and residents of licensed facilities. Anyone refusing to cooperate in the criminal background study cannot participate in coursework that requires direct contact with children, patients or residents. Students who are disqualified from having direct patient/resident/child contact will not be able to participate in coursework which includes a practical experience. Therefore, completion of coursework for the program major will not be possible without documentation of a cleared background study.

**Graduation (36 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/1/2022 : BP / EP 7811

**Medical Office**

## Medical Office Specialist (BP/EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

Medical Office Specialists have the opportunity to work on health care teams. Duties performed utilize a knowledge of medical terminology as well as hospital and clinic procedures and may include scribing of medical reports and correspondence, appointment and meeting scheduling, patient file and office record maintenance, and billing and insurance processing. This career requires excellent verbal and written communication skills and knowledge of patient confidentiality laws.

Prerequisite: CPLT1000 Computer Keyboarding or qualifying score on keyboarding assessment test with demonstration of QWERTY home row typing technique. Qualifying score on math assessment test OR MATH0910 or MATH0920.

#### Award Outcomes

- Apply medical terminology
- Scribe medical reports and correspondence
- Create business correspondence
- Communicate using grammatically correct English
- Apply medical coding principles
- Document telephone communication
- Schedule appointments
- Demonstrate accounting principles
- Demonstrate professional behavior
- Demonstrate insurance and billing procedures
- Interpret HIPAA regulations
- Utilize an electronic health record

#### Career Opportunities

Individuals may choose to work in an acute care facility, outpatient clinic, extended care facility, medical insurance office, research facility or another medical environment.

### Program Requirements

#### Technical Studies Required 38 Credits

ACCT1000	Introduction to Accounting or	3
ACCT1102	Principles of Accounting I	4
BUSN1100	Supervision	3
BUSN1150	Introduction to Service and Work Team Strategies	3
CPLT1005	Advanced Keyboarding and Document Processing	3
ITEC1080	Microsoft Productivity Apps 1	3
ITEC1090	Microsoft Productivity Apps 2	3
OFCR1301	Medical Terminology	4
OFCR1317	Medical Office Procedures	4
OFCR1335	Medical Coding and Reimbursement Fundamentals	4
OFCR1341	Medical Office Management	4
OFCR1345	U.S. Healthcare System	4

#### General Education Required 22 Credits

BIOL1400	Human Biology	4
COMM1250	Interpersonal Communication	3
ENGL1070	Technical Writing	3
ENGL1080	Professional Writing	3
PHIL1100	Critical Thinking for College Success	3

PHIL1200	Ethics	3
PHIL1400	or Medical Ethics	4
PSYC1000	General Psychology	3
PSYC1200	or Psychology Throughout the Lifespan	3

**General Education Elective 0 Credits****Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 60****Semester Sequence****Offered at Brooklyn Park and Eden Prairie****First Semester**

CPLT1005	Advanced Keyboarding and Document Processing	3
OFCR1301	Medical Terminology	4
OFCR1345	U.S. Healthcare System	4
COMM1250	Interpersonal Communication	3

**Total Credits 14****Second Semester**

OFCR1335	Medical Coding and Reimbursement Fundamentals	4
ITEC1080	Microsoft Productivity Apps 1	3
BIOL1400	Human Biology	4
ENGL1070	Technical Writing	3

**Total Credits 14****Third Semester**

ACCT1000	Introduction to Accounting	3
ACCT1102	or Principles of Accounting I	4
BUSN1150	Introduction to Service and Work Team Strategies	3
ITEC1090	Microsoft Productivity Apps 2	3
OFCR1317	Medical Office Procedures	4
PSYC1000	General Psychology	3
PSYC1200	or Psychology Throughout the Lifespan	3

**Total Credits 16****Fourth Semester**

BUSN1100	Supervision	3
OFCR1341	Medical Office Management	4
ENGL1080	Professional Writing	3
PHIL1100	Critical Thinking for College Success	3
PHIL1200	Ethics	3



## Medical Office Specialist (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

Medical Office Specialists have the opportunity to work on health care teams. Duties performed utilize a knowledge of medical terminology as well as hospital and clinic procedures and may include scribing of medical reports and correspondence, appointment and meeting scheduling, patient file and office record maintenance, and billing and insurance processing. This career requires excellent verbal and written communications skills and knowledge of patient confidentiality laws.

Prerequisite: CPLT1000 Computer Keyboarding or qualifying score on keyboarding assessment test with demonstration of QWERTY home row typing technique. Qualifying score on math assessment test OR MATH0910 or MATH0920.

#### Award Outcomes

- Apply medical terminology
- Scribe medical reports and correspondence
- Create business correspondence
- Communicate using grammatically correct English
- Apply medical coding principles
- Document telephone communication
- Schedule appointments
- Demonstrate accounting principles
- Demonstrate professional behavior
- Demonstrate insurance and billing procedures
- Interpret HIPAA regulations
- Utilize an electronic health record

#### Career Opportunities

Individuals may choose to work in an acute care hospital, outpatient clinic, extended-care facility, medical insurance office, research facility or another medical environment.

#### Program Requirements

##### Technical Studies Required 38 Credits

ACCT1000	Introduction to Accounting or	3
ACCT1102	Principles of Accounting I	4
BUSN1100	Supervision	3
BUSN1150	Introduction to Service and Work Team Strategies	3
CPLT1005	Advanced Keyboarding and Document Processing	3
ITEC1080	Microsoft Productivity Apps 1	3
ITEC1090	Microsoft Productivity Apps 2	3
OFCR1301	Medical Terminology	4
OFCR1317	Medical Office Procedures	4
OFCR1335	Medical Coding and Reimbursement Fundamentals	4
OFCR1341	Medical Office Management	4
OFCR1345	U.S. Healthcare System	4

##### General Education Required 10 Credits

BIOL1400	Human Biology	4
COMM1250	Interpersonal Communication	3
ENGL1080	Professional Writing	3

##### General Education Elective 0 Credits

**Technical Studies Elective 0 Credits****Total Diploma Credits 48****Semester Sequence****Offered at Brooklyn Park and Eden Prairie****First Semester**

CPLT1005	Advanced Keyboarding and Document Processing	3
OFCR1301	Medical Terminology	4
OFCR1345	U.S. Healthcare System	4
COMM1250	Interpersonal Communication	3

**Total Credits 14****Second Semester**

ITEC1080	Microsoft Productivity Apps 1	3
OFCR1335	Medical Coding and Reimbursement Fundamentals	4
BIOL1400	Human Biology	4

**Total Credits 11****Third Semester**

ACCT1000	Introduction to Accounting or	3
ACCT1102	Principles of Accounting I	4
BUSN1150	Introduction to Service and Work Team Strategies	3
ITEC1090	Microsoft Productivity Apps 2	3
OFCR1317	Medical Office Procedures	4

**Total Credits 13****Fourth Semester**

BUSN1100	Supervision	3
OFCR1341	Medical Office Management	4
ENGL1080	Professional Writing	3

**Total Credits 10****Graduation (48 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Medical Coding Specialist (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

This program is offered in partnership with Anoka Technical College, and the award is issued by Anoka Technical College.

Medical coders are clinical data professionals who translate written medical documentation into alpha-numeric codes to comply with medical reimbursement procedures and health information data requirements. Accuracy and knowledge of patient confidentiality laws are required.

Information on Anoka Technical College courses can be found at [www.anokatech.edu](http://www.anokatech.edu) or by calling 763-576-4700.

#### Award Outcomes

Analyze medical record documentation in order to assign diagnostic and procedure codes

Provide important information for the health care reimbursement process

Assist in medical research and statistics

#### Career Opportunities

Career opportunities are available for individuals in health care settings such as clinics, hospitals, and nursing homes.

Note: A minimum course grade of a "C" must be earned in each of the courses to meet graduation requirements.

### Program Requirements

#### Technical Studies Required 34 Credits

ACCT1125	Excel	3
HITM1260	Professional Practice for Coding Specialists (Anoka)	3
HITM1130	ICD-10-CM Coding (Anoka)	3
HITM1200	Billing and Reimbursement (Anoka)	2
HITM1221	Introduction to Health Information Management (Anoka)	3
HITM1230	ICD-10-PCS (Anoka)	3
HITM1240	CPT Coding (Anoka)	3
HITM1244	Law and Ethics (Anoka)	2
HITM1250	Advanced Coding (Anoka)	2
HLTH1020	Disease Conditions	3
	or	
HLTH1000	Disease Conditions (Anoka)	2
BIOL1400	Human Biology	4
	or	
HLTH1005	Anatomy and Physiology (Anoka)	4
OFCR1301	Medical Terminology	4

#### General Education Required 9 Credits

PHIL1100	Critical Thinking for College Success	3
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#### Choose six credits from two of the discipline areas below: 6 Credits

SPCH (Anoka), ENGL (Anoka or HTC), or COMM (HTC)

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Diploma Credits 43

#### Semester Sequence - Full-Time

**Offered at Brooklyn Park and Eden Prairie**

This program is offered in partnership with Anoka Technical College, and the award is issued by Anoka Technical College.

**First Semester**

BIOL1400	Human Biology or	4
HLTH1005	Anatomy and Physiology (Anoka)	4
CCDS1100	Student Success	3
HITM1130	ICD-10-CM Coding (Anoka)	3
OFCR1301	Medical Terminology	4

**Total Credits 14****Second Semester**

CPLT1005	Advanced Keyboarding and Document Processing	3
HITM1221	Introduction to Health Information Management (Anoka)	3
HITM1230	ICD-10-PCS (Anoka)	3
HITM1240	CPT Coding (Anoka)	3
HLTH1000	Disease Conditions (Anoka) or	2
HLTH1020	Disease Conditions	3

**Total Credits 14****Third Semester**

HITM1260	Professional Practice for Coding Specialists (Anoka)	3
HITM1200	Billing and Reimbursement (Anoka)	2
HITM1244	Law and Ethics (Anoka)	2
HITM1250	Advanced Coding (Anoka)	2
	Choose 6 credits from 2 of the following discipline areas: SPCH (Anoka), ENGL (Anoka or HTC), or COMM (HTC)	6

**Total Credits 15****Graduation (43 Credits)**

Note: Many of the courses offered through Anoka Technical College are Web-enhanced or Online courses.

Note: Financial Aid for this program is only available through Anoka Technical College. Students will also need to complete the consortium process to have courses taken at HTC be included in the award at Anoka Technical College.

2/7/2022 : BP 2215 / EP 2216

**Semester Sequence - Part-Time****Offered at Brooklyn Park and Eden Prairie**

This program is offered in partnership with Anoka Technical College, and the award is issued by Anoka Technical College.

**First Semester**

BIOL1400	Human Biology or	4
HLTH1005	Anatomy and Physiology (Anoka)	4
CCDS1100	Student Success	3
OFCR1301	Medical Terminology	4

**Total Credits 11****Second Semester**

CPLT1005	Advanced Keyboarding and Document Processing	3
HLTH1000	Disease Conditions (Anoka)	2
HLTH1020	Disease Conditions	3
	Choose 6 credits from 2 of the following discipline areas: SPCH (Anoka), ENGL (Anoka or HTC), or COMM (HTC)	6

**Total Credits 11****Third Semester**

HITM1130	ICD-10-CM Coding (Anoka)	3
HITM1221	Introduction to Health Information Management (Anoka)	3
HITM1230	ICD-10-PCS (Anoka)	3

**Total Credits 9****Fourth Semester**

HITM1200	Billing and Reimbursement (Anoka)	2
HITM1240	CPT Coding (Anoka)	3
HITM1244	Law and Ethics (Anoka)	2
HITM1250	Advanced Coding (Anoka)	2

**Total Credits 9****Fifth Semester**

HITM1260	Professional Practice for Coding Specialists (Anoka)	3
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**Total Credits 3****Graduation (43 Credits)**

Note: Many of the courses offered through Anoka Technical College are Web-enhanced or Online courses.

Note: Financial Aid for this program is only available through Anoka Technical College. Students will also need to complete the consortium process to have courses taken at HTC be included in the award at Anoka Technical College.

## Medical Office Specialist (BP/EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

The Medical Office Specialist processes telephone calls, greets patients, schedules appointments, maintains patient file data, and may arrange for laboratory and diagnostic services. Accuracy, dependability and a courteous professional manner are essential. This career requires excellent verbal and written communication skills and knowledge of patient confidentiality laws.

Prerequisite: CPLT1000 Computer Keyboarding or qualifying score on keyboarding assessment test with demonstration of QWERTY home row typing technique. Qualifying score on math assessment test OR MATH0910 or MATH0920.

#### Award Outcomes

Apply medical terminology  
 Create business correspondence  
 Communicate using grammatically correct English  
 Document telephone communication  
 Schedule appointments  
 Demonstrate professional behavior  
 Interpret HIPAA regulations  
 Utilize an electronic health record  
 Demonstrate insurance and billing procedures

#### Career Opportunities

The medical receptionist will find job opportunities in a variety of health care settings.

#### Program Requirements

##### Technical Studies Required 15 Credits

CPLT1005	Advanced Keyboarding and Document Processing	3
OFCR1301	Medical Terminology	4
OFCR1317	Medical Office Procedures	4
OFCR1335	Medical Coding and Reimbursement Fundamentals	4

##### General Education Required 6 Credits

COMM1250	Interpersonal Communication	3
ENGL1080	Professional Writing	3

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 21

#### Semester Sequence

##### Offered at Brooklyn Park and Eden Prairie

##### First Semester

CPLT1005	Advanced Keyboarding and Document Processing	3
COMM1250	Interpersonal Communication	3
OFCR1301	Medical Terminology	4

##### Total Credits 10

##### Second Semester

ENGL1080	Professional Writing	3
OFCR1317	Medical Office Procedures	4

OFCR1335

Medical Coding and Reimbursement  
Fundamentals

4

**Total Credits 11**

**Graduation (21 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/4/2022 : BP 2008 / EP 2209

**Practical Nursing**

## Practical Nursing (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

Licensed Practical Nurses provide direct care under the supervision of a licensed physician or registered nurse. Licensed Practical Nurses use the nursing process to collect patient data and implement nursing care in maintenance of health as well as caring for those who are ill, injured or who have debilitating conditions.

Students attending courses full-time can complete this program in 2 semesters. Cleared criminal background study is required.

The courses listed below are designated to meet the requirements of the Minnesota Board of Nursing for qualifying to take the practical nursing state board licensing examination (NCLEX-PN). Upon successful completion of NCLEX-PN the graduate practical nurse is licensed as a Licensed Practical Nurse.

Process for applying to the Practical Nursing Program:

1. Interested students must email Maddie Smith (Madison.Smith@HennepinTech.edu) for more information about the application process.
2. Apply to Hennepin Technical College  
The Student Success Advisor will discuss the following requirements if applicable:
  - complete placement testing
  - have any prior coursework evaluated for transfer
3. Complete pre-requisite courses:
  - a. EMSV1020 or 8-hour CPR course for Health Care Providers offered by the American Heart Association or 8-hour CPR/AED for the Professional Rescuer course offered by the American Red Cross
  - b. NAHA1002 or NAHA1010 or currently on the Minnesota Department of Health Registry for Nursing Assistants
  - c. BIOL1400 or BIOL2005
  - d. BIOL2125 and BIOL2225
  - e. ENGL1250 or ENGL1100
  - f. NURS1015 or BIOL1100 or HLTH2001
  - g. Qualifying scores in reading, writing and math assessment tests
  - h. Qualifying scores on the HESI entrance exam
    - i. Scores of at least 60% cumulative and 70% in reading comprehension. The HESI entrance exam may be repeated one time, after which, if scores are met, then students must meet with a Student Success advisor.

Students may apply to the Practical Nursing Program while finishing the prerequisites. Applications are all online and will be submitted after students pass the HESI test. Students should be in touch with Maddie Smith, the Nursing Advisor, early in their time at Hennepin Tech as well as checking-in each semester to be sure they are on-track and to get information about upcoming cohorts.

#### Award Outcomes

- Demonstrate effective communication techniques while providing patient care founded on basic physical, developmental, spiritual, cultural, functional, and psychosocial needs of individual patients across the lifespan
- Manage care through planning, organizing or assigning aspects of care to UAP's and LPN's under the direction of an RN or other licensed Health Care Provider
- Participate as a member of the inter-professional team collaborating with other health care providers to promote safe, quality, patient centered care
- Demonstrate nursing safety principles
- Utilize information technology effectively in the provision of care
- Demonstrate professional behaviors in accordance with legal and ethical nursing practice standards
- Utilize evidence-based nursing judgment when providing individualized patient care when prioritizing care across the lifespan
- Participate in quality improvement

#### Career Opportunities

Opportunities for employment may be available in hospitals, clinics, home health agencies, long-term care facilities, transitional care facilities, industry and the armed forces.

#### Program Requirements

##### Technical Studies Required 33 Credits

NURS1375	Fundamentals of Nursing	8
NURS1380	Medical Surgical Nursing I	8

NURS2375	Medical Surgical Nursing II	8
NURS2380	Transition to Practice	8
NURS1015	Nutrition Basics	1
	or	
BIOL1100	Nutrition and Health	3
	or	
HLTH2001	Nutrition and Health	2
<b>General Education Required 16 Credits</b>		
BIOL1400	Human Biology	4
	or	
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
	and	
BIOL2225	Anatomy and Physiology II	4
ENGL1100	Writing and Research	4
	or	
ENGL1250	Short Form Composition and Reporting	4

**General Education Elective 0 Credits****Technical Studies Elective 0 Credits****Total Diploma Credits 49****Semester Sequence****Offered at Brooklyn Park and Eden Prairie****Priority Point System**

- Completing the prerequisite courses does not guarantee acceptance into the program. The program uses a Point System admissions process to rank the top applicants for acceptance into the program. If there are more qualified applicants than spaces available, HTC will use the following priority point system to rank students.
- The student's GPA for the prerequisite courses is multiplied by 50% and the student's cumulative score for the HESI A2 exam will also be multiplied by 50%. The two numbers will be added up for a total score.

**Application Session:**

Students must attend an application session prior to applying to the program. Applications sessions are typically 1-2 semesters prior to starting the program.

Nursing Application Session Dates - To Be Determined.

**HESI Admission Assessment Exam Required for Admission:**

After attending an application session students will be invited to complete the HESI Admission Assessment Exam. The HESI Admission Assessment Exam tests students on three main academic areas – English Language (divided into vocabulary, grammar and reading), Math and Science. All students applying to the nursing program are expected to complete the HESI Admission Assessment prior to applying to the program. Students can take the HESI exam twice per semester.

Students must earn a 70% or higher on the reading section and have a cumulative score of 60% or greater on all 5 sections to be eligible for the nursing program.

HESI Admission Assessment Exam Dates - To Be Determined

**Pre-Practical Nursing Courses/Prerequisites**

The following courses must be completed with a "C" or better, students must also have a cumulative GPA of 2.50 or greater, and students may only repeat the courses one time in the three-year period prior to application: BIOL1400 or BIOL2005, BIOL2125, BIOL2225, NURS1015 or HLTH2001 or BIOL1100, ENGL1100 or ENGL1250.

EMSV1020	CPR/First Aid (taken within last 2 years)	1
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	or Current Basic Life Support (BLS) for Health Care Provider	
MATH0960	Mathematical Literacy (preference)	4
MATH0940	or Beginning Algebra or Score of 261+ on Accuplacer Quantitative Reasoning, Algebra, and Statistics (QAS) Test	3
NAHA1002	Nursing Assistant/Home Health Aide	5
NAHA1010	or Nursing Assistant or Currently on the MN Department of Health registry for Nursing Assistants	4
BIOL1400	Human Biology	4
BIOL2005	or General Biology I	4
BIOL2125	Anatomy and Physiology I and	4
BIOL2225	Anatomy and Physiology II	4
NURS1015	Nutrition Basics	1
HLTH2001	or Nutrition and Health	2
BIOL1100	or Nutrition and Health	3
ENGL1100	Writing and Research	4
ENGL1250	or Short Form Composition and Reporting	4

**Total Credits 17**

Students transferring coursework from another college must contact the HTC Transfer Specialist prior to applying to the nursing program.

**First Semester**

NURS1375	Fundamentals of Nursing	8
NURS1380	Medical Surgical Nursing I	8

**Total Credits 16****Second Semester**

NURS2375	Medical Surgical Nursing II	8
NURS2380	Transition to Practice	8

**Total Credits 16****General Information**

- The Practical Nursing program at Hennepin Technical College is approved by the Minnesota Board of Nursing.
- Students who have earned their Practical Nursing Diploma are eligible to take the national licensure exam (NCLEX-PN).
- Students unsuccessful in the nursing program are allowed to reapply once. Students must include a written plan for success with the application.

**Criminal Background Studies**

**Criminal Background Studies:** Minnesota law requires that any person who provides services that involve direct contact with children, patients, and residents at a health or child care facility licensed by the State of Minnesota must have a background study conducted by the state. Individuals with specified felony convictions are prohibited from having direct contact with children, patients, and residents of licensed facilities. Anyone refusing to cooperate in the criminal background study cannot participate in coursework that requires direct contact with children, patients or residents. Students who are disqualified from having direct patient/resident/child contact will not be able participate in coursework which includes a practical experience. Therefore, completion of coursework for the program major will not be possible without documentation of a cleared background study. Contact the MN Department of Human Services, 651-431-2000, with questions. The Minnesota Board of Nursing may have additional requirements prior to licensure. Please contact them with questions.

**Graduation (49 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

5/20/2022 : BP 7510 / EP 7511

## Practical Nursing (BP/EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

The AAS Degree option in Practical Nursing is designed for those who would like to fulfill some of the general education requirements to pursue a professional nursing degree or other advanced degree through Hennepin Tech. The diploma is required to take the licensure exam and for entry into practice; therefore this is an option in addition to the diploma. This may be taken either at the same time or after graduating with the diploma. Students are encouraged to contact the program to which they wish to transfer for specific information about their requirements to ensure the student selects the appropriate courses.

Licensed Practical Nurses provide direct care under the supervision of a licensed physician or registered nurse. Licensed Practical Nurses use the nursing process to collect patient data and implement nursing care in maintenance of health as well as caring for those who are ill, injured or who have debilitating conditions.

Students attending courses full-time can complete this program in 2 semesters. Cleared criminal background study is required.

The courses listed below are designated to meet the requirements of the Minnesota Board of Nursing for qualifying to take the practical nursing state board licensing examination (NCLEX-PN). Upon successful completion of NCLEX-PN the graduate practical nurse is licensed as a Licensed Practical Nurse.

Process for applying to the Practical Nursing Program:

1. Interested students must email Maddie Smith (Madison.Smith@HennepinTech.edu) for more information about the application process.
2. Apply to Hennepin Technical College  
The Student Success Advisor will discuss the following requirements if applicable:
  - complete placement testing
  - have any prior coursework evaluated for transfer
3. Complete pre-requisite courses:
  - a. EMSV1020 or 8-hour CPR course for Health Care Providers offered by the American Heart Association or 8-hour CPR/AED for the Professional Rescuer course offered by the American Red Cross
  - b. NAHA1002 NAHA1010 or currently on the Minnesota Department of Health Registry for Nursing Assistants
  - c. BIOL1400 or BIOL2005
  - d. BIOL2125 and BIOL2225
  - e. ENGL1250 or ENGL1100
  - f. NURS1015 or BIOL1100 HLTH2001
  - g. Qualifying scores in reading, writing and math assessment tests
  - h. Qualifying scores on the HESI entrance exam
    - i. Scores of at least 60% cumulative and 70% in reading comprehension. The HESI entrance exam may be repeated one time, after which, if scores are met, then students must meet with a Student Success advisor.

Students may apply to the Practical Nursing Program while finishing the prerequisites. Applications are all online and will be submitted after students pass the HESI test. Students should be in touch with Maddie Smith, the Nursing Advisor, early in their time at Hennepin Tech as well as checking-in each semester to be sure they are on-track and to get information about upcoming cohorts.

#### Award Outcomes

- Demonstrate effective communication techniques while providing patient care founded on basic physical, developmental, spiritual, cultural, functional, and psychosocial needs of individual patients across the lifespan
- Manage care through planning, organizing or assigning aspects of care to UAP's and LPN's under the direction of an RN or other licensed Health Care Provider
- Participate as a member of the inter-professional team collaborating with other health care providers to promote safe, quality, patient centered care
- Demonstrate nursing safety principles
- Utilize information technology effectively in the provision of care
- Demonstrate professional behaviors in accordance with legal and ethical nursing practice standards
- Utilize evidence-based nursing judgment when providing individualized patient care when prioritizing care across the lifespan
- Participate in quality improvement

#### Career Opportunities

Opportunities for employment may be available in hospitals, clinics, home health agencies, long-term care facilities, transitional care facilities, assisted living facilities, industry and the armed forces.

**Program Requirements****Technical Studies Required 33 Credits**

NURS1375	Fundamentals of Nursing	8
NURS1380	Medical Surgical Nursing I	8
NURS2375	Medical Surgical Nursing II	8
NURS2380	Transition to Practice	8
NURS1015	Nutrition Basics or	1
BIOL1100	Nutrition and Health or	3
HLTH2001	Nutrition and Health	2

**General Education Required 19 Credits**

BIOL1400	Human Biology or	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I and	4
BIOL2225	Anatomy and Physiology II	4
ENGL1100	Writing and Research or	4
ENGL1250	Short Form Composition and Reporting	4
	Choose one course from MnTC Goal Area 5	3

**General Education Elective 8 Credits**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 60****Semester Sequence****Offered at Brooklyn Park and Eden Prairie**

In addition to all of the Diploma requirements, students who are seeking the degree also must complete the following requirements:

**Required Additional General Education Courses**

These courses can be taken prior to or after Practical Nursing program admission:

Choose one course from MnTC Goal Area 5	3
Choose 8 MnTC General Education Electives to reach a 60-credit total	8

**Suggested Electives**

**Students planning to transfer are encouraged to consult the transfer college for program requirements before choosing electives.**

	Suggested MnTC electives:	
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
CHEM1000	Introduction to Chemistry	4
CHEM1100	General, Organic, and Biological Chemistry Foundations	4
MATH1250	Introduction to Statistics	3

MATH1400	College Algebra	4
PHIL1400	Medical Ethics	4
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
	Humanities/Fine Arts Offerings:	
ARTS1000	Elements of Design	3
ARTS1005	Art and Social Justice	3
ARTS1050	Introduction to Art	3
ENGL1060	Food in Literature and Film	3
MUSC1010	Influence of Pop/Rock Music	3
MUSC1015	World Music	3
MUSC1020	Class Guitar	3
PHIL1200	Ethics	3
PHIL1400	Medical Ethics	4
PHIL1500	World Religions	3

### Graduation (60 Credits)

Due to circumstances beyond our control, the information herein is subject to change without notice.

5/12/2022 : BP 7506 / EP 7507

# Manufacturing and Engineering Technology

Automation Robotics Engineering Technology

## Automation Robotics Engineering Technology (EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

Successful completion of training in Automation Robotics Engineering Technology leads to competitive compensation in a high-demand field. Automation Knowledge, Skills, and Attitudes (mind and hands) are applied to the designing, building, installing, and troubleshooting of high-tech, high-speed automated electro-mechanical machinery systems for Packaging and other manufacturing applications. Emphasized skills include problem-solving, repairing, fabricating, machining, and welding. Automated systems typically include Computers, Touch Screens, Quality Assurance, Vision Systems, Lasers, Robots, Programmable Logic Controllers (PLC), AC/DC/Servo/Stepper/VFD motor controls, hydraulic and pneumatic controls, Conveyors, Bar Code/SmartCard/RFID, Electrical systems, Electronic Circuits, and a wide variety of Sensors. Graduates are eligible to pursue baccalaureate programs in manufacturing and engineering technology.

#### Award Outcomes

Diagnose root problems impacting production flow  
 Solve root problems to maintain production flow  
 Perform basic electrical, electronic, welding, machining, laser, vision system, robotic, and fluid power operations  
 Apply electrical and mechanical machine control concepts  
 Use technical documents to assemble, install, troubleshoot, and repair automated packaging systems  
 Set up production lines  
 Utilize local area network for remote system control  
 Work effectively with a wide variety of packaging materials  
 Apply communication skills to interact with people in business and industry  
 Manage time and resources  
 Accept responsibility  
 Display a professional attitude

#### Career Opportunities

Automated packaging machine mechanics and technicians are in high demand; surveys indicate even a greater demand as technologies advance. Before reaching the consumer, almost every product is packaged and packed in several forms. Automation in the manufacturing industry is a high opportunity field. This is a Packaging Machinery Manufacturers Institute (PMMI) approved program.

#### Program Requirements

##### Technical Studies Required 45 Credits

ARET1126	Mechanical Power Transmission	3
ARET1130	Maintenance Operations	2
ARET1140	Computer Integrated Manufacturing	3
ARET1155	Automation Controls	3
ARET1161	Mechatronic Systems	3
ARET1165	Vision Systems for QA/SPC	3
ARET1170	Troubleshooting Mechatronic Systems	3
ARET1175	Industrial Electricity and Electronics I	3
ARET1180	Industrial Electricity and Electronics II	3
ARET1185	Sensor Applications	2
ARET1190	Programmable Logic Controllers	3
ARET1200	Introduction to Robotics	2
ARET2101	Advanced Automation Controls	3
ARET2105	Fluid Power Motion Control	2
ARET2111	Advanced Programmable Logic Controllers	3
ARET2150	Engineering Design and Fabrication	2
ARET2200	FANUC Robotics Operations	2

##### General Education Required 12 Credits

ENGL1070	Technical Writing or	3
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ENGL1100	Writing and Research	4
MATH1150	Applications of Quantitative Reasoning	3
MATH1400	or College Algebra or MnTC Goal Area 4	4
PHIL1100	Critical Thinking for College Success or MnTC Goal Area 2	3
PHYS1005	Introductory Physics I or MnTC Goal Area 3	3

**General Education Elective 3 Credits**

Choose three credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 60****Semester Sequence****Offered at Eden Prairie Only****First Semester**

ARET1126	Mechanical Power Transmission	3
ARET1161	Mechatronic Systems	3
ARET1175	Industrial Electricity and Electronics I	3
ARET1200	Introduction to Robotics	2
MATH1150	Applications of Quantitative Reasoning	3
MATH1400	or College Algebra or Any course from MnTC Goal Area 4	4

**Total Credits 14****Second Semester**

ARET1130	Maintenance Operations	2
ARET1140	Computer Integrated Manufacturing	3
ARET1155	Automation Controls	3
ARET1180	Industrial Electricity and Electronics II	3
ENGL1070	Technical Writing or	3
ENGL1100	Writing and Research	4

**Total Credits 14****Third Semester**

ARET1165	Vision Systems for QA/SPC	3
ARET1185	Sensor Applications	2
ARET1190	Programmable Logic Controllers	3
ARET2105	Fluid Power Motion Control	2
PHIL1100	Critical Thinking for College Success or Any course from MnTC Goal Area 2	3

PHYS1005	Introductory Physics I or Any course from MnTC Goal Area 3	3
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**Total Credits 16****Fourth Semester**

ARET1170	Troubleshooting Mechatronic Systems	3
ARET2101	Advanced Automation Controls	3
ARET2111	Advanced Programmable Logic Controllers	3
ARET2150	Engineering Design and Fabrication	2
ARET2200	FANUC Robotics Operations	2
	General Education Electives	3

**Total Credits 16****General Education Electives**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 3 Credits****MnTC Goal Area 2**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3
MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

**MnTC Goal Area 3**

BIOL1000	Biology in Society	4
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
CHEM1000	Introduction to Chemistry	4
CHEM1100	General, Organic, and Biological Chemistry Foundations	4
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
PHYS2005	College Physics I	4
PHYS2010	College Physics II	4

**MnTC Goal Area 4**

MATH1150	Applications of Quantitative Reasoning	3
MATH1250	Introduction to Statistics	3
MATH1400	College Algebra	4
PHIL1200	Ethics	3

**Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

3/2/2022 : BP / EP 4004

# Automated Machinery Repair Technician (EP) Associate in Applied Science Degree

## Overview and Award Outcomes

### Overview

Students in the Automated Machinery Repair Technician program are introduced to manufacturing, maintaining, and monitoring high-tech mechanical systems. Technicians use their advanced skills in machining processes combined with knowledge of Automated Systems and Robotics to build or repair machinery, equipment and mechanical parts, and assemble these into working systems. They build and set up individual systems and monitor their operation. Should an error occur, technicians diagnose, troubleshoot and then repair and maintain the machinery as needed. In this program, students will take courses at Eden Prairie and Brooklyn Park Campuses of Hennepin Technical College.

### Award Outcomes

Interpret blueprints/drawings  
 Machine parts with tolerance  
 Operate CNC machines efficiently  
 Solve root problems to maintain production flow  
 Use technical documents to assemble, install, troubleshoot, and repair automated packaging systems  
 Apply electrical and mechanical machine control concepts  
 Utilize local area network for remote system control  
 Manage time and resources

### Career Opportunities

Career opportunities are wide-spread in Minnesota and throughout the United States. Extensive opportunities exist as Maintenance, Engineering, and Field-Service Technicians for industrial equipment as well as Machine Builders, Machine Integrators, and Robotic Technicians. This program aligns with the ICATT Apprenticeship Program's Advanced Manufacturing Technician pathway.

## Program Requirements

### Technical Studies Required 45 Credits

ARET1126	Mechanical Power Transmission	3
ARET1130	Maintenance Operations	2
ARET1155	Automation Controls	3
ARET1170	Troubleshooting Mechatronic Systems	3
ARET1175	Industrial Electricity and Electronics I	3
ARET1180	Industrial Electricity and Electronics II	3
ARET1190	Programmable Logic Controllers	3
ARET1200	Introduction to Robotics	2
ARET2101	Advanced Automation Controls	3
	or	
ARET2111	Advanced Programmable Logic Controllers	3
ARET2105	Fluid Power Motion Control	2
ARET2200	FANUC Robotics Operations	2
ARET1165	Vision Systems for QA/SPC	3
	or	
ARET2250	FANUC Vision Systems	1
MACH1056	Blueprint Reading I	3
MACH1110	Turning Technology I	3
MACH1125	Milling Technology I	3

MACH1205	Machine Tool Technology	3
MACH2400	CNC Setup and Operation	3

**General Education Required 12 Credits**

ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
MATH1150	Applications of Quantitative Reasoning	3
	or	
MATH1400	College Algebra	4
	or	
	MnTC Goal Area 4	
PHIL1100	Critical Thinking for College Success	3
	or	
	MnTC Goal Area 2	
PHYS1005	Introductory Physics I	3
	or	
	MnTC Goal Area 3	

**General Education Elective 3 Credits**

Choose three credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree 60 Credits****Semester Sequence****Offered at Eden Prairie Only****First Semester**

ARET1126	Mechanical Power Transmission	3
ARET1175	Industrial Electricity and Electronics I	3
ARET1200	Introduction to Robotics	2
ARET2105	Fluid Power Motion Control	2
MACH1056	Blueprint Reading I	3
MATH1150	Applications of Quantitative Reasoning	3
	or	
MATH1400	College Algebra	4
	or	
	Any course from MnTC Goal Area 4	

**Total Credits 16****Second Semester**

ARET1130	Maintenance Operations	2
ARET1155	Automation Controls	3
ARET1180	Industrial Electricity and Electronics II	3
MACH1205	Machine Tool Technology	3
ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4

**Total Credits 14****Third Semester**

ARET1190	Programmable Logic Controllers	3
MACH1110	Turning Technology I	3

MACH1125	Milling Technology I	3
PHIL1100	Critical Thinking for College Success or Any course from MnTC Goal Area 2	3
PHYS1005	Introductory Physics I or Any course from MnTC Goal Area 3	3

**Total Credits 15****Fourth Semester**

ARET1170	Troubleshooting Mechatronic Systems	3
ARET2101	Advanced Automation Controls or	3
ARET2111	Advanced Programmable Logic Controllers	3
ARET2200	FANUC Robotics Operations	2
ARET1165	Vision Systems for QA/SPC or	3
ARET2250	FANUC Vision Systems	1
MACH2400	CNC Setup and Operation	3

**Total Credits 15****General Education Electives**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 3 Credits****MnTC Goal Area 2**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3
MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

**MnTC Goal Area 3**

BIOL1000	Biology in Society	4
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4

CHEM1000	Introduction to Chemistry	4
CHEM1100	General, Organic, and Biological Chemistry Foundations	4
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
PHYS2005	College Physics I	4
PHYS2010	College Physics II	4
<b>MnTC Goal Area 4</b>		
MATH1150	Applications of Quantitative Reasoning	3
MATH1250	Introduction to Statistics	3
MATH1400	College Algebra	4
PHIL1000	Introduction to Logic	3

**Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

3/4/2022 : BP / EP 4015

## Mechatronics (EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

Mechatronics is a rapidly growing field that integrates electrical systems, mechanics, fluid power, robotics, and computer control systems to create new and improved automated manufacturing production systems. This program is designed for people who are interested in plant maintenance, set up, installation, and assembly. The Mechatronics program is designed to reinforce the core technical skills and real-world application needed in today's manufacturing environment. Through alignment with PMMI's (The Association for Packaging and Processing Technologies) Mechatronics Certification Program, Hennepin Technical College's Mechatronics AAS offers a set of stackable credentials that are recognized by the U.S. Department of Labor and endorsed by the National Association of Manufacturer's Skills Certification System. This industry developed, third-party validated, nationally recognized credential is focused on ensuring graduates have the core technical skills with real world application for today's high-tech manufacturing environment. These jobs are found in the packaging, medical, electronics, agriculture, biotechnology, and automotive industries.

#### Award Outcomes

Apply technical documents to the installation and troubleshooting of automated packaging equipment  
 Apply Mechatronics control concepts to automated machinery  
 Use technical documents to assemble, install, troubleshoot and repair automated packaging systems  
 Diagnose root problems impacting production flow  
 Solve root problems to maintain production flow  
 Integrate automated systems into new and existing packaging and manufacturing lines  
 Perform basic Mechatronics operations in a manufacturing environment  
 Apply communication skills to interact with people in business and industry  
 Manage time and resources

#### Career Opportunities

Career opportunities are wide-spread in Minnesota and throughout the United States. Extensive opportunities exist as Electrical and Electronics Technicians for industrial equipment, Industrial Machinery Mechanics, Industrial Engineering Technicians, Mechanical Engineering Technicians, and as Packaging Technicians.

#### Program Requirements

##### Technical Studies Required 48 Credits

ARET1126	Mechanical Power Transmission	3
ARET1130	Maintenance Operations	2
ARET1140	Computer Integrated Manufacturing	3
ARET1155	Automation Controls	3
ARET1161	Mechatronic Systems	3
ARET1165	Vision Systems for QA/SPC	3
ARET1170	Troubleshooting Mechatronic Systems	3
ARET1175	Industrial Electricity and Electronics I	3
ARET1180	Industrial Electricity and Electronics II	3
ARET1185	Sensor Applications	2
ARET1190	Programmable Logic Controllers	3
ARET1200	Introduction to Robotics	2
ARET2101	Advanced Automation Controls	3
ARET2105	Fluid Power Motion Control	2
ARET2111	Advanced Programmable Logic Controllers	3
ARET2200	FANUC Robotics Operations	2
ARET2250	FANUC Vision Systems	1
ENGC1250	SOLIDWORKS I	4

##### General Education Required 12 Credits

ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4

MATH1150	Applications of Quantitative Reasoning	3
MATH1400	or College Algebra or MnTC Goal Area 4	4
PHIL1100	Critical Thinking for College Success or MnTC Goal Area 2	3
PHYS1005	Introductory Physics I or MnTC Goal Area 3	3

### General Education Elective 3 Credits

Choose three credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

### Technical Studies Elective 9 Credits

Any Automation Robotics Engineering Technology (ARET), Center for Manufacturing and Applied Engineering (CMAE), Fluid Power Engineering and Motion Control (FLPW), Machine Tool Technology (MACH), or Welding and Metal Fabrication (WLDG) course that is not required for this award may be used as an elective.

### Total Associate in Applied Science Degree 72 Credits

#### Semester Sequence

#### Offered at Eden Prairie Only

#### First Semester

ARET1126	Mechanical Power Transmission	3
ARET1161	Mechatronic Systems	3
ARET1175	Industrial Electricity and Electronics I	3
ARET1200	Introduction to Robotics	2
MATH1150	Applications of Quantitative Reasoning or	3
MATH1400	College Algebra or Any course from MnTC Goal Area 4	4
PHIL1100	Critical Thinking for College Success or Any course from MnTC Goal Area 2	3

#### Total Credits 17

#### Second Semester

ARET1130	Maintenance Operations	2
ARET1140	Computer Integrated Manufacturing	3
ARET1155	Automation Controls	3
ARET1180	Industrial Electricity and Electronics II	3
ENGC1250	SOLIDWORKS I	4
ENGL1070	Technical Writing or	3
ENGL1100	Writing and Research	4

#### Total Credits 18

#### Summer Semester

PHYS1005	Introductory Physics I or	3
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Any course from MnTC Goal Area 3

General Education Electives 3

**Total Credits 6**

**Third Semester**

ARET1165	Vision Systems for QA/SPC	3
ARET1185	Sensor Applications	2
ARET1190	Programmable Logic Controllers	3
ARET2105	Fluid Power Motion Control	2

Technical Studies Electives 6

**Total Credits 16**

**Fourth Semester**

ARET1170	Troubleshooting Mechatronic Systems	3
ARET2101	Advanced Automation Controls	3
ARET2111	Advanced Programmable Logic Controllers	3
ARET2200	FANUC Robotics Operations	2
ARET2250	FANUC Vision Systems	1

Technical Studies Electives 3

**Total Credits 15**

**Graduation (72 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Supply Chain Technician (EP) Diploma

### Overview and Award Outcomes

#### Overview

The Supply Chain Technician installs, operates, supports, upgrades or maintains the automated material handling equipment and systems that support the supply chain. This person is skilled in the hands-on operation and changeover of automated production and packaging machines used in manufacturing and the supply chain. This program teaches the skills to familiarize students in basic mechanical skills and standard operation procedures found in these areas.

#### Award Outcomes

Diagnose root problems impacting production flow  
 Solve root problems to maintain production flow  
 Perform basic electrical, electronic, welding, machining, laser, vision system, robotic, and fluid power operations  
 Apply electrical and mechanical machine control concepts  
 Set up production lines  
 Work effectively with a wide variety of packaging materials  
 Accept responsibility  
 Display a professional attitude

#### Career Opportunities

Career opportunities are entry-level positions in manufacturing companies and distribution networks.

#### Program Requirements

##### Technical Studies Required 29 Credits

ARET1126	Mechanical Power Transmission	3
ARET1130	Maintenance Operations	2
ARET1140	Computer Integrated Manufacturing	3
ARET1155	Automation Controls	3
ARET1161	Mechatronic Systems	3
ARET1165	Vision Systems for QA/SPC	3
	or	
CMAE1528	360 Career Success Skills	1
ARET1170	Troubleshooting Mechatronic Systems	3
ARET1175	Industrial Electricity and Electronics I	3
ARET1180	Industrial Electricity and Electronics II	3
ARET1190	Programmable Logic Controllers	3
ARET2105	Fluid Power Motion Control	2

##### General Education Required 4 Credits

COMM1007	Communication for Success in the Workplace	2
	or	
	Choose one course from MnTC Goal Area 1	
MATH1007	Math for the Trades	2
	or	
	Choose one course from MnTC Goal Area 2	

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Diploma Credits 33

##### Semester Sequence

##### Offered at Eden Prairie Only

##### First Semester

ARET1126	Mechanical Power Transmission	3
ARET1161	Mechatronic Systems	3
ARET1165	Vision Systems for QA/SPC	3
	or	
CMAE1528	360 Career Success Skills	1
ARET1175	Industrial Electricity and Electronics I	3
ARET1190	Programmable Logic Controllers	3
COMM1007	Communication for Success in the Workplace	2
	or	
	Choose one course from MnTC Goal Area 1	

**Total Credits 15**

**Second Semester**

ARET1130	Maintenance Operations	2
ARET1140	Computer Integrated Manufacturing	3
ARET1155	Automation Controls	3
ARET1170	Troubleshooting Mechatronic Systems	3
ARET1180	Industrial Electricity and Electronics II	3
ARET2105	Fluid Power Motion Control	2
MATH1007	Math for the Trades	2
	or	
	Choose one course from MnTC Goal Area 2	

**Total Credits 18**

**Graduation (33 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Automated Machinery Systems (EP) Diploma

### Overview and Award Outcomes

#### Overview

Successful completion of training in Automation Robotics Engineering Technology leads to competitive compensation in a high-demand field. Automation Knowledge, Skills, and Attitudes (mind and hands) are applied to the designing, building, installing, and troubleshooting of high-tech, high-speed automated electro-mechanical machinery systems for Packaging and other manufacturing applications. Emphasized skills include problem-solving, repairing, fabricating, machining, and welding. Automated systems typically include Computers, Touch Screens, Quality Assurance, Vision Systems, Lasers, Robots, Programmable Logic Controllers (PLC), AC/DC/Servo/Stepper/VFD motor controls, hydraulic and pneumatic controls, Conveyors, Bar Code/SmartCard/RFID, Electrical systems, Electronic Circuits, and a wide variety of Sensors.

#### Award Outcomes

Diagnose root problems impacting production flow  
 Solve root problems to maintain production flow  
 Perform basic electrical, electronic, welding, machining, laser, vision system, robotic, and fluid power operations  
 Apply electrical and mechanical machine control concepts  
 Use technical documents to assemble, install, troubleshoot, and repair automated packaging systems  
 Set up production lines  
 Utilize local area network for remote system control  
 Work effectively with a wide variety of packaging materials  
 Apply communication skills to interact with people in business and industry  
 Manage time and resources  
 Accept responsibility  
 Display a professional attitude

#### Career Opportunities

Automated packaging machine mechanics and technicians are in high demand; surveys indicate even a greater demand as technologies advance. Before reaching the consumer, almost every product is packaged and packed in several forms. Automation in the manufacturing industry is a high opportunity field. This is a Packaging Machinery Manufacturers Institute (PMMI) approved program.

### Program Requirements

#### Technical Studies Required 46 Credits

ARET1126	Mechanical Power Transmission	3
ARET1130	Maintenance Operations	2
ARET1140	Computer Integrated Manufacturing	3
ARET1155	Automation Controls	3
ARET1161	Mechatronic Systems	3
ARET1165	Vision Systems for QA/SPC	3
ARET1170	Troubleshooting Mechatronic Systems	3
ARET1175	Industrial Electricity and Electronics I	3
ARET1180	Industrial Electricity and Electronics II	3
ARET1185	Sensor Applications	2
ARET1190	Programmable Logic Controllers	3
ARET1200	Introduction to Robotics	2
ARET2101	Advanced Automation Controls	3
ARET2105	Fluid Power Motion Control	2
ARET2111	Advanced Programmable Logic Controllers	3
ARET2150	Engineering Design and Fabrication	2
ARET2200	FANUC Robotics Operations	2
ARET2250	FANUC Vision Systems	1

#### General Education Required 6 Credits

Choose one course from MnTC Goal Area 1	3
Choose one course from MnTC Goal Area 2	3

#### General Education Elective 0 Credits

**Technical Studies Elective 8 Credits**

Any combination of ARET, CMAE and/or ENGC courses listed below that are not required for this award may be used as an elective totaling 8 credits.

## Recommended:

ARET1900	Specialized Lab	1 - 4
ARET2181	Internship	1 - 4
ARET2500	Industrial Networks	2
ARET2540	Project Management for Manufacturing	2
ARET2560	Instrumentation and Process Control I	3
CMAE1510	Print Reading	2
CMAE1514	Safety Awareness	2
CMAE1528	360 Career Success Skills	1
	or	
ENGC1250	SOLIDWORKS I	4

**Total Diploma Credits 60****Semester Sequence****Offered at Eden Prairie Only****First Semester**

ARET1126	Mechanical Power Transmission	3
ARET1161	Mechatronic Systems	3
ARET1175	Industrial Electricity and Electronics I	3
ARET1200	Introduction to Robotics	2
	Choose one course from MnTC Goal Area 1	3

**Total Credits 14****Second Semester**

ARET1130	Maintenance Operations	2
ARET1140	Computer Integrated Manufacturing	3
ARET1155	Automation Controls	3
ARET1180	Industrial Electricity and Electronics II	3
	Choose one course from MnTC Goal Area 2	3

**Total Credits 14****Summer Semester**

	Technical Studies Electives	4
	Recommended:	
ARET2181	Internship	1 - 4

**Total Credits: 4****Third Semester**

ARET1165	Vision Systems for QA/SPC	3
ARET1185	Sensor Applications	2
ARET1190	Programmable Logic Controllers	3
ARET2105	Fluid Power Motion Control	2
	Technical Studies Electives	4

**Total Credits 14****Fourth Semester**

ARET1170	Troubleshooting Mechatronic Systems	3
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ARET2101	Advanced Automation Controls	3
ARET2111	Advanced Programmable Logic Controllers	3
ARET2150	Engineering Design and Fabrication	2
ARET2200	FANUC Robotics Operations	2
ARET2250	FANUC Vision Systems	1

**Total Credits 14****Technical Studies Electives**

Any Automation Robotics Engineering Technology (ARET) course that is not required for this award may be used as an elective.

	Recommended:	
ARET1900	Specialized Lab	1 - 4
ARET2181	Internship	1 - 4
ARET2500	Industrial Networks	2
ARET2540	Project Management for Manufacturing	2
ARET2560	Instrumentation and Process Control I	3
CMAE1510	Print Reading	2
CMAE1514	Safety Awareness	2
CMAE1528	360 Career Success Skills	1
	or	
ENGC1250	SOLIDWORKS I	4

**Choose a Total of: 8 Credits****Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/18/2022 : BP / EP 4005

## Controls Engineering Technician (EP) Diploma

### Overview and Award Outcomes

#### Overview

The Controls Engineering Technician Diploma degree emphasis is a 60-credit program. The program combines a thorough understanding of how computers and machines communicate as well as system level troubleshooting, Mechatronics systems, Robotic systems, Machine Vision Systems and a solid education in electrical engineering technology fundamentals. Students are prepared to install Mechatronics systems and how to analyze and implement feedback control systems (automation). The emphasis of this program is on the Electronic Control systems utilized in a modern manufacturing facility and on Packaging Equipment.

#### Award Outcomes

Diagnose and solve root problems to ensure production flow is maintained  
 Utilize local area network for remote system control  
 Apply technical documents to the installation and troubleshooting of automated packaging equipment  
 Manipulate objects and dimensions in engineering drawings and electrical schematics  
 Appraise operations for adherence to safety standards  
 Administer controllers to for single and multiple variable systems control  
 Appraise control equipment and systems for applications and operations in automation and packaging systems  
 Utilize project management practices for the life cycle of automation and packaging equipment  
 Integrate automated systems into new and existing packaging and manufacturing lines

#### Career Opportunities

Career opportunities are wide-spread in Minnesota and throughout the United States. Extensive opportunities exist as Electrical and Electronics Technicians for industrial equipment, Industrial Machinery Mechanics, Industrial Engineering Technicians, Mechanical Engineering Technicians, and as Packaging Technicians.

### Program Requirements

#### Technical Studies Required 54 Credits

ARET1126	Mechanical Power Transmission	3
ARET1140	Computer Integrated Manufacturing	3
ARET1155	Automation Controls	3
ARET1161	Mechatronic Systems	3
ARET1165	Vision Systems for QA/SPC	3
ARET1170	Troubleshooting Mechatronic Systems	3
ARET1175	Industrial Electricity and Electronics I	3
ARET1180	Industrial Electricity and Electronics II	3
ARET1185	Sensor Applications	2
ARET1190	Programmable Logic Controllers	3
ARET1200	Introduction to Robotics	2
ARET2101	Advanced Automation Controls	3
ARET2111	Advanced Programmable Logic Controllers	3
ARET2200	FANUC Robotics Operations	2
ARET2250	FANUC Vision Systems	1
ARET2500	Industrial Networks	2
ARET2540	Project Management for Manufacturing	2
ARET2560	Instrumentation and Process Control I	3
ARET2580	Instrumentation and Process Control II	3
ENGC1250	SOLIDWORKS I	4

#### General Education Required 6 Credits

ENGL1070	Technical Writing or MnTC Goal Area 1	3
MATH1150	Applications of Quantitative Reasoning or	3
MATH1400	College Algebra	4

or  
MnTC Goal Area 4

**General Education Elective 0 Credits**

**Technical Studies Elective 0 Credits**

**Total Diploma Credits 60**

**Semester Sequence**

**Offered at Eden Prairie Only**

**First Semester**

ARET1126	Mechanical Power Transmission	3
ARET1175	Industrial Electricity and Electronics I	3
ARET1190	Programmable Logic Controllers	3
ARET1200	Introduction to Robotics	2
MATH1150	Applications of Quantitative Reasoning	3
	or	
MATH1400	College Algebra	4
	or	
	Any course from MnTC Goal Area 4	

**Total Credits 14**

**Second Semester**

ARET1140	Computer Integrated Manufacturing	3
ARET1155	Automation Controls	3
ARET1180	Industrial Electricity and Electronics II	3
ARET2111	Advanced Programmable Logic Controllers	3
ENGL1070	Technical Writing	3
	or	
	Any course from MnTC Goal Area 1	

**Total Credits 15**

**Third Semester**

ARET1161	Mechatronic Systems	3
ARET1165	Vision Systems for QA/SPC	3
ARET1185	Sensor Applications	2
ARET2500	Industrial Networks	2
ARET2560	Instrumentation and Process Control I	3
ENGC1250	SOLIDWORKS I	4

**Total Credits 17**

**Fourth Semester**

ARET1170	Troubleshooting Mechatronic Systems	3
ARET2101	Advanced Automation Controls	3
ARET2200	FANUC Robotics Operations	2
ARET2250	FANUC Vision Systems	1
ARET2540	Project Management for Manufacturing	2
ARET2580	Instrumentation and Process Control II	3

**Total Credits 14**

**MnTC Goal Area 1**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

COMM1200	Intercultural Communication	3
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COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
ENGL1070	Technical Writing	3
ENGL1100	Writing and Research	4
ENGL1250	Short Form Composition and Reporting	4
ENGL1300	Introduction to Creative Writing	3
<b>MnTC Goal Area 4</b>		
MATH1150	Applications of Quantitative Reasoning	3
MATH1250	Introduction to Statistics	3
MATH1400	College Algebra	4
PHIL1000	Introduction to Logic	3

**Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

3/21/2022 : BP / EP 4011

## Mechatronics (EP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

The Mechatronics Certificate program is designed to reinforce the core technical skills and real-world application needed in today's manufacturing environment. Through alignment with PMMI's (The Association for Packaging and Processing Technologies) Mechatronics Certification Program, Hennepin Technical College's Mechatronics Certificate offers a set of stackable credentials that are recognized by the U.S. Department of Labor and endorsed by the National Association of Manufacturer's Skills Certification System.

Through a series of assessments that are based on industry-developed competencies, the Mechatronics Certificate and corresponding review courses will help students advance the set of skills needed to gain employment in manufacturing environments. The tests that the courses are aligned with allow both new and incumbent workers—entry-level operator through technologist—to demonstrate the skills needed for high-growth, technology intensive manufacturing jobs. Mechatronics Certificate Review courses are ideal for industrial maintenance staff, as well.

#### Award Outcomes

Apply electrical and mechanical machine control concepts to automated packaging systems  
 Perform basic electrical, electronic, welding, machining, laser, vision system, robotic, and fluid power operations  
 Use technical documents to assemble, install, troubleshoot and repair automated packaging systems  
 Diagnose root problems impacting production flow  
 Solve root problems to maintain production flow

#### Career Opportunities

Career opportunities are wide-spread in Minnesota and throughout the United States. Extensive opportunities exist as Electrical and Electronics Technicians for industrial equipment, Industrial Machinery Mechanics, Industrial Engineering Technicians, Mechanical Engineering Technicians, and as Packaging Technicians.

#### Program Requirements

##### Technical Studies Required 17 Credits

ARET1185	Sensor Applications	2
ARET2300	Mechanical Components I Certificate Review	3
ARET2320	Industrial Electricity I Certificate Review	3
ARET2330	Industrial Electricity II Certificate Review	3
ARET2340	Programmable Logic Controllers I Certificate Review	3
ARET2360	Automated Fluid Power I Certificate Review	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Advanced Technical Certificate Credits 17

#### Semester Sequence

##### Prerequisite Semester

##### First Semester

##### Second Semester

##### Third Semester

##### Fourth Semester

## Automation Technologies (BP/EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

This certificate will provide students with knowledge of manufacturing processes and plant operations, along with an advanced skill set in electronic and automation systems. Students will engage in coursework topics of technical mathematics, introductory computer skills, print interpretation, manufacturing processes, quality control, maintenance and safety. Also included in coursework is an advanced skill set of AC/DC power, digital electronics, analog circuits, and motor controls.

This 30 credit certificate offers courses designed to start students on a career pathway in automation technologies. Building off the seven courses in Production Technologies focusing on core skills, students build an advanced automation skill set with hands-on experience in: AC Power, Digital electronics, Analog circuits, and Motor controls. If you have completed the Production Technologies Certificate, you only have five additional courses to complete. Along with the core knowledge provided by the production technology courses, students will gain skills that provide them with the abilities and knowledge to work in automation. The Automation Technologies Certificate is a great way to start building a manufacturing career with no dead-ends.

For additional information on this award and the 360 Degree programs please go to: <https://mnmfg.org/programs-courses/>

#### Award Outcomes

- Identify and apply appropriate safety procedures
- Apply knowledge and skills in electrical systems
- Use and understand test equipment for analysis
- Design, build, and troubleshoot circuits
- Analyze and apply specific manufacturing process procedures
- Identify and apply specific quality procedures
- Interpret symbols and blueprints accurately for a variety of projects

#### Career Opportunities

According to Minnesota's Department of Employment and Economic Development, manufacturers are projected to have over 1,500 jobs available in automation, machining, and welding each year for the next 10 years, and those projects are expected to grow.

#### Program Requirements

##### Technical Studies Required 30 Credits

CMAE1502	360 Technical Mathematics	3
CMAE1506	360 Introduction to Computers	2
CMAE1510	Print Reading	2
CMAE1514	Safety Awareness	2
CMAE1518	Manufacturing Processes and Production	2
CMAE1522	Quality Practices	2
CMAE1526	Maintenance Awareness	2
ARET1140	Computer Integrated Manufacturing	3
ARET1155	Automation Controls	3
ARET1175	Industrial Electricity and Electronics I	3
ARET1180	Industrial Electricity and Electronics II	3
ARET1190	Programmable Logic Controllers	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 30

##### Semester Sequence

##### Prerequisite Semester

**First Semester**

**Second Semester**

**Third Semester**

**Fourth Semester**

## Production Technologies (BP/EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

The Production Technologies certificate will provide students with training, education, and skills to build a base knowledge of manufacturing processes and plant operations, generally for entry-level positions. Graduates can use the knowledge gained in this certificate to build upon a manufacturing career path leading to higher-level careers like Automation, Machining, and Welding. Students will receive training in industry practices for safety, manufacturing processes, maintenance, and quality control including lean principles. Interpreting mechanical drawings and applying technical mathematics will be included along with workplace computer skills and career success skills.

For additional information on this award and the 360 Degree programs please go to: <https://mnmfg.org/programs-courses/>

#### Award Outcomes

Apply appropriate safety procedures  
 Apply technical mathematic skills to production processes  
 Analyze and apply specific manufacturing process procedures  
 Analyze quality systems and components  
 Interpret mechanical drawings  
 Model career success skills

#### Career Opportunities

According to Minnesota's Department of Employment and Economic Development, manufacturers are projected to have over 1,500 jobs available in automation, machining, and welding each year for the next 10 years, and those projects are expected to grow.

### Program Requirements

#### Technical Studies Required 16 Credits

CMAE1502	360 Technical Mathematics	3
CMAE1506	360 Introduction to Computers	2
CMAE1510	Print Reading	2
CMAE1514	Safety Awareness	2
CMAE1518	Manufacturing Processes and Production	2
CMAE1522	Quality Practices	2
CMAE1526	Maintenance Awareness	2
CMAE1528	360 Career Success Skills	1

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Occupational Certificate Credits 16

#### Semester Sequence

#### Prerequisite Semester

#### First Semester

#### Second Semester

#### Third Semester

#### Fourth Semester

## Electronics Technology

## Electronics Technology (BP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

The Electronics Technician is an important member of the technical team. Their job as part of the team is to work with engineers and other professionals in the design, manufacture, testing, repair, and maintenance of technical systems. There is a wide variety of job situations the technician will encounter. These may include repairing equipment or testing systems while working in the plant or in the field. The Electronics Technician may be required to have extensive software skills in addition to their electronic skills. Some positions may require travel, lifting, and working with people from other companies to complete the task.

The skills the technician needs to bring to the team are the ability to analyze circuits or systems and work with tools and test equipment. Other important qualities are the desire to be part of a professional team, good communication skills, and the ability to work under supervision or independently.

Graduates who choose the A.A.S. degree usually have a future goal of a four-year degree in Engineering, Computer Science or other degree that will lead to a higher level of employment.

#### Award Outcomes

- Exhibit professional and ethical behavior
- Apply basic computer skills in a technical setting
- Apply effective team skills in the workplace
- Apply basic mathematical and problem-solving skills
- Demonstrate critical thinking skills
- Use electronic simulation software to construct and analyze circuit operation
- Disassemble, reassemble and build electromechanical hardware
- Practice safety in the workplace
- Troubleshoot, repair, test and report on electromechanical equipment
- Use standard electronic test equipment
- Interpret blueprint and electronic schematics
- Apply accurate writing and oral skills

#### Career Opportunities

Electronics Technicians are in demand in small to large companies and virtually all government agencies including the Department of Transportation, Federal Aviation Administration and the US Post Office. Technicians may work for the manufacturers, sellers, end users or third party maintenance organizations. Technicians may hold any one of the following job titles: Technical Sales, Troubleshooter, Installer, Support Specialist, Field Service, Depot Repair Technician, Test Technician, Quality Control Technician, Network Technician, Telecommunication Technician or Engineer Assistant.

#### Program Requirements

##### Technical Studies Required 52 Credits

ELEC1000	DC Circuits	4
ELEC1050	AC Circuits	4
ELEC1100	Complex AC Circuits	3
ELEC1150	Diodes and Rectifiers	2
ELEC1220	Electronic Soldering and Inspection	2
ELEC1250	Solid State Components and Circuits	5
ELEC1300	Operational Amplifiers	2
ELEC1400	Basic Troubleshooting	3
ELEC1450	Basic Digital Logic	3
ELEC2000	Advanced Digital Circuits I	4
ELEC2020	Advanced Digital Circuits II	3
ELEC2050	Advanced Troubleshooting	4
ELEC2200	Microprocessors and Microcomputers I	4
ELEC2220	Microprocessors and Microcomputers II	4
ELEC2450	Regulated Power Supplies	2
CPLT1100	Computer Essentials	3
	or	
METS1000	Computers in Manufacturing	3

**General Education Required 9 Credits**

ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
MATH1150	Applications of Quantitative Reasoning	3
	or	
MATH1250	Introduction to Statistics	3
	or	
MATH1400	College Algebra	4
PHIL1100	Critical Thinking for College Success	3

**General Education Elective 6 Credits**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Technical Studies Elective 5 Credits**

Recommended:

ELEC1285	Practical Circuit Analysis with Multisim	2
ELEC1375	LabVIEW Fundamentals and Applications	2
ELEC1900	Specialized Lab	1 - 4
ELEC2100	Motor and Motor Controllers	3
ELEC2300	Troubleshooting Computers	3
ELEC2400	Industrial Controls	2
ELEC2420	Telemetry	2

**Total Associate in Applied Science Degree Credits 72****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

ELEC1000	DC Circuits	4
ELEC1050	AC Circuits	4
ELEC1100	Complex AC Circuits	3
ELEC2300	Troubleshooting Computers	3
	Elective	
MATH1150	Applications of Quantitative Reasoning	3
	or	
MATH1250	Introduction to Statistics	3
	or	
MATH1400	College Algebra	4

**Total Credits 17****Second Semester**

ELEC1150	Diodes and Rectifiers	2
ELEC1220	Electronic Soldering and Inspection	2
ELEC1250	Solid State Components and Circuits	5
ELEC1300	Operational Amplifiers	2
ELEC1400	Basic Troubleshooting	3
CPLT1100	Computer Essentials	3
	or	
METS1000	Computers in Manufacturing	3

**Total Credits 17****Summer Semester**

ENGL1070	Technical Writing	3
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ENGL1100	or		
	Writing and Research		4
PHIL1100	Critical Thinking for College Success		3

**Total Credits 6****Third Semester**

ELEC1450	Basic Digital Logic		3
ELEC2000	Advanced Digital Circuits I		4
ELEC2020	Advanced Digital Circuits II		3
ELEC2050	Advanced Troubleshooting		4
	General Education Electives		3

**Total Credits 17****Fourth Semester**

ELEC2200	Microprocessors and Microcomputers I		4
ELEC2220	Microprocessors and Microcomputers II		4
ELEC2450	Regulated Power Supplies		2
	Technical Studies Electives		2
	General Education Electives		3

**Total Credits 15****Technical Studies Electives**

Recommended:

ELEC1285	Practical Circuit Analysis with Multisim		2
ELEC1375	LabVIEW Fundamentals and Applications		2
ELEC1900	Specialized Lab	1 - 4	
ELEC2100	Motor and Motor Controllers		3
ELEC2300	Troubleshooting Computers		3
ELEC2400	Industrial Controls		2
ELEC2420	Telemetry		2

**Choose a Total of: 5 Credits****General Education Electives**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 5 Credits****Graduation (72 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Electronics Technology (BP) Diploma

### Overview and Award Outcomes

#### Overview

The Electronic Technician is an important member of the technical team. Their job as part of the team is to work with engineers and other professionals in the design, manufacture, testing, repair, and maintenance of technical systems. There is a wide variety of job situations the technician will encounter. These may include repairing equipment or testing systems while working in the plant or in the field. The Electronic Technician may be required to have extensive software skills in addition to their electronic skills. Some positions may require travel, lifting, and working with people from other companies to complete the task.

The skills the technician needs to bring to the team are the ability to analyze circuits or systems and work with tools and test equipment. Other important qualities are the desire to be part of a professional team, good communication skills, and the ability to work under supervision or independently.

#### Award Outcomes

- Exhibit professional and ethical behavior
- Apply basic computer skills in a technical setting
- Apply effective team skills in the workplace
- Apply basic mathematical and problem-solving skills
- Demonstrate critical thinking skills
- Use electronic simulation software to construct and analyze circuit operation
- Disassemble, reassemble and build electromechanical hardware
- Practice safety in the workplace
- Troubleshoot, repair, test and report on electromechanical equipment
- Use standard electronic test equipment
- Interpret blueprint and electronic schematics
- Apply accurate writing and oral skills

#### Career Opportunities

Electronic Technicians are in demand in small to large companies and virtually all government agencies including the Department of Transportation, Federal Aviation Administration and the US Post Office. Technicians may work for the manufacturers, sellers, end users or third party maintenance organizations. Technicians may hold any one of the following job titles: Technical Sales, Troubleshooter, Installer, Support Specialist, Field Service, Depot Repair Technician, Test Technician, Quality Control Technician, Network Technician, Telecommunication Technician or Engineer Assistant.

#### Program Requirements

##### Technical Studies Required 49 Credits

ELEC1000	DC Circuits	4
ELEC1050	AC Circuits	4
ELEC1100	Complex AC Circuits	3
ELEC1150	Diodes and Rectifiers	2
ELEC1220	Electronic Soldering and Inspection	2
ELEC1250	Solid State Components and Circuits	5
ELEC1300	Operational Amplifiers	2
ELEC1400	Basic Troubleshooting	3
ELEC1450	Basic Digital Logic	3
ELEC2000	Advanced Digital Circuits I	4
ELEC2020	Advanced Digital Circuits II	3
ELEC2050	Advanced Troubleshooting	4
ELEC2200	Microprocessors and Microcomputers I	4
ELEC2220	Microprocessors and Microcomputers II	4
ELEC2450	Regulated Power Supplies	2

##### General Education Required 8 Credits

COMM1007	Communication for Success in the Workplace	2
CPLT1100	Computer Essentials	3
	or	
METS1000	Computers in Manufacturing	3

MATH1250	Introduction to Statistics	3
	or	
PHIL1100	Critical Thinking for College Success	3
	or	
PHYS1005	Introductory Physics I	3

**General Education Elective 0 Credits****Technical Studies Elective 7 Credits**

	Recommended:	
ELEC1285	Practical Circuit Analysis with Multisim	2
ELEC1375	LabVIEW Fundamentals and Applications	2
ELEC1900	Specialized Lab	1 - 4
ELEC2100	Motor and Motor Controllers	3
ELEC2300	Troubleshooting Computers	3
ELEC2400	Industrial Controls	2
ELEC2420	Telemetry	2

**Total Diploma Credits 64****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

ELEC1000	DC Circuits	4
ELEC1050	AC Circuits	4
ELEC1100	Complex AC Circuits	3
ELEC2300	Troubleshooting Computers	3
	Elective	
	Technical Studies Electives	2

**Total Credits 16****Second Semester**

ELEC1150	Diodes and Rectifiers	2
ELEC1220	Electronic Soldering and Inspection	2
ELEC1250	Solid State Components and Circuits	5
ELEC1300	Operational Amplifiers	2
ELEC1400	Basic Troubleshooting	3
CPLT1100	Computer Essentials	3
	or	
METS1000	Computers in Manufacturing	3

**Total Credits 17****Third Semester**

ELEC1450	Basic Digital Logic	3
ELEC2000	Advanced Digital Circuits I	4
ELEC2020	Advanced Digital Circuits II	3
ELEC2050	Advanced Troubleshooting	4
MATH1250	Introduction to Statistics	3
	or	
PHIL1100	Critical Thinking for College Success	3
	or	
PHYS1005	Introductory Physics I	3

**Total Credits 17****Fourth Semester**

ELEC2200	Microprocessors and Microcomputers I	4
ELEC2220	Microprocessors and Microcomputers II	4
ELEC2450	Regulated Power Supplies	2
COMM1007	Communication for Success in the Workplace Technical Studies Electives	2 2

**Total Credits 14****Technical Studies Electives**

Recommended:

ELEC1285	Practical Circuit Analysis with Multisim	2
ELEC1375	LabVIEW Fundamentals and Applications	2
ELEC1900	Specialized Lab	1 - 4
ELEC2100	Motor and Motor Controllers	3
ELEC2300	Troubleshooting Computers	3
ELEC2400	Industrial Controls	2
ELEC2420	Telemetry	2

**Choose a Total of: 7 Credits****Graduation (64 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/22/2022 : BP 4206 / EP

## Electronics Technician (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

There is a need in the Electronics Industry for an entry level technician position that requires DC Circuits, AC Circuits and Complex AC Circuits and a basic knowledge of soldering.

#### Award Outcomes

Apply basic computer skills in a technical setting  
 Demonstrate critical thinking skills  
 Practice safety in the workplace  
 Interpret blueprint and electronic schematics

#### Career Opportunities

Allows certificate holders to perform Test Technician jobs.

#### Program Requirements

##### Technical Studies Required 13 Credits

ELEC1000	DC Circuits	4
ELEC1050	AC Circuits	4
ELEC1100	Complex AC Circuits	3
ELEC1220	Electronic Soldering and Inspection	2

##### Technical Studies Elective 3 Credits

Any ELEC course that is not required for this award may be used as an elective.

##### General Education Required 0 Credits

##### General Education Electives 0 Credits

##### Total Associate in Applied Science Degree Credits 16

##### Semester Sequence - Full-Time

##### Offered at Brooklyn Park Only

##### First Semester

ELEC1000	DC Circuits	4
ELEC1050	AC Circuits	4
ELEC1100	Complex AC Circuits	3
ELEC1220	Electronic Soldering and Inspection	2
	Technical Studies Electives	3

##### Total Credits 16

##### Graduation (16 Credits)

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/7/2022 : BP 4210 / EP

##### Semester Sequence - Part-Time

**Offered at Brooklyn Park Only****First Semester**

ELEC1000	DC Circuits	4
ELEC1050	AC Circuits	4

**Total Credits 8****Second Semester**

ELEC1100	Complex AC Circuits	3
ELEC1220	Electronic Soldering and Inspection	2
	Technical Studies Electives	3

**Total Credits 8****Graduation (16 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/7/2022 : BP 4210 / EP

**Engineering CAD Technology**

## Engineering CAD Technology (BP/EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

The Engineering CAD Technology degree is designed for students seeking a career in the design and development of manufactured products. Engineering CAD Technicians are specialists in translating the rough sketches, layouts and written specifications of the engineer or more senior designer into a drawing showing complete details and specifications. For nearly every type of fabricated product, from a light fixture to a motorcycle, or a computer monitor to a bridge, a design technician is needed to detail the entire project and its component parts. Strength calculations, product reliability, computer aided design (CAD) and specifications, and cost of materials may also be the responsibilities of the person trained in the occupation.

#### Award Outcomes

- Apply drafting standards to engineering documents
- Prepare orthographic view drawings
- Dimension detail drawings
- Revise detail drawings
- Process engineering changes
- Generate detail drawings from layouts
- Create assembly drawings
- Create solid models
- Capture design intent
- Apply tolerances to drawings

#### Career Opportunities

Persons trained in Engineering CAD work for companies which manufacture machinery, electrical equipment, computers, fabricated metal products, and transportation equipment. Others are employed by the government in public works, highway departments, or ordinance plants. Advanced competencies qualify a person for employment in industry as an Engineering CAD Technician. Experienced technicians with CAD skills are in demand.

### Program Requirements

#### Technical Studies Required 54 Credits

ENGC1011	Engineering Drawing	3
ENGC1021	Working Drawings	3
ENGC1041	Geometric Dimensioning & Tolerancing	3
ENGC1060	Design for Additive Manufacturing	3
ENGC1100	AutoCAD	4
ENGC1160	Inventor	4
ENGC1201	Industrial CAD Project	3
ENGC1250	SOLIDWORKS I	4
ENGC1255	SOLIDWORKS II	4
ENGC2001	Mechanical Design	3
	or	
METS2000	Engineering Design Principles	3
ENGC2011	Special Fields of Drafting	3
ENGC2075	Engineering Design Project	3
ENGC2100	Basic Creo Parametric	4
ENGC2110	Advanced Creo Parametric	4
MACH1056	Blueprint Reading I	3
METS1020	Industrial Manufacturing Processes	3

#### General Education Required 9 Credits

ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4

MATH1150	Applications of Quantitative Reasoning	3
	or	
MATH1400	College Algebra	4
PHIL1100	Critical Thinking for College Success	3
	or	
PHYS1005	Introductory Physics I	3

**General Education Elective 6 Credits**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Technical Studies Elective 3 Credits**

ARET1200	Introduction to Robotics	2
ENGC1050	Additive Manufacturing	3
ENGC1070	Additive Manufacturing Finishing Techniques	3
ENGC1900	Specialized Lab	1 - 4
ENGC2200	Engineering CAD Technology Internship	3 - 4
FLPW1101	Fluid Power Technology I	3
MACH1205	Machine Tool Technology	3
METS2100	Statics and Strength of Materials	3

**Total Associate in Applied Science Degree Credits 72****Semester Sequence - Brooklyn Park****First Semester**

ENGC1160	Inventor	4
ENGC2100	Basic Creo Parametric	4
MACH1056	Blueprint Reading I	3
METS1020	Industrial Manufacturing Processes	3
MATH1150	Applications of Quantitative Reasoning	3
	or	
MATH1400	College Algebra	4

**Total Credits 17****Second Semester**

ENGC1060	Design for Additive Manufacturing	3
ENGC1100	AutoCAD	4
ENGC1250	SOLIDWORKS I	4
ENGC2110	Advanced Creo Parametric	4

**Total Credits 15****Summer Semester**

ENGC1050	Additive Manufacturing (elective)	3
ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
PHIL1100	Critical Thinking for College Success	3
	or	
PHYS1005	Introductory Physics I	3

**Total Credits 9****Third Semester**

ENGC1011	Engineering Drawing	3
ENGC1041	Geometric Dimensioning & Tolerancing	3
ENGC1201	Industrial CAD Project	3

ENGC1255	SOLIDWORKS II	4
ENGC2001	Mechanical Design	3
	or	
METS2000	Engineering Design Principles	3

**Total Credits 16****Fourth Semester**

ENGC1021	Working Drawings	3
ENGC2011	Special Fields of Drafting	3
ENGC2075	Engineering Design Project	3
	General Education Electives	6

**Total Credits 15****Technical Studies Electives**

## Recommended:

ARET1200	Introduction to Robotics	2
ENGC1050	Additive Manufacturing	3
ENGC1070	Additive Manufacturing Finishing Techniques	3
ENGC1900	Specialized Lab	1 - 4
ENGC2200	Engineering CAD Technology Internship	3 - 4
FLPW1101	Fluid Power Technology I	3
MACH1205	Machine Tool Technology	3

**Choose a Total of: 3 Credits****General Education Electives**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Choose a Total of: 6 Credits****Graduation (72 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

5/23/2022 : BP 4104 / EP 4105

**Semester Sequence - Eden Prairie****First Semester**

ENGC1100	AutoCAD	4
ENGC1250	SOLIDWORKS I	4
MACH1056	Blueprint Reading I	3
METS1020	Industrial Manufacturing Processes	3
MATH1150	Applications of Quantitative Reasoning	3
	or	
MATH1400	College Algebra	4

**Total Credits 17****Second Semester**

ENGC1011	Engineering Drawing	3
ENGC1050	Additive Manufacturing (elective)	3
ENGC1160	Inventor	4
ENGC1255	SOLIDWORKS II	4

ENGC2100	Basic Creo Parametric	4
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**Total Credits 18****Summer Semester**

ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
PHIL1100	Critical Thinking for College Success	3
	or	
PHYS1005	Introductory Physics I	3

**Total Credits 6****Third Semester**

ENGC1021	Working Drawings	3
ENGC2001	Mechanical Design	3
	or	
METS2000	Engineering Design Principles	3
ENGC2011	Special Fields of Drafting	3
ENGC2075	Engineering Design Project	3
ENGC2110	Advanced Creo Parametric	4

**Total Credits 16****Fourth Semester**

ENGC1041	Geometric Dimensioning & Tolerancing	3
ENGC1060	Design for Additive Manufacturing	3
ENGC1201	Industrial CAD Project	3
	General Education Electives	6

**Total Credits 15****Technical Studies Electives**

## Recommended:

ARET1200	Introduction to Robotics	2
ENGC1050	Additive Manufacturing	3
ENGC1070	Additive Manufacturing Finishing Techniques	3
ENGC1900	Specialized Lab	1 - 4
ENGC2050	AutoCAD Upgrade Training	1
ENGC2200	Engineering CAD Technology Internship	3 - 4
FLPW1101	Fluid Power Technology I	3
MACH1205	Machine Tool Technology	3
METS2100	Statics and Strength of Materials	3

**Choose a Total of: 3 Credits****General Education Electives**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Choose a Total of: 6 Credits****Graduation (72 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Engineering CAD Technology (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

The Engineering CAD Technology diploma is designed for students seeking a career in the design and development of manufactured products. Engineering CAD Technicians are specialists in translating the rough sketches, layouts and written specifications of the engineer or more senior designer into a drawing showing complete details and specifications. For nearly every type of fabricated product, from a light fixture to a motorcycle, or a computer monitor to a bridge, a design technician is needed to detail the entire project and its component parts. Strength calculations, product reliability, computer aided design (CAD) and specifications, and cost of materials may also be the responsibilities of the person trained in the occupation.

#### Award Outcomes

Apply drafting standards to engineering documents  
 Prepare orthographic view drawings  
 Dimension detail drawings  
 Revise detail drawings  
 Process engineering changes  
 Generate detail drawings from layouts  
 Create assembly drawings  
 Create solid models  
 Capture design intent  
 Apply tolerances to drawings

#### Career Opportunities

Persons trained in Engineering CAD work for companies which manufacture machinery, electrical equipment, computers, fabricated metal products, and transportation equipment. Others are employed by the government in public works, highway departments, or ordinance plants. Advanced competencies qualify a person for employment in industry as an Engineering CAD Technician. Experienced technicians with CAD skills are in demand.

### Program Requirements

#### Technical Studies Required 54 Credits

ENGC1011	Engineering Drawing	3
ENGC1021	Working Drawings	3
ENGC1041	Geometric Dimensioning & Tolerancing	3
ENGC1050	Additive Manufacturing	3
ENGC1100	AutoCAD	4
ENGC1160	Inventor	4
ENGC1201	Industrial CAD Project	3
ENGC1250	SOLIDWORKS I	4
ENGC1255	SOLIDWORKS II	4
ENGC2001	Mechanical Design or	3
METS2000	Engineering Design Principles	3
ENGC2011	Special Fields of Drafting	3
ENGC2075	Engineering Design Project	3
ENGC2100	Basic Creo Parametric	4
ENGC2110	Advanced Creo Parametric	4
MACH1056	Blueprint Reading I	3
METS1020	Industrial Manufacturing Processes	3

#### General Education Required 8 Credits

COMM1050	Communication in the Workplace - Deleted Summer 2022	2
MATH1500	Beginning Algebra	3
METS1000	Computers in Manufacturing	3

**General Education Elective 0 Credits****Technical Studies Elective 2 Credits**

	Recommended:	
ARET1200	Introduction to Robotics	2
ENGC1060	Design for Additive Manufacturing	3
ENGC1070	Additive Manufacturing Finishing Techniques	3
ENGC1900	Specialized Lab	1 - 4
ENGC2200	Engineering CAD Technology Internship	3 - 4
FLPW1101	Fluid Power Technology I	3
MACH1205	Machine Tool Technology	3
MACH2425	Geometry/Trigonometry for Machinists	2
METS2100	Statics and Strength of Materials	3

**Total Diploma Credits 64****Semester Sequence - Brooklyn Park****First Semester**

ENGC1160	Inventor	4
ENGC2100	Basic Creo Parametric	4
MACH1056	Blueprint Reading I	3
METS1000	Computers in Manufacturing	3
MATH1500	Beginning Algebra	3

**Total Credits 17****Second Semester**

ENGC1050	Additive Manufacturing	3
ENGC1100	AutoCAD	4
ENGC1250	SOLIDWORKS I	4
ENGC2110	Advanced Creo Parametric	4
METS1020	Industrial Manufacturing Processes	3

**Total Credits 18****Third Semester**

ENGC1011	Engineering Drawing	3
ENGC1041	Geometric Dimensioning & Tolerancing	3
ENGC1201	Industrial CAD Project	3
ENGC1255	SOLIDWORKS II	4
ENGC2001	Mechanical Design	3
	or	
METS2000	Engineering Design Principles	3

**Total Credits 16****Fourth Semester**

ENGC1021	Working Drawings	3
ENGC2011	Special Fields of Drafting	3
ENGC2075	Engineering Design Project	3
COMM1050	Communication in the Workplace - Deleted Summer 2022	2
	Technical Studies Electives	2

**Total Credits 13****Technical Studies Electives**

## Recommended:

ARET1200	Introduction to Robotics	2
ENGC1060	Design for Additive Manufacturing	3
ENGC1070	Additive Manufacturing Finishing Techniques	3
ENGC1900	Specialized Lab	1 - 4

ENGC2050	AutoCAD Upgrade Training	1
ENGC2200	Engineering CAD Technology Internship	3 - 4
FLPW1101	Fluid Power Technology I	3
MACH1205	Machine Tool Technology	3
MACH2425	Geometry/Trigonometry for Machinists	2
METS2100	Statics and Strength of Materials	3

**Graduation (64 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/29/2022 : BP 4106 / EP 4107

**Semester Sequence - Eden Prairie****First Semester**

ENGC1100	AutoCAD	4
ENGC1250	SOLIDWORKS I	4
MACH1056	Blueprint Reading I	3
METS1000	Computers in Manufacturing	3
MATH1500	Beginning Algebra	3

**Total Credits 17****Second Semester**

ENGC1011	Engineering Drawing	3
ENGC1050	Additive Manufacturing	3
ENGC1160	Inventor	4
ENGC1255	SOLIDWORKS II	4
ENGC2100	Basic Creo Parametric	4

**Total Credits 18****Third Semester**

ENGC1021	Working Drawings	3
ENGC2011	Special Fields of Drafting	3
ENGC2075	Engineering Design Project	3
ENGC2001	Mechanical Design	3
	or	
METS2000	Engineering Design Principles	3
ENGC2110	Advanced Creo Parametric	4

**Total Credits 16****Fourth Semester**

ENGC1041	Geometric Dimensioning & Tolerancing	3
ENGC1201	Industrial CAD Project	3
METS1020	Industrial Manufacturing Processes	3
COMM1050	Communication in the Workplace - Deleted Summer 2022	2
	Technical Studies Electives	2

**Total Credits 13****Technical Studies Electives**

Recommended:

ARET1200	Introduction to Robotics	2
ENGC1900	Specialized Lab	1 - 4
ENGC2050	AutoCAD Upgrade Training	1
ENGC2200	Engineering CAD Technology Internship	3 - 4
FLPW1101	Fluid Power Technology I	3

MACH1205	Machine Tool Technology	3
MACH2425	Geometry/Trigonometry for Machinists	2
METS2100	Statics and Strength of Materials	3

**Graduation (64 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/29/2022 : BP 4106 / EP 4107

## 3D Printing System Maintenance (BP/EP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

The 3D Printing System Maintenance Certificate is designed for students seeking employment as field service technicians for additive manufacturing machines. These technicians will install new 3D printers, provide phone support to customers, troubleshoot mechanical and electrical problems, and provide routine maintenance for 3D printing equipment. Generally, the technician will be sent to a customer site to complete the work.

#### Award Outcomes

Create solid models  
 Build prototypes using additive manufacturing  
 Investigate 3D printing material  
 Solve problems with mechanical systems in 3D printers  
 Solve problems with electrical systems in 3D printers

#### Career Opportunities

A graduate with this certificate would be employed at 3D printing sales offices or at manufacturing firms that have many 3D printers. Additionally, graduates may be employed at a 3D printer manufacturer doing assembly of mechanical and electrical systems. Job titles for this area include field service technician, sales support, customer support engineer, and production assembler.

### Program Requirements

#### Technical Studies Required 13 Credits

ARET1125	Power Transmission and Mechanical Systems - Replaced with ARET1126	4
ARET1175	Industrial Electricity and Electronics I	3
ENGC1050	Additive Manufacturing	3
PLST1041	Introduction to Plastics Molding Processes	3

#### Technical Studies Elective 4 Credits

Recommended:		
ENGC1160	Inventor	4
ENGC1250	SOLIDWORKS I	4
ENGC2110	Advanced Creo Parametric	4

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Total Advanced Technical Certificate Credits 17

#### Semester Sequence

#### Prerequisite Semester

#### First Semester

#### Second Semester

#### Third Semester

#### Fourth Semester

## Additive Manufacturing Designer (BP/EP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

The Additive Manufacturing Designer Certificate is for anyone interested in 3D printing. Students enrolled in either Engineering CAD or Interactive Design and Video Production would be able to create prototypes of their 3D work. The coursework is project based and emphasis will be placed on creating printable objects. Coursework will include 3D scanning, solid modeling, and finishing techniques to create professional models. Specific rules of designing for additive manufacturing will be used to ensure the best possible results for 3D printing. Elective courses can be selected to best suit each students special needs and interests. This certificate prepares students for entry level positions in model shops, 3D printing service bureaus, and engineering departments that use additive manufacturing.

#### Award Outcomes

Create solid models  
 Build prototypes using additive manufacturing  
 Solve 3D print quality problems  
 Generate 3D scans  
 Apply surface treatments to prototype models

#### Career Opportunities

A graduate of this program would be employed as a model maker, model finisher, 3D printing operator, 3D printing technician, or additive manufacturing technician. These workers prepare customer data for 3D printing, run the 3D printing machines, perform final finishing operations to the prints, and deliver the finished model to the customer. With additional education in engineering and/or CAD, graduates may also work in engineering departments of manufacturing firms. Students with artistic educational background may use 3D printing technology for dioramas, clothing, jewelry, and sculptures.

#### Program Requirements

##### Technical Studies Required 9 Credits

ENGC1050	Additive Manufacturing	3
ENGC1060	Design for Additive Manufacturing	3
ENGC1070	Additive Manufacturing Finishing Techniques	3

##### Technical Studies Elective 8 Credits

Recommended:

ENGC1160	Inventor	4
ENGC1250	SOLIDWORKS I	4
ENGC1255	SOLIDWORKS II	4
ENGC2100	Basic Creo Parametric	4
ENGC2110	Advanced Creo Parametric	4
MMVP1500	Concepts of Interactive Media	3
MMVP1545	3D Basics	3
MMVP2045	3D Modeling	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Total Advanced Technical Certificate Credits 17

#### Semester Sequence

##### Prerequisite Semester

##### First Semester

##### Second Semester

##### Third Semester

**Fourth Semester**

## AutoCAD Operator (BP/EP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

The AutoCAD Operator certificate is designed to provide up-to-date AutoCAD skills for the person already trained or experienced in a technical field. Elective courses can be selected to best suit each student's special needs and interests.

Prerequisite: Graduation from or concurrent enrollment in a 2-year Engineering CAD or machining program or a minimum of 2 years of related work experience.

#### Award Outcomes

Capture design intent  
 Create solid models  
 Generate drawings from solid models and assemblies  
 Apply tolerances to drawings  
 Utilize AutoCAD software interface  
 Utilize Inventor software interface

#### Career Opportunities

Employment opportunities are as limited or as diverse as the student's individual background. Companies of all types are looking for people with a technical background and AutoCAD skills.

### Program Requirements

#### Technical Studies Required 14 Credits

ENGC1021	Working Drawings	3
ENGC1100	AutoCAD	4
ENGC1160	Inventor	4
ENGC2075	Engineering Design Project	3

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 3 Credits

Recommended:

ENGC1011	Engineering Drawing	3
ENGC1041	Geometric Dimensioning & Tolerancing	3
ENGC1050	Additive Manufacturing	3
ENGC1060	Design for Additive Manufacturing	3
ENGC1070	Additive Manufacturing Finishing Techniques	3
ENGC1201	Industrial CAD Project	3
ENGC1250	SOLIDWORKS I	4
ENGC1255	SOLIDWORKS II	4
ENGC1900	Specialized Lab	1 - 4
ENGC2001	Mechanical Design	3
ENGC2100	Basic Creo Parametric	4
ENGC2110	Advanced Creo Parametric	4
MACH2410	CAD/CAM	3
METS1000	Computers in Manufacturing	3
METS1020	Industrial Manufacturing Processes	3

### Total Advanced Technical Certificate Credits 17

#### Semester Sequence

#### Offered at Brooklyn Park and Eden Prairie

#### First Semester

ENGC1100	AutoCAD	4
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Technical Studies Electives	3
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**Total Credits 7****Second Semester**

ENGC1021	Working Drawings	3
ENGC1160	Inventor	4
ENGC2075	Engineering Design Project	3

**Total Credits 10****Technical Studies Electives**

Recommended:

ENGC1011	Engineering Drawing	3
ENGC1041	Geometric Dimensioning & Tolerancing	3
ENGC1050	Additive Manufacturing	3
ENGC1060	Design for Additive Manufacturing	3
ENGC1070	Additive Manufacturing Finishing Techniques	3
ENGC1201	Industrial CAD Project	3
ENGC1250	SOLIDWORKS I	4
ENGC1255	SOLIDWORKS II	4
ENGC1900	Specialized Lab	1 - 4
ENGC2001	Mechanical Design	3
ENGC2100	Basic Creo Parametric	4
ENGC2110	Advanced Creo Parametric	4
MACH2410	CAD/CAM	3
METS1000	Computers in Manufacturing	3
METS1020	Industrial Manufacturing Processes	3

**Choose a Total of: 3 Credits****Graduation (17 Credits)**

**Prerequisite:** Graduation from or concurrent enrollment in a 2 year engineering CAD or machining program or a minimum of 2 years of related work experience.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/29/2022 : BP 4108 / EP 4109

## Creo Parametric Operator (BP/EP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

The Creo Parametric Operator Certificate is designed for people with a solid background in mechanical design and/or machining. The coursework is project based and emphasis will be placed on creating solid models, assemblies, and detail drawings.

Prerequisite: Graduation from or concurrent enrollment in a 2-year Engineering CAD or machining program or a minimum of 2 years of related work experience.

#### Award Outcomes

Capture design intent  
 Create solid models  
 Generate drawings from solid models and assemblies  
 Apply tolerances to drawings  
 Utilize Creo Parametric software interface

#### Career Opportunities

Most Creo Parametric Operators work in the design or engineering departments of manufacturing facilities creating or changing parametric solid models, assemblies, and detail drawings according to an engineer's specifications; however, career opportunities are not limited to engineering office jobs. Employers prefer students with machining and/or mechanical design experience.

### Program Requirements

#### Technical Studies Required 14 Credits

ENGC1021	Working Drawings	3
ENGC2075	Engineering Design Project	3
ENGC2100	Basic Creo Parametric	4
ENGC2110	Advanced Creo Parametric	4

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 3 Credits

Recommended:

ENGC1011	Engineering Drawing	3
ENGC1041	Geometric Dimensioning & Tolerancing	3
ENGC1050	Additive Manufacturing	3
ENGC1060	Design for Additive Manufacturing	3
ENGC1070	Additive Manufacturing Finishing Techniques	3
ENGC1100	AutoCAD	4
ENGC1160	Inventor	4
ENGC1201	Industrial CAD Project	3
ENGC1250	SOLIDWORKS I	4
ENGC1255	SOLIDWORKS II	4
ENGC1900	Specialized Lab	1 - 4
ENGC2001	Mechanical Design	3
MACH2410	CAD/CAM	3
METS1000	Computers in Manufacturing	3
METS1020	Industrial Manufacturing Processes	3

#### Total Advanced Technical Certificate Credits 17

#### Semester Sequence

#### Offered at Brooklyn Park and Eden Prairie

#### First Semester

ENGC2100	Basic Creo Parametric	4
	Technical Studies Electives	3

**Total Credits 7****Second Semester**

ENGC1021	Working Drawings	3
ENGC2075	Engineering Design Project	3
ENGC2110	Advanced Creo Parametric	4

**Total Credits 10****Technical Studies Electives**

## Recommended:

ENGC1011	Engineering Drawing	3
ENGC1041	Geometric Dimensioning & Tolerancing	3
ENGC1050	Additive Manufacturing	3
ENGC1060	Design for Additive Manufacturing	3
ENGC1070	Additive Manufacturing Finishing Techniques	3
ENGC1100	AutoCAD	4
ENGC1160	Inventor	4
ENGC1201	Industrial CAD Project	3
ENGC1250	SOLIDWORKS I	4
ENGC1255	SOLIDWORKS II	4
ENGC1900	Specialized Lab	1 - 4
ENGC2001	Mechanical Design	3
MACH2410	CAD/CAM	3
METS1000	Computers in Manufacturing	3
METS1020	Industrial Manufacturing Processes	3

**Choose a Total of: 3 Credits****Graduation (17 Credits)**

**Prerequisite:** Graduation from or concurrent enrollment in a 2 year Engineering CAD or machining program or a minimum of 2 years of related work experience.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/29/2022 : BP 4110 / EP 4111

# SOLIDWORKS Operator (BP/EP) Advanced Technical Certificate

## Overview and Award Outcomes

### Overview

The SOLIDWORKS Operator Certificate is designed for the person already trained or experienced in a technical field who possesses a solid background in mechanical design and/or machining. The coursework is project based and emphasis will be placed on creating solid models, assemblies, and detail drawings using SOLIDWORKS. Elective courses can be selected to best suit each students special needs and interests.

Prerequisite: Graduation from or concurrent enrollment in a 2-year Engineering CAD or machining program or a minimum of 2 years of related work experience.

### Award Outcomes

- Capture design intent
- Create solid models
- Generate drawings from solid models and assemblies
- Apply tolerances to drawings
- Utilize SOLIDWORKS software interface

### Career Opportunities

A person with industry experience or a graduate from the Engineering CAD Technology program could use the SOLIDWORKS Operator Certificate to find a career in mechanical drafting or mechanical design using SOLIDWORKS. Workers in those careers prepare detailed working diagrams of machinery and mechanical devices, including dimensions, fastening methods, and other engineering information.

### Program Requirements

#### Technical Studies Required 14 Credits

ENGC1021	Working Drawings	3
ENGC1250	SOLIDWORKS I	4
ENGC1255	SOLIDWORKS II	4
ENGC2075	Engineering Design Project	3

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 3 Credits

ENGC1011	Engineering Drawing	3
ENGC1041	Geometric Dimensioning & Tolerancing	3
ENGC1050	Additive Manufacturing	3
ENGC1060	Design for Additive Manufacturing	3
ENGC1070	Additive Manufacturing Finishing Techniques	3
ENGC1100	AutoCAD	4
ENGC1160	Inventor	4
ENGC1201	Industrial CAD Project	3
ENGC1900	Specialized Lab	1 - 4
ENGC2001	Mechanical Design	3
ENGC2100	Basic Creo Parametric	4
ENGC2110	Advanced Creo Parametric	4
MACH2410	CAD/CAM	3
METS1000	Computers in Manufacturing	3
METS1020	Industrial Manufacturing Processes	3

#### Total Advanced Technical Certificate Credits 17

### Semester Sequence

Offered at Brooklyn Park and Eden Prairie

#### First Semester

ENGC1250	SOLIDWORKS I	4
	Technical Studies Electives	3

**Total Credits 7****Second Semester**

ENGC1021	Working Drawings	3
ENGC1255	SOLIDWORKS II	4
ENGC2075	Engineering Design Project	3

**Total Credits 10****Technical Studies Electives**

Recommended:

ENGC1011	Engineering Drawing	3
ENGC1041	Geometric Dimensioning & Tolerancing	3
ENGC1050	Additive Manufacturing	3
ENGC1060	Design for Additive Manufacturing	3
ENGC1100	AutoCAD	4
ENGC1160	Inventor	4
ENGC1201	Industrial CAD Project	3
ENGC1900	Specialized Lab	1 - 4
ENGC2001	Mechanical Design	3
ENGC2100	Basic Creo Parametric	4
ENGC2110	Advanced Creo Parametric	4
MACH2410	CAD/CAM	3
METS1000	Computers in Manufacturing	3
METS1020	Industrial Manufacturing Processes	3

**Choose a Total of: 3 Credits****Graduation (17 of Credits)**

**Prerequisite:** Graduation from or concurrent enrollment in a 2 year Engineering CAD or machining program or a minimum of 2 years of work experience.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/29/2022 : BP 4112 / EP 4113

**Fluid Power Engineering and Motion Control**

## Fluid Power Engineering Technician (BP/EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

The Fluid Power Engineering Technician A.A.S. degree program prepares individuals to perform high level research and design work. Emphasis is placed on system design, test and evaluation, problem-solving, business communications, system integration, computer-aided circuit construction and programmable logic controls. Technicians design, modify and specify motion controls for today's high speed production equipment. The program will focus on improving system efficiency through the integration of technology (hydraulics, pneumatics, PLC's, industrial controls and computers). Individuals with a high mechanical aptitude that enjoy working with their hands as well as their minds should consider this program. This individual must be a people orientated person.

#### Award Outcomes

Demonstrate teamwork

Adhere to Occupational Safety & Health Administration (O.S.H.A.) safety guidelines and practices

Identify components that are utilized in the fluid power industry

Apply engineering concepts as they relate to fluid power applications

Employ fluid power best-practices methods when troubleshooting and repairing fluid power systems

Apply National Electrical Manufacturers Association (N.E.M.A.) and International Electrotechnical Commission (I.E.C.) electrical standards and practices as they relate to electrical concepts and equipment

Design fluid power systems in accordance with National Fluid Power Association (NFPA) and International Organization for Standardization (ISO) standards and practices

Utilize calculations as they relate to the design of efficient fluid power applications

Examine engineering design practices as they relate to the transmission of power

Develop programmable logic controller (PLC) programs using Boolean algebra methods and computer software applications

Integrate electrical, programmable logic controller (PLC) and electronic hardware with motion control components

Instrument fluid power systems

Utilize data acquisition methods when analyzing fluid power application efficiency

Incorporate human machine interface (HMI) technologies with fluid power applications

Produce engineering drawings and schematics using American National Standards Institute (ANSI), International Organization for Standardization (ISO) and industry symbols and standards

Use applied physics to investigate power transmission methods

Collaborate with others to create a capstone project that utilizes the engineering portfolio concept

#### Career Opportunities

The fluid power industry is one of the fastest growing technologies today. Technicians will find employment with industries in automation, material handling and processing, heavy equipment, plant automation and fluid power distribution. These opportunities will exist in large and small companies in local as well as international markets. Jobs will include supervision, engineering, inside and outside sales consultant and product development.

#### Program Requirements

##### Technical Studies Required 57 Credits

FLPW1101	Fluid Power Technology I	3
FLPW1106	Fluid Power Technology II	4
FLPW1150	Pneumatic Components	4
	or	
FLPW1181	Pumps, Actuators, and Conductors	4
FLPW1191	Hydraulic Components	3
FLPW1231	Industrial Electricity I	3
FLPW1320	Hydraulic Circuits	2
FLPW1340	Pneumatic Circuits and Air Logic	4
FLPW2000	Programmable Logic Controllers	3
FLPW2112	Instrumentation of Fluid Power Systems	3
FLPW2180	Circuit Design	3

FLPW2191	Industrial Circuit Design	3
FLPW2250	Proportional and Servo Controls (Robotics Application)	3
FLPW2301	Mobile Circuit Design	3
FLPW2321	System Engineering Portfolio	3
METS1200	Industry Practices and Procedures	3
METS2000	Engineering Design Principles	3
METS2100	Statics and Strength of Materials	3

**Choose one of the following:**

ENGC1100	AutoCAD	4
ENGC1160	Inventor	4
ENGC1250	SOLIDWORKS I	4
ENGC2100	Basic Creo Parametric	4
FLPW1400	Engineering Drawings and Schematics	4

**General Education Required 9 Credits**

ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
	Choose six credits from two MnTC Goal Areas 2-10	6

**General Education Elective 6 Credits**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 72****Semester Sequence - Brooklyn Park****First Semester**

FLPW1101	Fluid Power Technology I	3
FLPW1231	Industrial Electricity I	3
FLPW1400	Engineering Drawings and Schematics	4
FLPW2000	Programmable Logic Controllers	3
METS1200	Industry Practices and Procedures	3

**Total Credits 16****Second Semester**

FLPW1106	Fluid Power Technology II	4
FLPW1191	Hydraulic Components	3
FLPW1320	Hydraulic Circuits	2
FLPW1340	Pneumatic Circuits and Air Logic	4
METS2000	Engineering Design Principles	3

**Total Credits 16****Summer Semester**

ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
	General Education Electives	6

**Total Credits 9****Third Semester**

FLPW1150	Pneumatic Components	4
	or	
FLPW1181	Pumps, Actuators, and Conductors	4

FLPW2180	Circuit Design	3
FLPW2191	Industrial Circuit Design	3
FLPW2301	Mobile Circuit Design	3
METS2100	Statics and Strength of Materials	3

**Total Credits 16****Fourth Semester**

FLPW2112	Instrumentation of Fluid Power Systems	3
FLPW2250	Proportional and Servo Controls (Robotics Application)	3
FLPW2321	System Engineering Portfolio	3
	Choose 3 credits from MnTC Goal Areas 2-6	3
	Choose 3 credits from MnTC Goal Areas 7-10	3

**Total Credits 15****General Education Electives**

A complete list of Minnesota Transfer Curriculum (MnTC) courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 6 Credits****Graduation (72 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/8/2022 : BP 4704 / EP 4705

**Semester Sequence - Eden Prairie****First Semester**

FLPW1101	Fluid Power Technology I	3
FLPW1106	Fluid Power Technology II	4
FLPW1181	Pumps, Actuators, and Conductors	4
FLPW1191	Hydraulic Components	3
FLPW1320	Hydraulic Circuits	2
MATH1150	Applications of Quantitative Reasoning (elective)	3
	or	
MATH1400	College Algebra (elective)	4

**Total Credits 19****Second Semester**

FLPW1231	Industrial Electricity I	3
FLPW1340	Pneumatic Circuits and Air Logic	4
METS1200	Industry Practices and Procedures	3
	Choose 3 credits from MnTC Goal Areas 2-6	3
	Optional:	
FLPW1236	Industrial Electricity II	3
FLPW1150	Pneumatic Components	4

**Total Credits 13****Summer Semester**

ENGL1070	Technical Writing	3
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ENGL1100	or	
	Writing and Research	4
	General Education Electives	3

**Total Credits 6****Third Semester**

FLPW2000	Programmable Logic Controllers	3
FLPW2112	Instrumentation of Fluid Power Systems	3
FLPW2250	Proportional and Servo Controls (Robotics Application)	3
METS2000	Engineering Design Principles	3
METS2100	Statics and Strength of Materials	3

Choose one of the following:

ENGC1100	AutoCAD	4
ENGC1160	Inventor	4
ENGC1250	SOLIDWORKS I	4
ENGC2100	Basic Creo Parametric	4

**Total Credits 19****Fourth Semester**

FLPW2180	Circuit Design	3
FLPW2191	Industrial Circuit Design	3
FLPW2301	Mobile Circuit Design	3
FLPW2321	System Engineering Portfolio	3
	Choose 3 credits from MnTC Goal Areas 7-10	3

Optional:

FLPW2350	Hydraulic Specialist Certification Review	2
FLPW2360	Pneumatic Specialist Certification Review	2

**Total Credits 15****General Education Electives**

A complete list of Minnesota Transfer Curriculum (MnTC) courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 6 Credits****Graduation (72 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/8/2022 : BP 4704 / EP 4705

**Semester Sequence - Eden Prairie - Spring Start****Spring Semester****Fall Semester****Spring Semester****Fall Semester****Graduation (72 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/8/2022 : BP 4704 / EP 4705

## Fluid Power Engineering Technician (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

Fluid Power Engineering Technicians are responsible for building and modifying fluid power systems. Technicians calculate system parameters, design hydraulic and pneumatic circuits, evaluate operating systems and recommend changes for maximum efficiency. This program will focus on hydraulic and pneumatic component repair and testing, industrial electricity, programmable logic controls, circuit design and system design. Emphasis will be placed on computer-aided circuit construction and software programming of automated systems. Individuals that enjoy working with their hands as well as their minds and have a high mechanical aptitude should consider this program. Technicians must be able to read schematics, determine adjustments to improve system efficiency and recommend circuit changes. Technicians test components and systems, document changes and build new systems.

#### Award Outcomes

Demonstrate teamwork

Adhere to Occupational Safety & Health Administration (O.S.H.A.) safety guidelines and practices

Identify components that are utilized in the fluid power industry

Apply engineering concepts as they relate to fluid power applications

Employ fluid power best-practices methods when troubleshooting and repairing fluid power systems

Apply National Electrical Manufacturers Association (N.E.M.A.) and International Electrotechnical Commission (I.E.C.) electrical standards and practices as they relate to electrical concepts and equipment

Design fluid power systems in accordance with National Fluid Power Association (NFPA) and International Organization for Standardization (ISO) standards and practices

Utilize calculations as they relate to the design of efficient fluid power applications

Examine engineering design practices as they relate to the transmission of power

Develop programmable logic controller (PLC) programs using Boolean algebra methods and computer software applications

Integrate electrical, programmable logic controller (PLC) and electronic hardware with motion control components

Instrument fluid power systems

Utilize data acquisition methods when analyzing fluid power application efficiency

Incorporate human machine interface (HMI) technologies with fluid power applications

Produce engineering drawings and schematics using American National Standards Institute (ANSI), International Organization for Standardization (ISO) and industry symbols and standards

Use applied physics to investigate power transmission methods

Collaborate with others to create a capstone project that utilizes the engineering portfolio concept

#### Career Opportunities

Fluid Power Technicians will find employment with fluid power manufacturing companies, sales organizations and distributors. Positions vary from fluid power technician, inside sales consultant, industrial maintenance technician and product testing.

#### Program Requirements

##### Technical Studies Required 54 Credits

FLPW1101	Fluid Power Technology I	3
FLPW1106	Fluid Power Technology II	4
FLPW1181	Pumps, Actuators, and Conductors	4
FLPW1191	Hydraulic Components	3
FLPW1231	Industrial Electricity I	3
FLPW1320	Hydraulic Circuits	2
FLPW1340	Pneumatic Circuits and Air Logic	4
FLPW2000	Programmable Logic Controllers	3
FLPW2112	Instrumentation of Fluid Power Systems	3
FLPW2180	Circuit Design	3
FLPW2191	Industrial Circuit Design	3
FLPW2250	Proportional and Servo Controls (Robotics Application)	3
FLPW2301	Mobile Circuit Design	3
FLPW2321	System Engineering Portfolio	3
METS2000	Engineering Design Principles	3
METS2100	Statics and Strength of Materials	3

**Choose one of the following:**

ENGC1100	AutoCAD	4
ENGC1160	Inventor	4
ENGC1250	SOLIDWORKS I	4
ENGC2100	Basic Creo Parametric	4
FLPW1400	Engineering Drawings and Schematics	4

**General Education Required 3 Credits**

METS1000	Computers in Manufacturing	3
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**General Education Elective 3 Credits**

Any HTC 1000 level or higher general education course may be used to satisfy the elective requirements.

**Technical Studies Elective 6 Credits**

Recommended:

FLPW1150	Pneumatic Components	4
FLPW1236	Industrial Electricity II	3
FLPW1500	Fluid Power Process Lab	1 - 4
FLPW2020	Advanced Programmable Logic Controllers	3
FLPW2350	Hydraulic Specialist Certification Review	2
FLPW2360	Pneumatic Specialist Certification Review	2

**Total Diploma Credits 66****Semester Sequence - Brooklyn Park****First Semester**

FLPW1101	Fluid Power Technology I	3
FLPW1231	Industrial Electricity I	3
FLPW1400	Engineering Drawings and Schematics	4
FLPW2000	Programmable Logic Controllers	3
METS1000	Computers in Manufacturing	3

**Total Credits 16****Second Semester**

FLPW1106	Fluid Power Technology II	4
FLPW1191	Hydraulic Components	3
FLPW1320	Hydraulic Circuits	2
FLPW1340	Pneumatic Circuits and Air Logic	4
METS2000	Engineering Design Principles	3

**Total Credits 16****Summer Semester**

Technical Studies Electives	4
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**Total Credits 4****Third Semester**

FLPW1181	Pumps, Actuators, and Conductors	4
FLPW2180	Circuit Design	3
FLPW2191	Industrial Circuit Design	3
FLPW2301	Mobile Circuit Design	3
METS2100	Statics and Strength of Materials	3

**Total Credits 16****Fourth Semester**

FLPW2112	Instrumentation of Fluid Power Systems	3
FLPW2250	Proportional and Servo Controls (Robotics Application)	3
FLPW2321	System Engineering Portfolio	3

Technical Studies Electives	2
General Education Electives	3

**Total Credits 14****Technical Studies Electives**

Recommended:

FLPW1150	Pneumatic Components	4
FLPW1236	Industrial Electricity II	3
FLPW1500	Fluid Power Process Lab	1 - 4
FLPW2020	Advanced Programmable Logic Controllers	3
FLPW2350	Hydraulic Specialist Certification Review	2
FLPW2360	Pneumatic Specialist Certification Review	2

**Choose a Total of: 6 Credits****General Education Electives**

If a General Education course is required it may not be used as a General Education Elective.

Minnesota Transfer Curriculum (MnTC) may also be used to meet General Education Elective requirements. A complete list of MnTC courses can be found at [www.hennepintech.edu](http://www.hennepintech.edu).

**Choose a Total of: 3 Credits****Graduation (66 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/8/2022 : BP 4706 / EP 4707

**Semester Sequence - Eden Prairie****First Semester**

FLPW1101	Fluid Power Technology I	3
FLPW1106	Fluid Power Technology II	4
FLPW1181	Pumps, Actuators, and Conductors	4
FLPW1191	Hydraulic Components	3
FLPW1320	Hydraulic Circuits	2
	General Education Electives	3

**Total Credits 19****Second Semester**

FLPW1150	Pneumatic Components (elective)	4
FLPW1236	Industrial Electricity II (elective)	3
FLPW1231	Industrial Electricity I	3
FLPW1340	Pneumatic Circuits and Air Logic	4
METS1000	Computers in Manufacturing	3

**Total Credits 14****Third Semester**

FLPW2000	Programmable Logic Controllers	3
FLPW2112	Instrumentation of Fluid Power Systems	3
FLPW2250	Proportional and Servo Controls (Robotics Application)	3
METS2000	Engineering Design Principles	3

METS2100	Statics and Strength of Materials	3
	Choose one of the following:	
ENGC1100	AutoCAD	4
ENGC1160	Inventor	4
ENGC1250	SOLIDWORKS I	4
ENGC2100	Basic Creo Parametric	4
FLPW1400	Engineering Drawings and Schematics	4

**Total Credits 19****Fourth Semester**

FLPW2180	Circuit Design	3
FLPW2191	Industrial Circuit Design	3
FLPW2301	Mobile Circuit Design	3
FLPW2321	System Engineering Portfolio	3
	Optional:	
FLPW2350	Hydraulic Specialist Certification Review	2
	or	
FLPW2360	Pneumatic Specialist Certification Review	2

**Total Credits 14****Technical Studies Electives**

Recommended:

FLPW1150	Pneumatic Components	4
FLPW1236	Industrial Electricity II	3
FLPW1500	Fluid Power Process Lab	1 - 4
FLPW2020	Advanced Programmable Logic Controllers	3
FLPW2350	Hydraulic Specialist Certification Review	2
FLPW2360	Pneumatic Specialist Certification Review	2

**Choose a Total of: 6 Credits****General Education Electives**

If a General Education course is required it may not be used as a General Education Elective.

Minnesota Transfer Curriculum (MnTC) may also be used to meet General Education Elective requirements. A complete list of MnTC courses can be found at [www.hennepintech.edu](http://www.hennepintech.edu).

**Choose a Total of: 3 Credits****Graduation (66 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/8/2022: BP 4706 / EP 4707

## Fluid Power Mechanic (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

The Fluid Power Mechanic fabricates, assembles, repairs and tests hydraulic and pneumatic components. The mechanic must follow instructions, read schematics, read precision measuring devices, record data and analyze test data. This person troubleshoots automated equipment, performs routine maintenance and connects units to automated control systems. Individuals with previous mechanical experience, small engine or automotive backgrounds do extremely well in the Fluid Power Mechanic program.

This program is designed to prepare an individual to meet the challenges of current industry trends. The program courses cover hydraulics, pneumatics, blueprint reading, programmable logic controls and industrial electricity.

#### Award Outcomes

Demonstrate teamwork

Adhere to Occupational Safety & Health Administration (O.S.H.A.) safety guidelines and practices

Identify components that are utilized in the fluid power industry

Apply engineering concepts as they relate to fluid power applications

Employ fluid power best-practices methods when troubleshooting and repairing fluid power systems

Apply National Electrical Manufacturers Association (N.E.M.A.) and International Electrotechnical Commission (I.E.C.) electrical standards and practices as they relate to electrical concepts and equipment

Utilize calculations as they relate to the design of efficient fluid power applications

Examine engineering design practices as they relate to the transmission of power

Develop programmable logic controller (PLC) programs using Boolean algebra methods and computer software applications

Integrate electrical, programmable logic controller (PLC) and electronic hardware with motion control components

Instrument fluid power systems

Utilize data acquisition methods when analyzing fluid power application efficiency

Incorporate human machine interface (HMI) technologies with fluid power applications

Produce engineering drawings and schematics using American National Standards Institute (ANSI), International Organization for Standardization (ISO) and industry symbols and standards

Use applied physics to investigate power transmission methods

#### Career Opportunities

The Fluid Power Mechanic will find employment in hydraulic repair facilities, heavy equipment repair and service and manufacturing (food processing, plastics, printing, precision metal and woodworking industries.)

#### Program Requirements

##### Technical Studies Required 30 Credits

FLPW1101	Fluid Power Technology I	3
FLPW1106	Fluid Power Technology II	4
FLPW1150	Pneumatic Components	4
FLPW1181	Pumps, Actuators, and Conductors	4
FLPW1191	Hydraulic Components	3
FLPW1231	Industrial Electricity I	3
FLPW1320	Hydraulic Circuits	2
FLPW1340	Pneumatic Circuits and Air Logic	4
FLPW2000	Programmable Logic Controllers	3

##### General Education Required 3 Credits

METS1000	Computers in Manufacturing	3
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##### General Education Elective 1 Credit

Any HTC 1000 level or higher general education course may be used to satisfy the elective requirements.

##### Technical Studies Elective 0 Credits

##### Total Diploma Credits 34

##### Semester Sequence

**Prerequisite Semester**

**First Semester**

**Second Semester**

**Third Semester**

**Fourth Semester**

# Hydraulic Engineering Technician (BP/EP) Associate in Applied Science Degree

## Overview and Award Outcomes

### Overview

The Hydraulic Engineering Technician A.A.S. degree program prepares individuals to perform high level research and design work utilized in the fluid power industry. Emphasis is placed on hydraulic system design, test and evaluation, problem-solving, business communications, system integration, computer-aided circuit construction and programmable logic controls. Hydraulic Engineering Technicians design, modify and specify motion controls for today's high-speed production equipment. The program will focus on improving hydraulic system efficiency through the integration of technology (hydraulics, PLC's, industrial controls and computers). Individuals with a high mechanical aptitude that enjoy working with their hands as well as their minds should consider this program. This individual must be a people orientated person.

### Award Outcomes

Demonstrate teamwork

Adhere to Occupational Safety & Health Administration (O.S.H.A.) safety guidelines and practices

Identify components that are utilized in the fluid power industry

Apply engineering concepts as they relate to fluid power applications

Employ fluid power best-practices methods when troubleshooting and repairing fluid power systems

Apply National Electrical Manufacturers Association (N.E.M.A.) and International Electrotechnical Commission (I.E.C.) electrical standards and practices as they relate to electrical concepts and equipment

Design fluid power systems in accordance with National Fluid Power Association (NFPA) and International Organization for Standardization (ISO) standards and practices

Utilize calculations as they relate to the design of efficient fluid power applications

Examine engineering design practices as they relate to the transmission of power

Develop programmable logic controller (PLC) programs using Boolean algebra methods and computer software applications

Integrate electrical, programmable logic controller (PLC) and electronic hardware with motion control components

Instrument fluid power systems

Utilize data acquisition methods when analyzing fluid power application efficiency

Incorporate human machine interface (HMI) technologies with fluid power applications

Produce engineering drawings and schematics using American National Standards Institute (ANSI), International Organization for Standardization (ISO) and industry symbols and standards

Use applied physics to investigate power transmission methods

Collaborate with others to create a capstone project that utilizes the engineering portfolio concept

### Career Opportunities

The fluid power industry is one of the fastest growing technologies today. Hydraulic Engineering Technicians will find employment with industries in automation, material handling and processing, heavy equipment, plant automation and fluid power distribution. These opportunities will exist in large and small companies in local as well as international markets. Jobs will include supervision, hydraulic engineering, inside and outside sales consultant and product development.

### Program Requirements

#### Technical Studies Required 45 Credits

FLPW1101	Fluid Power Technology I	3
FLPW1106	Fluid Power Technology II	4
FLPW1181	Pumps, Actuators, and Conductors	4
FLPW1191	Hydraulic Components	3
FLPW1231	Industrial Electricity I	3
FLPW1236	Industrial Electricity II	3
FLPW1320	Hydraulic Circuits	2
FLPW2000	Programmable Logic Controllers	3
FLPW2180	Circuit Design	3
FLPW2112	Instrumentation of Fluid Power Systems	3
FLPW2191	Industrial Circuit Design	3
FLPW2250	Proportional and Servo Controls (Robotics Application)	3
FLPW2301	Mobile Circuit Design	3

FLPW2350	Hydraulic Specialist Certification Review	2
METS2100	Statics and Strength of Materials	3
<b>General Education Required 12 Credits</b>		
ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
	Choose 9 credits from 2 MnTC Goal Areas 2-10	9

**General Education Elective 3 Credits**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 60****Semester Sequence****Prerequisite Semester****First Semester****Second Semester****Third Semester****Fourth Semester**

## Hydraulic Engineering Technician (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

Hydraulic Engineering Technicians are responsible for building and modifying hydraulic systems utilized in the fluid power industry. Hydraulic Technicians calculate hydraulic system parameters, design circuits, evaluate operating systems and recommend changes for maximum efficiency. This program will focus on hydraulic component repair and testing, industrial electricity, programmable logic controls, circuit design and system engineering design. Emphasis will be placed on computer-aided circuit construction and software programming of automated systems. Individuals that enjoy working with their hands as well as their minds and have a high mechanical aptitude should consider this program. Hydraulic Engineering Technicians must be able to read various fluid power schematics, determine adjustments to improve system efficiency and recommend circuit changes. Hydraulic Engineering Technicians test hydraulic components and systems, document changes and build new systems.

#### Award Outcomes

Demonstrate teamwork

Adhere to Occupational Safety & Health Administration (O.S.H.A.) safety guidelines and practices

Identify components that are utilized in the fluid power industry

Apply engineering concepts as they relate to fluid power applications

Employ fluid power best-practices methods when troubleshooting and repairing fluid power systems

Apply National Electrical Manufacturers Association (N.E.M.A.) and International Electrotechnical Commission (I.E.C.) electrical standards and practices as they relate to electrical concepts and equipment

Design fluid power systems in accordance with National Fluid Power Association (NFPA) and International Organization for Standardization (ISO) standards and practices

Utilize calculations as they relate to the design of efficient fluid power applications

Examine engineering design practices as they relate to the transmission of power

Develop programmable logic controller (PLC) programs using Boolean algebra methods and computer software applications

Integrate electrical, programmable logic controller (PLC) and electronic hardware with motion control components

Instrument fluid power systems

Utilize data acquisition methods when analyzing fluid power application efficiency

Incorporate human machine interface (HMI) technologies with fluid power applications

Produce engineering drawings and schematics using American National Standards Institute (ANSI), International Organization for Standardization (ISO) and industry symbols and standards

Use applied physics to investigate power transmission methods

Collaborate with others to create a capstone project that utilizes the engineering portfolio concept

#### Career Opportunities

Hydraulic Engineering Technicians will find employment with fluid power manufacturing companies, sales organizations and distributors. Positions vary from fluid power technician, inside sales consultant, industrial maintenance technician and product testing.

#### Program Requirements

##### Technical Studies Required 58 Credits

FLPW1101	Fluid Power Technology I	3
FLPW1106	Fluid Power Technology II	4
FLPW1181	Pumps, Actuators, and Conductors	4
FLPW1191	Hydraulic Components	3
FLPW1231	Industrial Electricity I	3
FLPW1236	Industrial Electricity II	3
FLPW1320	Hydraulic Circuits	2
FLPW2000	Programmable Logic Controllers	3
FLPW2020	Advanced Programmable Logic Controllers	3
	or	
FLPW2180	Circuit Design	3
FLPW2112	Instrumentation of Fluid Power Systems	3
FLPW2191	Industrial Circuit Design	3

FLPW2250	Proportional and Servo Controls (Robotics Application)	3
FLPW2301	Mobile Circuit Design	3
FLPW2321	System Engineering Portfolio	3
FLPW2350	Hydraulic Specialist Certification Review	2
METS1200	Industry Practices and Procedures	3
METS2000	Engineering Design Principles	3
METS2100	Statics and Strength of Materials	3

**Choose one of the following:**

ENGC1100	AutoCAD	4
ENGC1160	Inventor	4
ENGC1250	SOLIDWORKS I	4
ENGC2100	Basic Creo Parametric	4
FLPW1400	Engineering Drawings and Schematics	4

**General Education Required 3 Credits**

METS1000	Computers in Manufacturing	3
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**General Education Elective 3 Credits**

Any HTC 1000 level or higher general education course may be used to satisfy the elective requirements.

**Technical Studies Elective 0 Credits****Total Diploma Credits 64****Semester Sequence****Prerequisite Semester****First Semester****Second Semester****Third Semester****Fourth Semester**

## Industrial Maintenance Mechanic (BP/EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

The Industrial Maintenance Mechanic performs routine maintenance on production equipment such as die casting, plastic manufacturing, food processing, machining and automated woodworking equipment. The job responsibilities include adjusting machines, scheduling preventative maintenance, changing filters, troubleshooting and repairing production machines.

The Industrial Maintenance Mechanic must be able to complete detailed tasks in today's high speed production environment. The mechanic will read electrical, fluid power and mechanical schematics to ensure machines are operating efficiently.

#### Award Outcomes

Demonstrate teamwork

Adhere to Occupational Safety & Health Administration (O.S.H.A.) safety guidelines and practices

Identify components that are utilized in the fluid power industry

Apply engineering concepts as they relate to fluid power applications

Employ fluid power best-practices methods when troubleshooting and repairing fluid power systems

Apply National Electrical Manufacturers Association (N.E.M.A.) and International Electrotechnical Commission (I.E.C.) electrical standards and practices as they relate to electrical concepts and equipment

Utilize calculations as they relate to the design of efficient fluid power applications

Examine engineering design practices as they relate to the transmission of power

Develop programmable logic controller (PLC) programs using Boolean algebra methods and computer software applications

Integrate electrical, programmable logic controller (PLC) and electronic hardware with motion control components

Instrument fluid power systems

Utilize data acquisition methods when analyzing fluid power application efficiency

Produce engineering drawings and schematics using American National Standards Institute (ANSI), International Organization for Standardization (ISO) and industry symbols and standards

Use applied physics to investigate power transmission methods

Collaborate with others to create a capstone project that utilizes the engineering portfolio concept

#### Career Opportunities

Industrial Maintenance Mechanics are employed in the die casting, plastics, food processing, printing, precision metal and woodworking industries. Coursework involves a broad curricula of industrial electricity, hydraulic and pneumatics and blueprint reading. Emphasis will be hands-on training repairing and testing of hydraulic and pneumatic equipment.

#### Program Requirements

##### Technical Studies Required 18 Credits

FLPW1101	Fluid Power Technology I	3
FLPW1106	Fluid Power Technology II	4
FLPW1150	Pneumatic Components	4
FLPW1181	or Pumps, Actuators, and Conductors	4
FLPW1231	Industrial Electricity I	3
FLPW1340	Pneumatic Circuits and Air Logic	4

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 18

#### Semester Sequence

##### Prerequisite Semester

##### First Semester

**Second Semester**

**Third Semester**

**Fourth Semester**

## National Certified Fluid Power Specialist (BP/EP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

This certificate is designed for students who desire national certification as a Fluid Power Specialist.

Prerequisite: Graduation from the Hydraulic Engineering Technician and Pneumatic Engineering Technician diploma or A.A.S. degree programs.

#### Award Outcomes

- Demonstrate teamwork
- Adhere to Occupational Safety & Health Administration (O.S.H.A.) safety guidelines and practices
- Identify components that are utilized in the fluid power industry
- Apply engineering concepts as they relate to fluid power applications
- Employ fluid power best-practices methods when troubleshooting and repairing fluid power systems
- Apply National Electrical Manufacturers Association (N.E.M.A.) and International Electrotechnical Commission (I.E.C.) electrical standards and practices as they relate to electrical concepts and equipment
- Design fluid power systems in accordance with National Fluid Power Association (NFPA) and International Organization for Standardization (ISO) standards and practices
- Utilize calculations as they relate to the design of efficient fluid power applications
- Examine engineering design practices as they relate to the transmission of power
- Develop programmable logic controller (PLC) programs using Boolean algebra methods and computer software applications
- Integrate electrical, programmable logic controller (PLC) and electronic hardware with motion control components
- Instrument fluid power systems
- Utilize data acquisition methods when analyzing fluid power application efficiency
- Produce engineering drawings and schematics using American National Standards Institute (ANSI), International Organization for Standardization (ISO) and industry symbols and standards
- Use applied physics to investigate power transmission methods
- Collaborate with others to create a capstone project that utilizes the engineering portfolio concept

#### Career Opportunities

Students with this certification are recognized in the industry as possessing the knowledge and skills necessary to perform as an engineering technician in the fluid power industry.

#### Program Requirements

##### Technical Studies Required 10 Credits

FLPW2191	Industrial Circuit Design	3
FLPW2321	System Engineering Portfolio	3
FLPW2350	Hydraulic Specialist Certification Review	2
FLPW2360	Pneumatic Specialist Certification Review	2
FLPW2450	Hydraulic Specialist Certification Exam	0
FLPW2460	Pneumatic Specialist Certification Exam	0

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Advanced Technical Certificate Credits 10

#### Semester Sequence

#### Prerequisite Semester

#### First Semester

#### Second Semester

**Third Semester**

**Fourth Semester**

## Pneumatic Engineering Technician (BP/EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

The Pneumatic Engineering Technician A.A.S. degree program prepares individuals to perform high level research and design work utilized in the fluid power industry. Emphasis is placed on pneumatic system design, test and evaluation, problem-solving, business communications, system integration, computer-aided circuit construction and programmable logic controls. Pneumatic Engineering Technicians design, modify and specify motion controls for today's high-speed production equipment. The program will focus on improving pneumatic system efficiency through the integration of technology (pneumatics, PLC's, industrial controls and computers). Individuals with a high mechanical aptitude that enjoy working with their hands as well as their minds should consider this program. This individual must be a people orientated person.

#### Award Outcomes

Demonstrate teamwork

Adhere to Occupational Safety & Health Administration (O.S.H.A.) safety guidelines and practices

Identify components that are utilized in the fluid power industry

Apply engineering concepts as they relate to fluid power applications

Employ fluid power best-practices methods when troubleshooting and repairing fluid power systems

Apply National Electrical Manufacturers Association (N.E.M.A.) and International Electrotechnical Commission (I.E.C.) electrical standards and practices as they relate to electrical concepts and equipment

Design fluid power systems in accordance with National Fluid Power Association (NFPA) and International Organization for Standardization (ISO) standards and practices

Utilize calculations as they relate to the design of efficient fluid power applications

Examine engineering design practices as they relate to the transmission of power

Develop programmable logic controller (PLC) programs using Boolean algebra methods and computer software applications

Integrate electrical, programmable logic controller (PLC) and electronic hardware with motion control components

Instrument fluid power systems

Utilize data acquisition methods when analyzing fluid power application efficiency

Incorporate human machine interface (HMI) technologies with fluid power applications

Produce engineering drawings and schematics using American National Standards Institute (ANSI), International Organization for Standardization (ISO) and industry symbols and standards

Use applied physics to investigate power transmission methods

Collaborate with others to create a capstone project that utilizes the engineering portfolio concept

#### Career Opportunities

The fluid power industry is one of the fastest growing technologies today. Pneumatic Engineering Technicians will find employment with industries in automation, material handling and processing, robotics, plant automation and fluid power distribution. These opportunities will exist in large and small companies in local as well as international markets. Jobs will include supervision, pneumatic engineering, inside and outside sales consultant and product development.

#### Program Requirements

##### Technical Studies Required 45 Credits

FLPW1101	Fluid Power Technology I	3
FLPW1106	Fluid Power Technology II	4
FLPW1150	Pneumatic Components	4
FLPW1231	Industrial Electricity I	3
FLPW1236	Industrial Electricity II	3
FLPW1340	Pneumatic Circuits and Air Logic	4
FLPW2000	Programmable Logic Controllers	3
FLPW2020	Advanced Programmable Logic Controllers	3
FLPW2112	Instrumentation of Fluid Power Systems	3
FLPW2321	System Engineering Portfolio	3
FLPW2360	Pneumatic Specialist Certification Review	2
METS2000	Engineering Design Principles	3
METS2100	Statics and Strength of Materials	3

**Choose one of the following:**

ENGC1100	AutoCAD	4
ENGC1160	Inventor	4
ENGC1250	SOLIDWORKS I	4
ENGC2100	Basic Creo Parametric	4
FLPW1400	Engineering Drawings and Schematics	4

**General Education Required 12 Credits**

ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
	Choose 9 credits from 2 MnTC Goal Areas 2-10	9

**General Education Elective 3 Credits**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 60****Semester Sequence****Prerequisite Semester****First Semester****Second Semester****Third Semester****Fourth Semester**

## Pneumatic Engineering Technician (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

Pneumatic Engineering Technicians are responsible for building and modifying pneumatic systems utilized in the fluid power industry. Pneumatic Engineering Technicians calculate pneumatic system parameters, design circuits, evaluate operating systems and recommend changes for maximum efficiency. This program will focus on pneumatic component repair and testing, industrial electricity, programmable logic controls, circuit design and system engineering design. Emphasis will be placed on computer-aided circuit construction and software programming of automated systems. Individuals that enjoy working with their hands as well as their minds and have a high mechanical aptitude should consider this program. Pneumatic Engineering Technicians must be able to read various fluid power schematics, determine adjustments to improve system efficiency and recommend circuit changes. Pneumatic Engineering Technicians test pneumatic components and systems, document changes and build new systems.

#### Award Outcomes

Demonstrate teamwork

Adhere to Occupational Safety & Health Administration (O.S.H.A.) safety guidelines and practices

Identify components that are utilized in the fluid power industry

Apply engineering concepts as they relate to fluid power applications

Employ fluid power best-practices methods when troubleshooting and repairing fluid power systems

Apply National Electrical Manufacturers Association (N.E.M.A.) and International Electrotechnical Commission (I.E.C.) electrical standards and practices as they relate to electrical concepts and equipment

Design fluid power systems in accordance with National Fluid Power Association (NFPA) and International Organization for Standardization (ISO) standards and practices

Utilize calculations as they relate to the design of efficient fluid power applications

Examine engineering design practices as they relate to the transmission of power

Develop programmable logic controller (PLC) programs using Boolean algebra methods and computer software applications

Integrate electrical, programmable logic controller (PLC) and electronic hardware with motion control components

Instrument fluid power systems

Utilize data acquisition methods when analyzing fluid power application efficiency

Incorporate human machine interface (HMI) technologies with fluid power applications

Produce engineering drawings and schematics using American National Standards Institute (ANSI), International Organization for Standardization (ISO) and industry symbols and standards

Use applied physics to investigate power transmission methods

Collaborate with others to create a capstone project that utilizes the engineering portfolio concept

#### Career Opportunities

Pneumatic Engineering Technicians will find employment with fluid power manufacturing companies, sales organizations and distributors. Positions vary from fluid power technician, inside sales consultant, industrial maintenance technician and product testing.

#### Program Requirements

##### Technical Studies Required 48 Credits

FLPW1101	Fluid Power Technology I	3
FLPW1106	Fluid Power Technology II	4
FLPW1150	Pneumatic Components	4
FLPW1231	Industrial Electricity I	3
FLPW1236	Industrial Electricity II	3
FLPW1340	Pneumatic Circuits and Air Logic	4
FLPW2000	Programmable Logic Controllers	3
FLPW2020	Advanced Programmable Logic Controllers	3
FLPW2112	Instrumentation of Fluid Power Systems	3
FLPW2321	System Engineering Portfolio	3
FLPW2360	Pneumatic Specialist Certification Review	2
METS1200	Industry Practices and Procedures	3
METS2000	Engineering Design Principles	3
METS2100	Statics and Strength of Materials	3

**Choose one of the following:**

ENGC1100	AutoCAD	4
ENGC1160	Inventor	4
ENGC1250	SOLIDWORKS I	4
ENGC2100	Basic Creo Parametric	4
FLPW1400	Engineering Drawings and Schematics	4

**General Education Required 3 Credits**

METS1000	Computers in Manufacturing	3
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**General Education Elective 3 Credits**

Any HTC 1000 level or higher general education course may be used to satisfy the elective requirements.

**Technical Studies Elective 10 Credits**

Any FLPW course that is not required for this award may be used as an elective.

**Total Diploma Credits 64****Semester Sequence****Prerequisite Semester****First Semester****Second Semester****Third Semester****Fourth Semester**

# Manufacturing Support Technician Level I (BP/EP) Occupational Certificate

## Overview and Award Outcomes

### Overview

The Manufacturing Support Technician Level I occupational certificate will provide students with the skills needed to build a base knowledge of manufacturing equipment, operating practices, and is generally suited for entry-level positions. The award introduces hydraulics, pneumatics, industrial electricity, ladder logic, relay control circuits, electrical motor operation, electrical motor control circuits, and programmable logic controls. Graduates can use the knowledge gained within this award to build upon future manufacturing career paths, leading to higher-level positions within manufacturing, production support, fluid power, and maintenance mechanic.

### Award Outcomes

Demonstrate teamwork  
 Demonstrate safe shop safety practices  
 Solve fluid power mathematical formulas  
 Identify components that are utilized in the fluid power industry  
 Experiment with various components utilized in the fluid power industry  
 Solve electrical mathematical formulas  
 Construct electrical circuits  
 Utilize tools to examine and troubleshoot electrical circuits  
 Apply National Electrical Manufacturers Association (N.E.M.A.) and International Electrotechnical Commission (I.E.C.) electrical standards and practices as they relate to electrical concepts and equipment  
 Develop programmable logic controller (PLC) programs using Boolean algebra methods and computer software applications  
 Integrate electrical, programmable logic controller (PLC) and electronic hardware with motion control components

### Career Opportunities

Graduates can expect to gain entry level positions within industries including, material handling and processing, heavy equipment, plant manufacturing support and fluid power distribution. These opportunities exist within large and small companies in local, national, and international markets.

### Program Requirements

#### Technical Studies Required Credits 12 Credits

FLPW1101	Fluid Power Technology I	3
FLPW1231	Industrial Electricity I	3
FLPW1236	Industrial Electricity II	3
FLPW2000	Programmable Logic Controllers	3

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Occupational Certificate Degree Credits 12

#### Semester Sequence - Brooklyn Park

##### First Semester

FLPW1101	Fluid Power Technology I	3
FLPW1231	Industrial Electricity I	3
FLPW2000	Programmable Logic Controllers	3

#### Total Credits 9

##### Second Semester

FLPW1236	Industrial Electricity II	3
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**Total Credits 3****Graduation (12 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/8/2022 : BP 4722 / EP 4723

**Semester Sequence - Eden Prairie****First Semester**

FLPW1101	Fluid Power Technology I	3
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**Total Credits 3****Second Semester**

FLPW1231	Industrial Electricity I	3
FLPW1236	Industrial Electricity II	3

**Total Credits 6****Third Semester**

FLPW2000	Programmable Logic Controllers	3
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**Total Credits 3****Graduation (12 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/8/2022 : BP 4722 / EP 4723

## Manufacturing Support Technician Level II (BP/EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

The Manufacturing Support Technician Level II occupational certificate will provide students with the skills needed to build a base knowledge of manufacturing equipment, operating practices, and is generally suited for more advanced level positions. This award introduces industry practices and procedures, hydraulic control circuits, pneumatic control circuits, industrial electricity, ladder logic, relay control circuits, electrical motor operation, electrical motor control circuits, human machine interface (HMI), and programmable logic controls. Graduates can use the knowledge gained within this award to build upon future manufacturing career paths, leading to higher-level positions within manufacturing support, production support, fluid power, and maintenance mechanic fields.

#### Award Outcomes

Demonstrate teamwork  
 Demonstrate safe shop safety practices  
 Explain key terms and concepts and the importance of safety-related work practices  
 Solve fluid power mathematical formulas  
 Construct fluid power circuits  
 Identify components that are utilized in the fluid power industry  
 Experiment with various components utilized in the fluid power industry  
 Solve electrical mathematical formulas  
 Construct electrical circuits  
 Utilize tools to examine and troubleshoot electrical circuits  
 Apply National Electrical Manufacturers Association (N.E.M.A.) and International Electrotechnical Commission (I.E.C.) electrical standards and practices as they relate to electrical concepts and equipment  
 Develop programmable logic controller (PLC) programs using Boolean algebra methods and computer software applications  
 Integrate electrical, programmable logic controller (PLC), and electronic hardware with motion control components  
 Incorporate human machine interface (HMI) technologies with fluid power applications

#### Career Opportunities

Graduates can expect to attain positions within industries including, material handling and processing, heavy equipment, plant production support, and fluid power distribution. These opportunities exist within large and small companies in local, national, and international markets.

#### Program Requirements

##### Technical Studies Required 26 Credits

FLPW1101	Fluid Power Technology I	3
FLPW1106	Fluid Power Technology II	4
FLPW1231	Industrial Electricity I	3
FLPW1236	Industrial Electricity II	3
FLPW1340	Pneumatic Circuits and Air Logic	4
FLPW2020	Advanced Programmable Logic Controllers	3
METS1200	Industry Practices and Procedures	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 26

#### Semester Sequence - Brooklyn Park

##### First Semester

FLPW1101	Fluid Power Technology I	3
FLPW1231	Industrial Electricity I	3
FLPW2000	Programmable Logic Controllers	3

**Total Credits 9****Second Semester**

FLPW1106	Fluid Power Technology II	4
FLPW1236	Industrial Electricity II	3

**Total Credits 7****Third Semester**

FLPW1340	Pneumatic Circuits and Air Logic	4
FLPW2020	Advanced Programmable Logic Controllers	3
METS1200	Industry Practices and Procedures	3

**Total Credits 10****Graduation (26 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/8/2022 : BP 4724 / EP 4725

**Semester Sequence - Eden Prairie****First Semester**

FLPW1101	Fluid Power Technology I	3
FLPW1106	Fluid Power Technology II	4

**Total Credits 7****Second Semester**

FLPW1231	Industrial Electricity I	3
FLPW1236	Industrial Electricity II	3
FLPW1340	Pneumatic Circuits and Air Logic	4

**Total Credits 10****Third Semester**

FLPW2000	Programmable Logic Controllers	3
FLPW2020	Advanced Programmable Logic Controllers	3
METS1200	Industry Practices and Procedures	3

**Total Credits 9****Graduation (26 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/8/2022 : BP 4724 / EP 4725

**Industrial Building Engineering and Maintenance**

## Industrial Building Engineering and Maintenance (BP) Diploma

### Overview and Award Outcomes

#### Overview

The Industrial Building Engineering and Maintenance diploma provides students with a multi-discipline education in building and machine maintenance technologies. This program will educate the student in various aspects of boiler operation, maintenance carpentry, heating and cooling applications, hydraulic and pneumatic components, industrial electrical and motor control systems, machine-tool processes, welding, fluid conductor application, CAD operation, machine repair and troubleshooting practices.

#### Award Outcomes

Demonstrate the ability to understand and implement OSHA safety regulations  
 Demonstrate teamwork  
 Apply electrical concepts as they relate to the installation and troubleshooting analysis of N.E.M.A. and I.E.C. industrial electrical equipment  
 Develop the skills necessary to braze and solder fluid conductors  
 Develop drawings by using a personal computer and computer aided design (CAD) software  
 Interpret blueprints, drawings and schematics  
 Utilize calculations as they relate to the design of fluid power systems  
 Demonstrate the ability to interpret and troubleshoot hydraulic and pneumatic circuits  
 Complete the Environmental Protection Agency certification to handle refrigerants  
 Develop programs for programmable logic controllers that meet industry standards  
 Demonstrate carpentry finishing skills and techniques  
 Demonstrate the ability to construct floor and wall component systems  
 Operate welding tools and equipment  
 Demonstrate the ability to perform welding techniques  
 Demonstrate the ability to perform material handling techniques

#### Career Opportunities

The maintenance field is one that offers consistence and long-term employment opportunities. The maintenance of buildings and machines is a vital and ever-present task at all industrial facilities. Career opportunities exist in small and large companies and employment can be found in local as well as in the national markets. The maintenance technician will find jobs that include any or all of these duties: repair and maintenance of the inside and outside of the facility, carpentry, boiler operation, the preservation of heating and air conditioning systems, up-keep of material handling equipment and preventative maintenance and repair of manufacturing machines and related equipment.

#### Program Requirements

##### Technical Studies Required 38 Credits

FLPW1101	Fluid Power Technology I	3
FLPW1150	Pneumatic Components	4
FLPW1231	Industrial Electricity I	3
FLPW1236	Industrial Electricity II	3
FLPW1400	Engineering Drawings and Schematics	4
FLPW2000	Programmable Logic Controllers	3
FLPW2020	Advanced Programmable Logic Controllers or	3
FLPW2112	Instrumentation of Fluid Power Systems	3
IBEM1000	Welding Maintenance	3
IBEM1010	Carpentry Maintenance	3
IBEM1020	HVAC Maintenance	3
IBEM1030	Tube and Pipe Repair	2
IBEM1040	Rigging Procedures and Forklift Operations	1
MACH1205	Machine Tool Technology	3

##### General Education Required 5 Credits

MATH1007	Math for the Trades	2
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METS1000	Computers in Manufacturing	3
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**General Education Elective 0 Credits****Technical Studies Elective 1 Credits**

Any FLPW, MACH, METS, PLST, or WLDG course that is not required for this award may be used as an elective.

**Total Diploma Credits 44****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

FLPW1101	Fluid Power Technology I	3
FLPW1231	Industrial Electricity I	3
FLPW1400	Engineering Drawings and Schematics	4
FLPW2000	Programmable Logic Controllers	3
IBEM1000	Welding Maintenance BPC Only	3

**Total Credits 16****Second Semester**

FLPW1236	Industrial Electricity II	3
FLPW2020	Advanced Programmable Logic Controllers or	3
FLPW2112	Instrumentation of Fluid Power Systems	3
MACH1205	Machine Tool Technology BPC Only	3
METS1000	Computers in Manufacturing	3
MATH1007	Math for the Trades	2

**Total Credits 14****Summer Semester (BPC Campus Only)**

FLPW1150	Pneumatic Components	4
IBEM1010	Carpentry Maintenance BPC Only	3
IBEM1020	HVAC Maintenance BPC Only	3
IBEM1030	Tube and Pipe Repair BPC Only	2
IBEM1040	Rigging Procedures and Forklift Operations BPC Only	1
	Technical Studies Electives	1

**Total Credits 14****Technical Studies Electives**

Any Fluid Power (FLPW), Machine Tool (MACH), Manufacturing Engineering Technology (METS), Plastics Engineering Technology (PLST), or Welding (WLDG) course that is not required for this award may be used as an elective.

**Choose a Total of: 1 Credit****Graduation (44 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## **Machine Tool Technology & Quality Assurance**

## Tool and Die/Moldmaking (BP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

Diemakers are machinists with additional skills in designing and constructing metal-stamping dies. They build the dies that mass-produce parts for many industries including small appliances, computers, automobiles, and aircraft. Diemakers use both manual and computer-controlled machine tools to build intricate and close tolerance dies. Diemakers need those skills to work to close tolerances, interpret blueprints, and follow detailed instructions.

Moldmakers are machinists with additional skills in the design and construction of plastic injection molds. They build the molds that mass-produce the plastic products that make our high-tech world possible. The molding process produces products ranging from pens to automobile parts to medical implants. Moldmakers use both manual and computer-controlled machine tools to build plastic injection molds that require intricate 3-dimensional shapes and close tolerances. Moldmakers must be able to visualize 3-dimensional objects from a blueprint, pay attention to details, and work to close tolerances.

#### Award Outcomes

- Apply precision measurement techniques
- Demonstrate sawing procedures
- Demonstrate drilling procedures
- Demonstrate grinding procedures
- Demonstrate milling procedures
- Demonstrate turning procedures
- Interpret blueprints/drawings
- Apply heat treating principles
- Machine parts with tolerance
- Apply math skills necessary for industry requirements
- Operate equipment safely
- Inspect machined parts for tolerance requirements
- Operate CNC machines efficiently
- Demonstrate teamwork
- Develop part designs within a group

#### Career Opportunities

Career opportunities are available for these highly-skilled professionals. Tool and Die/Moldmakers work in both small and large companies. The Tool and Die/Moldmakers skills qualify him/her for good pay and jobs that encourage creativity and innovation. Opportunities exist to move into management positions or start a business.

#### Program Requirements

##### Technical Studies Required 50 Credits

MACH1056	Blueprint Reading I	3
MACH1100	Introduction to Machining Technology	3
MACH1105	Drilling and Sawing Processes	2
MACH1110	Turning Technology I	3
MACH1120	Turning Technology II	3
MACH1125	Milling Technology I	3
MACH1130	Milling Technology II	3
MACH1135	Precision Grinding	2
MACH1140	Introduction to CNC	3
MACH2400	CNC Setup and Operation	3
MACH2406	CNC Programming	3
MACH2410	CAD/CAM	3
MACH2420	Blueprint Reading II for Machinists	2
MACH2450	Fundamentals of EDM	2
MACH2455	Die/Mold Design	3
MACH2460	Die Construction	3
MACH2465	Mold Construction	3
MACH2500	Introduction to Swiss-Style Machining	3

**General Education Required 9 Credits**

ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
MATH1150	Applications of Quantitative Reasoning	3
	or	
MATH1400	College Algebra	4
PHIL1100	Critical Thinking for College Success	3
	or	
PHYS1005	Introductory Physics I	3

**General Education Elective 6 Credits**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Technical Studies Elective 7 Credits**

Recommended:

MACH1145	Machinists Reference Materials	1
MACH1900	Specialized Lab	1 - 4
MACH2415	CNC Milling	3
MACH2425	Geometry/Trigonometry for Machinists	2
MACH2430	CNC Machining Centers	3
MACH2435	CNC Turning Centers	3
MACH2450	Fundamentals of EDM	2
MACH2600	Introduction to Quality Assurance	3
MACH2610	Inspection Processes	3
MACH2615	Inspection Equipment and Techniques	3
MACH2620	Quality Systems	3
METS1000	Computers in Manufacturing	3
ENGC1050	Additive Manufacturing	3
ENGC1250	SOLIDWORKS I	4

**Total Associate in Applied Science Degree Credits 72****Semester Sequence - Full-Time****Offered at Brooklyn Park Only****First Semester**

MACH1056	Blueprint Reading I	3
MACH1100	Introduction to Machining Technology	3
MACH1105	Drilling and Sawing Processes	2
MACH1110	Turning Technology I	3
MACH1125	Milling Technology I	3
MATH1150	Applications of Quantitative Reasoning	3
	or	
MATH1400	College Algebra	4

**Total Credits 17****Second Semester**

MACH1120	Turning Technology II	3
MACH1130	Milling Technology II	3
MACH1135	Precision Grinding	2
MACH1140	Introduction to CNC	3
	Technical Studies Electives	4

**Total Credits 15****Summer Semester**

ENGL1070	Technical Writing	3
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ENGL1100	or Writing and Research	4
	General Education Electives	3

**Total Credits 6****Third Semester**

MACH2400	CNC Setup and Operation	3
MACH2406	CNC Programming	3
MACH2410	CAD/CAM	3
MACH2420	Blueprint Reading II for Machinists	2
	Technical Studies Electives	3
	General Education Electives	3

**Total Credits 17****Fourth Semester**

MACH2450	Fundamentals of EDM	2
MACH2455	Die/Mold Design	3
MACH2460	Die Construction	3
MACH2465	Mold Construction	3
MACH2500	Introduction to Swiss-Style Machining	3
PHIL1100	Critical Thinking for College Success	3
	or	
PHYS1005	Introductory Physics I	3

**Total Credits 17****Technical Studies Electives**

## Recommended:

MACH1145	Machinists Reference Materials	1
MACH1900	Specialized Lab	1 - 4
MACH2415	CNC Milling	3
MACH2425	Geometry/Trigonometry for Machinists	2
MACH2430	CNC Machining Centers	3
MACH2435	CNC Turning Centers	3
MACH2450	Fundamentals of EDM	2
MACH2600	Introduction to Quality Assurance	3
MACH2610	Inspection Processes	3
MACH2615	Inspection Equipment and Techniques	3
MACH2620	Quality Systems	3
MACH2625	Computer Analysis of Manufacturing Data	2
METS1000	Computers in Manufacturing	3
ENGC1050	Additive Manufacturing	3
ENGC1250	SOLIDWORKS I	4

**Choose a Total of: 7 Credits****General Education Electives**

A complete list of Minnesota Transfer Curriculum (MnTC) courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 6 Credits****Graduation (72 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

**Semester Sequence - Part-Time****Offered at Brooklyn Park Only****First Semester**

MACH1056	Blueprint Reading I	3
MACH1100	Introduction to Machining Technology	3
MACH1105	Drilling and Sawing Processes	2

**Total Credits 8****Second Semester**

MACH1110	Turning Technology I	3
MACH1125	Milling Technology I	3
MACH1135	Precision Grinding	2

**Total Credits 8****Summer Semester**

MATH1150	Applications of Quantitative Reasoning or	3
MATH1400	College Algebra General Education Electives	4 3

**Total Credits 6****Third Semester**

MACH1120	Turning Technology II	3
MACH1130	Milling Technology II	3
MACH1140	Introduction to CNC	3

**Total Credits 9****Fourth Semester**

MACH2410	CAD/CAM	3
MACH2420	Blueprint Reading II for Machinists Technical Studies Electives	2 4

**Total Credits 9****Summer Semester**

ENGL1070	Technical Writing or	3
ENGL1100	Writing and Research	4

**Total Credits 3****Fifth Semester**

MACH2400	CNC Setup and Operation	3
MACH2406	CNC Programming	3
MACH2450	Fundamentals of EDM	2

**Total Credits 8****Sixth Semester**

MACH2455	Die/Mold Design	3
MACH2460	Die Construction	3
MACH2465	Mold Construction	3

**Total Credits 9****Summer Semester**

PHIL1100	Critical Thinking for College Success or	3
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PHYS1005	Introductory Physics I	3
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**Total Credits 3****Seventh Semester**

MACH2500	Introduction to Swiss-Style Machining	3
	Technical Studies Electives	3
	General Education Electives	3

**Total Credits 9****Technical Studies Electives**

## Recommended:

MACH1145	Machinists Reference Materials	1
MACH1900	Specialized Lab	1 - 4
MACH2415	CNC Milling	3
MACH2425	Geometry/Trigonometry for Machinists	2
MACH2430	CNC Machining Centers	3
MACH2435	CNC Turning Centers	3
MACH2450	Fundamentals of EDM	2
MACH2600	Introduction to Quality Assurance	3
MACH2610	Inspection Processes	3
MACH2615	Inspection Equipment and Techniques	3
MACH2620	Quality Systems	3
MACH2625	Computer Analysis of Manufacturing Data	2
METS1000	Computers in Manufacturing	3
ENGC1050	Additive Manufacturing	3
ENGC1250	SOLIDWORKS I	4

**Choose a Total of: 7 Credits****General Education Electives**

A complete list of Minnesota Transfer Curriculum (MnTC) courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 6 Credits****Graduation (72 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/15/2022 : BP 4305 / EP

## Computer Numerical Control (CNC) Technician (BP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

CNC Technicians are machinists with additional skills in programming, setup and operating computer driven machine tools. Most high-tech products including computers, aircraft and medical devices use precision components made on CNC machine tools. The CNC Technician relies on a strong background of machining skills. These skills include the understanding of machines, tooling, blueprints, and additional methods used to produce and inspect a part. After determining the best manufacturing strategies and selecting tools, a CNC program is developed. CAD/CAM (Computer Aided Design/Computer Aided Manufacturing) software is many times used to assist in developing the CNC program.

#### Award Outcomes

- Apply precision measurement techniques
- Demonstrate sawing procedures
- Demonstrate drilling procedures
- Demonstrate grinding procedures
- Demonstrate milling procedures
- Demonstrate turning procedures
- Interpret blueprints/drawings
- Apply heat treating principles
- Machine parts with tolerance
- Apply math skills necessary for industry requirements
- Operate equipment safely
- Inspect machined parts for tolerance requirements
- Operate CNC machines efficiently
- Demonstrate teamwork
- Develop part designs within a group

#### Career Opportunities

The successful CNC Technician may start his/her career as a CNC operator and progress to CNC setup, programmer, or inspector. Well paying jobs are available in the medical, aerospace, computer and recreational industries.

#### Program Requirements

##### Technical Studies Required 50 Credits

MACH1056	Blueprint Reading I	3
MACH1100	Introduction to Machining Technology	3
MACH1105	Drilling and Sawing Processes	2
MACH1110	Turning Technology I	3
MACH1120	Turning Technology II	3
MACH1125	Milling Technology I	3
MACH1130	Milling Technology II	3
MACH1135	Precision Grinding	2
MACH1140	Introduction to CNC	3
MACH2400	CNC Setup and Operation	3
MACH2406	CNC Programming	3
MACH2410	CAD/CAM	3
MACH2415	CNC Milling	3
MACH2420	Blueprint Reading II for Machinists	2
MACH2430	CNC Machining Centers	3
MACH2435	CNC Turning Centers	3
MACH2440	Quality Assurance	2
MACH2500	Introduction to Swiss-Style Machining	3

##### General Education Required 9 Credits

ENGL1070	Technical Writing or	3
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ENGL1100	Writing and Research	4
MATH1150	Applications of Quantitative Reasoning or	3
MATH1400	College Algebra	4
PHIL1100	Critical Thinking for College Success or	3
PHYS1005	Introductory Physics I	3

**General Education Elective 6 Credits**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Technical Studies Elective 7 Credits**

Recommended:

MACH1145	Machinists Reference Materials	1
MACH1900	Specialized Lab	1 - 4
MACH2425	Geometry/Trigonometry for Machinists	2
MACH2450	Fundamentals of EDM	2
MACH2600	Introduction to Quality Assurance	3
MACH2610	Inspection Processes	3
MACH2615	Inspection Equipment and Techniques	3
MACH2620	Quality Systems	3
METS1000	Computers in Manufacturing	3
ENGC1050	Additive Manufacturing	3
ENGC1250	SOLIDWORKS I	4

**Total Associate in Applied Science Degree Credits 72****Semester Sequence - Full-Time****Offered at Brooklyn Park Only****First Semester**

MACH1056	Blueprint Reading I	3
MACH1100	Introduction to Machining Technology	3
MACH1105	Drilling and Sawing Processes	2
MACH1110	Turning Technology I	3
MACH1125	Milling Technology I	3
MATH1150	Applications of Quantitative Reasoning or	3
MATH1400	College Algebra	4

**Total Credits 17****Second Semester**

MACH1120	Turning Technology II	3
MACH1130	Milling Technology II	3
MACH1135	Precision Grinding	2
MACH1140	Introduction to CNC	3
	Technical Studies Electives	4

**Total Credits 15****Summer Semester**

ENGL1070	Technical Writing or	3
ENGL1100	Writing and Research	4
	General Education Electives	3

**Total Credits 6****Third Semester**

MACH2400	CNC Setup and Operation	3
MACH2406	CNC Programming	3
MACH2410	CAD/CAM	3
MACH2415	CNC Milling	3
MACH2420	Blueprint Reading II for Machinists	2
	General Education Electives	3

**Total Credits 17****Fourth Semester**

MACH2430	CNC Machining Centers	3
MACH2435	CNC Turning Centers	3
MACH2440	Quality Assurance	2
MACH2500	Introduction to Swiss-Style Machining	3
PHIL1100	Critical Thinking for College Success	3
	or	
PHYS1005	Introductory Physics I	3
	Technical Studies Electives	3

**Total Credits 17****Technical Studies Electives**

## Recommended:

MACH1145	Machinists Reference Materials	1
MACH1900	Specialized Lab	1 - 4
MACH2425	Geometry/Trigonometry for Machinists	2
MACH2450	Fundamentals of EDM	2
MACH2470	Advanced CNC Turning Centers	3
MACH2600	Introduction to Quality Assurance	3
MACH2610	Inspection Processes	3
MACH2615	Inspection Equipment and Techniques	3
MACH2620	Quality Systems	3
MACH2625	Computer Analysis of Manufacturing Data	2
METS1000	Computers in Manufacturing	3
ENGC1050	Additive Manufacturing	3
ENGC1250	SOLIDWORKS I	4

**Choose a Total of: 7 Credits****General Education Electives**

A complete list of Minnesota Transfer Curriculum (MnTC) courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 6 Credits****Graduation (72 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/15/2022 : BP 4304 / EP

**Semester Sequence - Part-Time****Offered at Brooklyn Park Only****First Semester**

MACH1056	Blueprint Reading I	3
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MACH1100	Introduction to Machining Technology	3
MACH1105	Drilling and Sawing Processes	2
<b>Total Credits 8</b>		
<b>Second Semester</b>		
MACH1110	Turning Technology I	3
MACH1125	Milling Technology I	3
MACH1135	Precision Grinding	2
<b>Total Credits 8</b>		
<b>Summer Semester</b>		
MATH1150	Applications of Quantitative Reasoning or	3
MATH1400	College Algebra	4
	General Education Electives	3
<b>Total Credits 6</b>		
<b>Third Semester</b>		
MACH1120	Turning Technology II	3
MACH1130	Milling Technology II	3
MACH1140	Introduction to CNC	3
<b>Total Credits 9</b>		
<b>Fourth Semester</b>		
MACH2410	CAD/CAM	3
MACH2420	Blueprint Reading II for Machinists	2
	Technical Studies Electives	4
<b>Total Credits 9</b>		
<b>Summer Semester</b>		
ENGL1070	Technical Writing or	3
ENGL1100	Writing and Research	4
<b>Total Credits 3</b>		
<b>Fifth Semester</b>		
MACH2400	CNC Setup and Operation	3
MACH2406	CNC Programming	3
	Technical Studies Electives	3
<b>Total Credits 9</b>		
<b>Sixth Semester</b>		
MACH2415	CNC Milling	3
MACH2430	CNC Machining Centers	3
MACH2435	CNC Turning Centers	3
<b>Total Credits 9</b>		
<b>Summer Semester</b>		
PHIL1100	Critical Thinking for College Success or	3
PHYS1005	Introductory Physics I	3
<b>Total Credits 3</b>		
<b>Seventh Semester</b>		
MACH2440	Quality Assurance	2

MACH2500	Introduction to Swiss-Style Machining	3
	General Education Electives	3

**Total Credits 8****Technical Studies Electives**

## Recommended:

MACH1145	Machinists Reference Materials	1
MACH1900	Specialized Lab	1 - 4
MACH2425	Geometry/Trigonometry for Machinists	2
MACH2450	Fundamentals of EDM	2
MACH2470	Advanced CNC Turning Centers	3
MACH2600	Introduction to Quality Assurance	3
MACH2610	Inspection Processes	3
MACH2615	Inspection Equipment and Techniques	3
MACH2620	Quality Systems	3
MACH2625	Computer Analysis of Manufacturing Data	2
METS1000	Computers in Manufacturing	3
ENGC1050	Additive Manufacturing	3
ENGC1250	SOLIDWORKS I	4

**Choose a Total of: 7 Credits****General Education Electives**

A complete list of Minnesota Transfer Curriculum (MnTC) courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 6 Credits****Graduation (72 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Tool and Die/Moldmaking (BP) Diploma

### Overview and Award Outcomes

#### Overview

Diemakers are machinists with additional skills in designing and constructing metal-stamping dies. They build the dies that mass-produce parts for many industries including small appliances, computers, automobiles, and aircraft. Diemakers use both manual and computer-controlled machine tools to build intricate and close tolerance dies. Diemakers need those skills to work to close tolerances, interpret blueprints, and follow detailed instructions.

Moldmakers are machinists with additional skills in the design and construction of plastic injection molds. They build the molds that mass-produce the plastic products that make our high-tech world possible. The molding process produces products ranging from pens to automobile parts to medical implants. Moldmakers use both manual and computer-controlled machine tools to build plastic injection molds that require intricate 3-dimensional shapes and close tolerances. Moldmakers must be able to visualize 3-dimensional objects from a blueprint, pay attention to details, and work to close tolerances.

#### Award Outcomes

- Apply precision measurement techniques
- Demonstrate sawing procedures
- Demonstrate drilling procedures
- Demonstrate grinding procedures
- Demonstrate milling procedures
- Demonstrate turning procedures
- Interpret blueprints/drawings
- Apply heat treating principles
- Machine parts with tolerance
- Apply math skills necessary for industry requirements
- Operate equipment safely
- Inspect machined parts for tolerance requirements
- Operate CNC machines efficiently
- Demonstrate teamwork
- Develop part designs within a group

#### Career Opportunities

Career opportunities are available for these highly-skilled professionals. Tool and Die/Moldmakers work in both small and large companies. The Tool and Die/Moldmakers skills qualify him/her for good pay and jobs that encourage creativity and innovation. Opportunities exist to move into management positions or start a business.

#### Program Requirements

##### Technical Studies Required 52 Credits

MACH1056	Blueprint Reading I	3
MACH1100	Introduction to Machining Technology	3
MACH1105	Drilling and Sawing Processes	2
MACH1110	Turning Technology I	3
MACH1120	Turning Technology II	3
MACH1125	Milling Technology I	3
MACH1130	Milling Technology II	3
MACH1135	Precision Grinding	2
MACH1140	Introduction to CNC	3
MACH2400	CNC Setup and Operation	3
MACH2406	CNC Programming	3
MACH2410	CAD/CAM	3
MACH2420	Blueprint Reading II for Machinists	2
MACH2425	Geometry/Trigonometry for Machinists	2
MACH2450	Fundamentals of EDM	2
MACH2455	Die/Mold Design	3
MACH2460	Die Construction	3
MACH2465	Mold Construction	3
MACH2500	Introduction to Swiss-Style Machining	3

**General Education Required 6 Credits**

COMM1250	Interpersonal Communication	3
	or	
ENGL1026	Writing for Careers	3
MATH1500	Beginning Algebra	3
	or	
MATH1650	Mathematical Literacy	4

**General Education Elective 0 Credits****Technical Studies Elective 6 Credits**

Recommended:

MACH1145	Machinists Reference Materials	1
MACH2415	CNC Milling	3
MACH2430	CNC Machining Centers	3
MACH2435	CNC Turning Centers	3
MACH2440	Quality Assurance	2
MACH2600	Introduction to Quality Assurance	3
METS1000	Computers in Manufacturing	3
ENGC1250	SOLIDWORKS I	4

**Total Diploma Credits 64****Semester Sequence - Full-Time****Offered at Brooklyn Park Only****First Semester**

MACH1056	Blueprint Reading I	3
MACH1100	Introduction to Machining Technology	3
MACH1105	Drilling and Sawing Processes	2
MACH1110	Turning Technology I	3
MACH1125	Milling Technology I	3
COMM1250	Interpersonal Communication	3
	or	
ENGL1026	Writing for Careers	3

**Total Credits 17****Second Semester**

MACH1120	Turning Technology II	3
MACH1130	Milling Technology II	3
MACH1135	Precision Grinding	2
MACH1140	Introduction to CNC	3
MATH1500	Beginning Algebra	3
	or	
MATH1650	Mathematical Literacy	4
	Technical Studies Electives	3

**Total Credits 17****Third Semester**

MACH2400	CNC Setup and Operation	3
MACH2406	CNC Programming	3
MACH2410	CAD/CAM	3
MACH2420	Blueprint Reading II for Machinists	2
MACH2425	Geometry/Trigonometry for Machinists	2
	Technical Studies Electives	3

**Total Credits 16****Fourth Semester**

MACH2450	Fundamentals of EDM	2
MACH2455	Die/Mold Design	3
MACH2460	Die Construction	3
MACH2465	Mold Construction	3
MACH2500	Introduction to Swiss-Style Machining	3

**Total Credits 14****Technical Studies Electives**

Recommended:

MACH1145	Machinists Reference Materials	1
MACH1900	Specialized Lab	1 - 4
MACH2415	CNC Milling	3
MACH2430	CNC Machining Centers	3
MACH2435	CNC Turning Centers	3
MACH2600	Introduction to Quality Assurance	3
MACH2610	Inspection Processes	3
MACH2615	Inspection Equipment and Techniques	3
MACH2620	Quality Systems	3
MACH2625	Computer Analysis of Manufacturing Data	2
METS1000	Computers in Manufacturing	3
ENGC1050	Additive Manufacturing	3
ENGC1250	SOLIDWORKS I	4

**Choose a Total of: 6 Credits****Graduation (64 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/8/2022 : BP 4307 / EP

**Semester Sequence - Part-Time****Offered at Brooklyn Park Only****First Semester**

MACH1056	Blueprint Reading I	3
MACH1100	Introduction to Machining Technology	3
MACH1105	Drilling and Sawing Processes	2

**Total Credits 8****Second Semester**

MACH1110	Turning Technology I	3
MACH1125	Milling Technology I	3
MACH1135	Precision Grinding	2

**Total Credits 8****Summer Semester**

COMM1250	Interpersonal Communication	3
	or	
ENGL1026	Writing for Careers	3

**Total Credits 3****Third Semester**

MACH1120	Turning Technology II	3
MACH1130	Milling Technology II	3
MATH1500	Beginning Algebra	3

MATH1650	or Mathematical Literacy	4
<b>Total Credits 9</b>		
<b>Fourth Semester</b>		
MACH1140	Introduction to CNC	3
MACH2410	CAD/CAM	3
MACH2425	Geometry/Trigonometry for Machinists	2
<b>Total Credits 8</b>		
<b>Summer Semester</b>		
	Technical Studies Electives	3
<b>Total Credits 3</b>		
<b>Fifth Semester</b>		
MACH2400	CNC Setup and Operation	3
MACH2406	CNC Programming	3
MACH2450	Fundamentals of EDM	2
<b>Total Credits 8</b>		
<b>Sixth Semester</b>		
MACH2455	Die/Mold Design	3
MACH2460	Die Construction	3
MACH2465	Mold Construction	3
<b>Total Credits 9</b>		
<b>Seventh Semester</b>		
MACH2420	Blueprint Reading II for Machinists	2
MACH2500	Introduction to Swiss-Style Machining	3
	Technical Studies Electives	3
<b>Total Credits 8</b>		
<b>Technical Studies Electives</b>		
Recommended:		
MACH1145	Machinists Reference Materials	1
MACH1900	Specialized Lab	1 - 4
MACH2415	CNC Milling	3
MACH2430	CNC Machining Centers	3
MACH2435	CNC Turning Centers	3
MACH2600	Introduction to Quality Assurance	3
MACH2610	Inspection Processes	3
MACH2615	Inspection Equipment and Techniques	3
MACH2620	Quality Systems	3
MACH2625	Computer Analysis of Manufacturing Data	2
METS1000	Computers in Manufacturing	3
ENGC1050	Additive Manufacturing	3
ENGC1250	SOLIDWORKS I	4

**Choose a Total of: 6 Credits****Graduation (64 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Computer Numerical Control (CNC) Technician (BP) Diploma

### Overview and Award Outcomes

#### Overview

CNC Technicians are machinists with additional skills in programming, setup and operating computer driven machine tools. Most high-tech products including computers, aircraft and medical devices use precision components made on CNC machine tools. The CNC Technician relies on a strong background of machining skills. This includes the understanding of machines, tooling, blueprints, and additional methods used to produce and inspect a part. After determining the best manufacturing strategies and selecting tools, a CNC program is developed. CAD/CAM (Computer Aided Design/Computer Aided Manufacturing) software is many times used to assist in developing the CNC program.

#### Award Outcomes

- Apply precision measurement techniques
- Demonstrate sawing procedures
- Demonstrate drilling procedures
- Demonstrate grinding procedures
- Demonstrate milling procedures
- Demonstrate turning procedures
- Interpret blueprints/drawings
- Apply heat treating principles
- Machine parts with tolerance
- Apply math skills necessary for industry requirements
- Operate equipment safely
- Inspect machined parts for tolerance requirements
- Operate CNC machines efficiently
- Demonstrate teamwork
- Develop part designs within a group

#### Career Opportunities

The successful CNC Technician may start his/her career as a CNC operator and progress to CNC setup, programmer, or inspector. Well paying jobs are available in the medical, aerospace, computer and recreational fields.

### Program Requirements

#### Technical Studies Required 52 Credits

MACH1056	Blueprint Reading I	3
MACH1100	Introduction to Machining Technology	3
MACH1105	Drilling and Sawing Processes	2
MACH1110	Turning Technology I	3
MACH1120	Turning Technology II	3
MACH1125	Milling Technology I	3
MACH1130	Milling Technology II	3
MACH1135	Precision Grinding	2
MACH1140	Introduction to CNC	3
MACH2400	CNC Setup and Operation	3
MACH2406	CNC Programming	3
MACH2410	CAD/CAM	3
MACH2415	CNC Milling	3
MACH2420	Blueprint Reading II for Machinists	2
MACH2425	Geometry/Trigonometry for Machinists	2
MACH2430	CNC Machining Centers	3
MACH2435	CNC Turning Centers	3
MACH2440	Quality Assurance	2
MACH2500	Introduction to Swiss-Style Machining	3

#### General Education Required 6 Credits

COMM1250	Interpersonal Communication	3
	or	
ENGL1026	Writing for Careers	3

MATH1500	Beginning Algebra	3
	or	
MATH1650	Mathematical Literacy	4

**General Education Elective 0 Credits****Technical Studies Elective 6 Credits**

## Recommended:

MACH1145	Machinists Reference Materials	1
MACH2440	Quality Assurance	2
MACH2450	Fundamentals of EDM	2
MACH2470	Advanced CNC Turning Centers	3
MACH2600	Introduction to Quality Assurance	3
METS1000	Computers in Manufacturing	3
ENGC1250	SOLIDWORKS I	4

**Total Diploma Credits 64****Semester Sequence - Full-Time****Offered at Brooklyn Park Only****First Semester**

MACH1056	Blueprint Reading I	3
MACH1100	Introduction to Machining Technology	3
MACH1105	Drilling and Sawing Processes	2
MACH1110	Turning Technology I	3
MACH1125	Milling Technology I	3
COMM1250	Interpersonal Communication	3
	or	
ENGL1026	Writing for Careers	3

**Total Credits 17****Second Semester**

MACH1120	Turning Technology II	3
MACH1130	Milling Technology II	3
MACH1135	Precision Grinding	2
MACH1140	Introduction to CNC	3
MATH1500	Beginning Algebra	3
	or	
MATH1650	Mathematical Literacy	4
	Technical Studies Electives	3

**Total Credits 17****Third Semester**

MACH2400	CNC Setup and Operation	3
MACH2406	CNC Programming	3
MACH2410	CAD/CAM	3
MACH2415	CNC Milling	3
MACH2420	Blueprint Reading II for Machinists	2
MACH2425	Geometry/Trigonometry for Machinists	2

**Total Credits 16****Fourth Semester**

MACH2430	CNC Machining Centers	3
MACH2435	CNC Turning Centers	3
MACH2440	Quality Assurance	2
MACH2500	Introduction to Swiss-Style Machining	3
	Technical Studies Electives	3

**Total Credits 14****Technical Studies Electives**

Recommended:

MACH1145	Machinists Reference Materials	1
MACH1900	Specialized Lab	1 - 4
MACH2450	Fundamentals of EDM	2
MACH2470	Advanced CNC Turning Centers	3
MACH2600	Introduction to Quality Assurance	3
MACH2610	Inspection Processes	3
MACH2615	Inspection Equipment and Techniques	3
MACH2620	Quality Systems	3
MACH2625	Computer Analysis of Manufacturing Data	2
METS1000	Computers in Manufacturing	3
ENGC1050	Additive Manufacturing	3
ENGC1250	SOLIDWORKS I	4

**Choose a Total of: 6 Credits****Graduation (64 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/8/2022 : BP 4306 / EP

**Semester Sequence - Part-Time****Offered at Brooklyn Park Only****First Semester**

MACH1056	Blueprint Reading I	3
MACH1100	Introduction to Machining Technology	3
MACH1105	Drilling and Sawing Processes	2

**Total Credits 8****Second Semester**

MACH1110	Turning Technology I	3
MACH1125	Milling Technology I	3
MACH1135	Precision Grinding	2

**Total Credits 8****Summer Semester**

COMM1250	Interpersonal Communication	3
	or	
ENGL1026	Writing for Careers	3

**Total Credits 3****Third Semester**

MACH1120	Turning Technology II	3
MACH1130	Milling Technology II	3
MATH1500	Beginning Algebra	3
	or	
MATH1650	Mathematical Literacy	4

**Total Credits 9****Fourth Semester**

MACH1140	Introduction to CNC	3
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MACH2410	CAD/CAM	3
MACH2425	Geometry/Trigonometry for Machinists	2

**Total Credits 8****Summer Semester**

Technical Studies Electives	3
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**Total Credits 3****Fifth Semester**

MACH2400	CNC Setup and Operation	3
MACH2406	CNC Programming	3
MACH2415	CNC Milling	3

**Total Credits 9****Sixth Semester**

MACH2420	Blueprint Reading II for Machinists	2
MACH2430	CNC Machining Centers	3
MACH2435	CNC Turning Centers	3

**Total Credits 8****Seventh Semester**

MACH2440	Quality Assurance	2
MACH2500	Introduction to Swiss-Style Machining	3
	Technical Studies Electives	3

**Total Credits 8****Technical Studies Electives**

## Recommended:

MACH1145	Machinists Reference Materials	1
MACH1900	Specialized Lab	1 - 4
MACH2450	Fundamentals of EDM	2
MACH2470	Advanced CNC Turning Centers	3
MACH2600	Introduction to Quality Assurance	3
MACH2610	Inspection Processes	3
MACH2615	Inspection Equipment and Techniques	3
MACH2620	Quality Systems	3
MACH2625	Computer Analysis of Manufacturing Data	2
METS1000	Computers in Manufacturing	3
ENGC1050	Additive Manufacturing	3
ENGC1250	SOLIDWORKS I	4

**Choose a Total of: 6 Credits****Graduation (64 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## CNC Operator (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

CNC operators make precision and intricate parts for many industries including medical, computer, aerospace and recreational industries. They use computer-operated machine tools following explicit specifications to produce components. These components are produced from many types of metals and other materials. CNC operators are skilled workers who can efficiently operate basic CNC machine tools. The successful CNC operator must also be able to read shop drawings and use precision measuring instruments and hand tools. They must have acquired enough knowledge and sound judgment to perform many machining operations. In addition, they should be capable of making mathematical calculations required for machining the required parts. Credits earned for this certificate may be combined with other certificates and courses to earn a diploma.

#### Award Outcomes

- Apply precision measurement techniques
- Demonstrate sawing procedures
- Demonstrate drilling procedures
- Demonstrate grinding procedures
- Demonstrate milling procedures
- Demonstrate turning procedures
- Interpret blueprints/drawings
- Apply heat treating principles
- Machine parts with tolerance
- Apply math skills necessary for industry requirements
- Operate equipment safely
- Inspect machined parts for tolerance requirements
- Operate CNC machines efficiently
- Demonstrate teamwork
- Develop part designs within a group

#### Career Opportunities

CNC operators are employed in both small and large manufacturing firms that produce durable goods. Excellent opportunities exist for personal and professional growth in this industry.

### Program Requirements

#### Technical Studies Required 25 Credits

MACH1056	Blueprint Reading I	3
MACH1100	Introduction to Machining Technology	3
MACH1105	Drilling and Sawing Processes	2
MACH1110	Turning Technology I	3
MACH1120	Turning Technology II	3
MACH1125	Milling Technology I	3
MACH1130	Milling Technology II	3
MACH1135	Precision Grinding	2
MACH1140	Introduction to CNC	3

#### General Education Required 3 Credits

MATH1050	Math Pathways Plus for College and Careers	4
	or	
MATH1060	Math Pathways for College and Careers	3

#### General Education Elective 0 Credits

#### Technical Studies Elective 2 Credits

Recommended:

MACH2420	Blueprint Reading II for Machinists	2
MACH2425	Geometry/Trigonometry for Machinists	2
MACH2440	Quality Assurance	2

**Total Occupational Certificate Credits 30****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

MACH1056	Blueprint Reading I	3
MACH1100	Introduction to Machining Technology	3
MACH1105	Drilling and Sawing Processes	2
MACH1110	Turning Technology I	3
MACH1125	Milling Technology I	3
MATH1050	Math Pathways Plus for College and Careers or	4
MATH1060	Math Pathways for College and Careers	3

**Total Credits 17****Second Semester**

MACH1120	Turning Technology II	3
MACH1130	Milling Technology II	3
MACH1135	Precision Grinding	2
MACH1140	Introduction to CNC Technical Studies Electives	3 2

**Total Credits 13****Technical Studies Electives**

Recommended:

MACH2420	Blueprint Reading II for Machinists	2
MACH2425	Geometry/Trigonometry for Machinists	2
MACH2440	Quality Assurance	2

**Choose a Total of: 2 Credits****Graduation (30 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Quality Assurance (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

Quality Assurance (QA) will focus on the planned and systematic activities implemented in a quality system so that quality requirements for a product or service fulfill the goals of the manufacturer and the customer. Students will understand the systematic measurement, comparison with a standard, monitoring of processes and an associated feedback loop that confers error prevention.

#### Award Outcomes

Apply precision measuring techniques  
 Interpret blueprints/drawings  
 Apply math skills necessary for industry requirements  
 Operate equipment safely  
 Inspect machined parts for tolerance requirements  
 Demonstrate teamwork

#### Career Opportunities

Today's advanced manufacturing facilities require the application of well-developed analytical skills to support the delivery of quality products and services. This program addresses Quality Assurance (QA) and will focus on the planned and systematic activities that are part of a quality system of manufacturing requirements for a product or service.

In addition to the foundational principles which govern advanced manufacturing practices, this certificate includes training that allows students to achieve proficiency in Quality Assurance techniques. Precision Measurement principles are introduced and reinforced through practical, real-world examples. Students will become familiar with equipment and tools such as Coordinate Measuring Machines, utilized in state-of-the art facilities for Quality Assurance and Quality Improvement activities.

If you believe in the idea of "quality in, quality out," and you want to play a vital role in helping an organization achieve success through quality, HTC's Quality Assurance Technician program is the way to realize your goal.

- Quality Assurance Specialist, Inspector, Manufacturing Supervisor, Product Design Engineering, Production Engineering.

### Program Requirements

#### Technical Studies Required 14 Credits

MACH2600	Introduction to Quality Assurance	3
MACH2440	Quality Assurance	2
MACH2610	Inspection Processes	3
MACH2615	Inspection Equipment and Techniques	3
MACH2620	Quality Systems	3

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 2 Credits

Any ARET, ELEC, ENGC, FLPW, IBEM, MACH, METS, PLST or WLDG course that is not required for this award may be used as an elective.

### Total Occupational Certificate Credits 16

#### Semester Sequence

#### Offered at Brooklyn Park Only

#### First Semester

MACH2600	Introduction to Quality Assurance	3
MACH2610	Inspection Processes	3
	Technical Studies Electives	2

**Total Credits 8**

**Second Semester**

MACH2440	Quality Assurance	2
MACH2615	Inspection Equipment and Techniques	3
MACH2620	Quality Systems	3

**Total Credits 8**

**Technical Studies Electives**

Any Automation Robotics Engineering Technology (ARET), Electronic Technology (ELEC), Engineering CAD Technology (ENGC), Fluid Power Technology (FLPW), Industrial Building Engineering and Maintenance (IBEM), Machine Tool Technology (MACH), Manufacturing Engineering Technology (METS), Plastics Engineering Technology (PLST), or Welding and Metal Fabrication (WLDG) course that is not required for this award may be used as an elective.

**Choose a Total of: 2 Credits**

**Graduation (16 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/15/2022 : BP 4311 / EP

## Computer Numerical Control (CNC) Setup Technician (BP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

CNC Setup Technicians run computer-controlled machine tools that produce highly precise parts used in many of the products we use on a daily basis. Setup Technicians may tend one machine or several at one time. Setup Technician duties vary from operating the machine to setup of cutting tools, fixtures, programs, and producing the complete part. The CNC Setup Technician Advanced Technical certificate builds upon the skills developed for the CNC Operator certificate with additional training in computer numerical control. Emphasis will be placed on basic programming, editing, and operation of CNC lathes and milling machines.

Prerequisite: Graduation from or concurrent enrollment in a 2-year machine tool program or a minimum of 2 years of related work experience.

#### Award Outcomes

- Demonstrate milling procedures
- Demonstrate turning procedures
- Interpret blueprints/drawings
- Machine parts with tolerance
- Apply math skills necessary for industry requirements
- Operate equipment safely
- Operate CNC machines efficiently
- Demonstrate teamwork
- Develop part designs within a group

#### Career Opportunities

Many well-paying jobs are available in medical, aerospace, computer and recreational industries. Completion of this certificate may lead to entry-level employment as a CNC Setup Technician.

#### Program Requirements

##### Technical Studies Required 17 Credits

MACH2400	CNC Setup and Operation	3
MACH2406	CNC Programming	3
MACH2410	CAD/CAM	3
MACH2415	CNC Milling	3
MACH2425	Geometry/Trigonometry for Machinists	2
MACH2435	CNC Turning Centers	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Advanced Technical Certificate Credits 17

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

MACH2400	CNC Setup and Operation	3
MACH2406	CNC Programming	3
MACH2410	CAD/CAM	3

##### Total Credits 9

##### Second Semester

MACH2415	CNC Milling	3
MACH2425	Geometry/Trigonometry for Machinists	2
MACH2435	CNC Turning Centers	3

**Total Credits 8**

**Graduation (17 Credits)**

**Prerequisite:** Graduation from or concurrent enrollment in a 2-year machine tool program or a minimum of 2 years of related work experience.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/15/2022 :BP 4309 / EP

# CNC Swiss Turning Center Technician (BP) Advanced Technical Certificate

## Overview and Award Outcomes

### Overview

Swiss-type lathes are a specialized type of lathe used for machining high precision parts in large quantities. They are capable of producing very small parts with many operations in one chucking. The productivity of the Swiss-type lathe is very high as the machine can perform many operations in one setting that would typically require two or more machines to produce. Swiss-type lathes have been an asset to the growing medical device industry. Production of the tiny implantable, high precision parts made from exotic materials like titanium are a good fit for these machines. Skills needed for setup and operation of Swiss-type lathes include basic machining skills and a knowledge of CNC Swiss-type machining centers.

Prerequisite: Graduation from or concurrent enrollment in a 2-year machine tool program or a minimum of 2 years related work experience.

### Award Outcomes

Interpret blueprints/drawings  
Machine parts with tolerance  
Apply math skills necessary for industry requirements  
Operate equipment safely  
Inspect machined parts for tolerance requirements  
Operate CNC machines efficiently

### Career Opportunities

As the products we use everyday decrease in size, the parts that make up those products also get smaller. The growing medical device industry is a good example of the need for tiny sophisticated parts. Producing these parts requires special skills, knowledge and machine tools. Increased global competition in manufacturing also requires increased productivity to remain competitive in the market place. Swiss-type turning centers provide capability and the productivity to produce small high-precision parts efficiently. Demand for machinists with these specialized skills is growing and should continue to increase.

### Program Requirements

#### Technical Studies Required 9 Credits

MACH2500	Introduction to Swiss-Style Machining	3
MACH2505	CNC Swiss-Style Lathe Setup and Operation	3
MACH2510	CNC Swiss-Style Lathe Programming	3

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Advanced Technical Certificate Credits 9

### Semester Sequence

#### Offered at Brooklyn Park Only

#### First Semester

MACH2500	Introduction to Swiss-Style Machining	3
MACH2505	CNC Swiss-Style Lathe Setup and Operation	3

#### Total Credits 6

#### Second Semester

MACH2510	CNC Swiss-Style Lathe Programming	3
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**Total Credits 3**

**Graduation (9 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/15/2022 : BP 4310 / EP

## Mazak CNC Technician (BP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

Mazak CNC (Computer Numerical Control) Technicians are machinists who are experienced in the use of the Mazak brand machine and control system to create parts. Mazak machines are used to make a variety of machined parts for many industries, including but not limited to medical, aerospace, defense, agricultural and automotive. Mazak Technicians have a strong background in machining skills, including tool selection, speeds and feeds, material machinability characteristics, blueprint reading, parts inspection and the use of Mazatrol. Mastery of Mazatrol conversational programming language allows technicians to create accurate machine-readable codes quickly and efficiently.

Prerequisite: Graduation from or concurrent enrollment in a 2-year machine tool program or a minimum of 2 years of related work experience.

#### Award Outcomes

Demonstrate Mazatrol programming system operation  
 Operate Mazak control panel  
 Operate equipment safely  
 Interpret blueprints/drawings  
 Program machining center parts using Mazatrol  
 Program turning center parts using Mazatrol  
 Program mill parts with CAM software  
 Machine Mazak lathe parts  
 Machine Mazak mill parts  
 Apply precision measurement techniques.  
 Inspect machined parts for tolerance requirements.  
 Demonstrate team work

#### Career Opportunities

The successful Mazak CNC Technician may start his/her career as a Mazak CNC operator and progress to Mazak CNC setup, programmer or inspector. Careers are available in medical, aerospace, defense, automotive and more.

#### Program Requirements

##### Technical Studies Required 20 Credits

MACH1140	Introduction to CNC	3
MACH2400	CNC Setup and Operation	3
MACH2410	CAD/CAM	3
MACH2420	Blueprint Reading II for Machinists	2
MACH2520	Mazak CNC Mazatrol Programming	3
MACH2525	Mazak CNC Turning Center	3
MACH2530	Mazak CNC Machining Center	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Associate in Applied Science Degree Credits 20

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

MACH1140	Introduction to CNC	3
MACH2400	CNC Setup and Operation	3
MACH2420	Blueprint Reading II for Machinists	2

MACH2520	Mazak CNC Mazatrol Programming	3
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**Total Credits 11**

**Second Semester**

MACH2410	CAD/CAM	3
MACH2525	Mazak CNC Turning Center	3
MACH2530	Mazak CNC Machining Center	3

**Total Credits 9**

**Graduation (20 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/15/2022 : BP 4312 / EP

**Manufacturing Engineering Technology**

# Manufacturing Engineering Technology (BP/EP) Associate in Applied Science Degree

## Overview and Award Outcomes

### Overview

A manufacturing engineering technician is a professional person who is flexible, self-motivated, team oriented, and capable of assigning as well as following instructions. Manufacturing engineering technicians are called upon to assist engineers in the research, development and the modification of new and current designs, products and processes. Many technicians are involved in the assembly, acceptance testing, and providing field service support for current products. The technician possesses an understanding of CAD drafting, engineering drawings, fluid power fundamentals, instrumentation and data acquisition, industrial electrical applications, machining and tooling principles and precision measurement.

The Manufacturing Engineering Technology A.A.S. degree program provides the student with a multi-discipline skill base and prepares the individual to perform the high level tasks that are required in today's global manufacturing market. This degree is unique in that it allows the student to receive a broad-based education in the manufacturing environment along with a specialization in one or more of the many areas involved in this field. The student may choose to specialize in automated robotics, electronics, engineering CAD, fluid power, machine tool, plastics technology or welding. This degree is also intended for those seeking career advancement. Students may continue their education and proceed towards a Bachelors in Manufacturing degree which prepares the student for supervisory and management positions.

### Award Outcomes

Follow safety guidelines and practices as mandated by O.S.H.A.

Apply electrical concepts as they relate to N.E.M.A. and I.E.C. electrical standards and equipment

Develop PLC programs using Boolean algebra and software methods

Produce engineering drawings and schematics using ANSI, ISO and industry symbols and standards

Problem solve by analyzing data using statistical process control (SPC) and quality assurance (QA) theory and methods

Utilize data acquisition systems and devices that are prevalent in the manufacturing industries

Generate drawings with a personal computer and computer aided design (CAD) software

Analyze fluid power applications in accordance with NFPA and industry standards and practices

Comprehend terms and methods that are used to communicate between manufacturing industry disciplines

Examine manufacturing engineering design concepts and processes

Use applied physics to investigate power transmission methods

Investigate production models using various data methods

Utilize software applications commonly found in the manufacturing industry

### Career Opportunities

This is one of the fastest growing areas of employment in manufacturing occupations. There is an extensive shortage of individuals who possess a multi-discipline skill base. Global market competition has directed manufacturing companies to seek out the multi-facet candidate. As a result of these situations, demand for the graduate is extremely high. The employment positions offer excellent opportunities for personal and professional growth. Individuals who seek a career as a manufacturing engineering technician may find jobs in a variety of diverse areas such as: assembly, automation, manufacturing, quality assurance, research and development, design, and field service. Job duties may include supervision, engineering, and product development along with customer relations and travel. Manufacturing Engineering Technicians are in high demand in small to large companies and within various government agencies. The Manufacturing Engineering Technician is well positioned for advancement opportunities as well as long-term employment.

### Program Requirements

#### Technical Studies Required 45 Credits

ENGC1011	Engineering Drawing	3
FLPW1101	Fluid Power Technology I	3
FLPW1231	Industrial Electricity I	3
METS1020	Industrial Manufacturing Processes	3
METS1050	Quality Control	3
METS1200	Industry Practices and Procedures	3
METS2000	Engineering Design Principles	3
METS2100	Statics and Strength of Materials	3
ARET1140	Computer Integrated Manufacturing	3

ENGC1050	and Additive Manufacturing	3
MACH1205	or Machine Tool Technology	3
PLST1041	and Introduction to Plastics Molding Processes	3

**Choose one of the following specializations:****~Automation Robotics Engineering Technology Specialization 15 Credits**

ARET1130	Maintenance Operations	2
ARET1155	Automation Controls	3
ARET1165	Vision Systems for QA/SPC	3
ARET1190	Programmable Logic Controllers	3
ARET1200	Introduction to Robotics	2
ARET2200	FANUC Robotics Operations	2

**~Electronics Technology Specialization 15 Credits**

ELEC1000	DC Circuits	4
ELEC1050	AC Circuits	4
ELEC1100	Complex AC Circuits	3
ELEC1150	Diodes and Rectifiers	2
ELEC1200	Soldering Skills	1
	Choose at least one additional credit in ELEC	1

**~Engineering CAD Technology Specialization 15 Credits****Choose one of the following:**

ENGC1100	AutoCAD	4
ENGC1160	Inventor	4
ENGC1250	SOLIDWORKS I	4
ENGC2100	Basic Creo Parametric	4

**Choose at least 11 credits from the following:**

ENGC1021	Working Drawings	3
ENGC1041	Geometric Dimensioning & Tolerancing	3
ENGC1201	Industrial CAD Project	3
ENGC1255	SOLIDWORKS II	4
ENGC2110	Advanced Creo Parametric	4

**~Fluid Power Engineering Technology Specialization 15 Credits****Choose one of the following;**

ENGC1100	AutoCAD	4
ENGC1160	Inventor	4
ENGC1250	SOLIDWORKS I	4
ENGC2100	Basic Creo Parametric	4

**Choose at least 11 credits from the following:**

FLPW1106	Fluid Power Technology II	4
FLPW1181	Pumps, Actuators, and Conductors	4
FLPW1191	Hydraulic Components	3
FLPW1236	Industrial Electricity II	3
FLPW1320	Hydraulic Circuits	2
FLPW1340	Pneumatic Circuits and Air Logic	4
FLPW2000	Programmable Logic Controllers	3

**~Machine Tool Technology Specialization 15 Credits**

MACH1056	Blueprint Reading I	3
MACH1110	Turning Technology I	3
MACH1125	Milling Technology I	3
MACH2400	CNC Setup and Operation	3
MACH2406	CNC Programming	3

**~Plastics Engineering Technology Specialization 15 Credits**

PLST1008	Fundamentals of Plastics/Chemistry/Ingredients	4
PLST2007	Properties and Tests of Selected Plastics	4
PLST2011	Extrusion Molding Processes I	3
PLST2017	Extrusion Molding Processes II	4
PLST2035	Medical Device Polymer Processes	3
PLST2128	Injection Molding Process I	4
PLST2138	Injection Molding Process II	4
PLST2143	Injection Molding Process III	4

**~Welding and Metal Fabrication Specialization 15 Credits**

WLDG1135	Gas Metal Arc Welding I	3
WLDG1182	Blueprint Reading for Welders	2
WLDG1220	Gas Tungsten Arc Welding I	3
WLDG1350	Flux Cored Arc Welding I	3
	Choose at least four additional credit in WLDG	4

**General Education Required 9 Credits**

ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
MATH1150	Applications of Quantitative Reasoning	3
	or	
MATH1250	Introduction to Statistics	3
	or	
MATH1400	College Algebra	4
	Choose one course from MnTC Goal Area 2	3

**General Education Elective 6 Credits**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 60****Semester Sequence****Offered at Brooklyn Park and Eden Prairie****First Semester**

FLPW1101	Fluid Power Technology I	3
FLPW1231	Industrial Electricity I	3
METS1200	Industry Practices and Procedures	3
METS2000	Engineering Design Principles	3

Choose one of the following if required for your specialization:

ENGC1100	AutoCAD	4
ENGC1160	Inventor	4
ENGC1250	SOLIDWORKS I	4
ENGC2100	Basic Creo Parametric	4
	or	
	Choose three credits from your specialization courses	3

**Total Credits 15****Second Semester**

ENGC1011	Engineering Drawing	3
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METS1020	Industrial Manufacturing Processes	3
	Choose one of the following: Brooklyn Park Campus	
MACH1205	Machine Tool Technology	3
	and	
PLST1041	Introduction to Plastics Molding Processes	3
	or	
ARET1140	Eden Prairie Campus Computer Integrated Manufacturing	3
	and	
ENGC1050	Additive Manufacturing	3
	Choose three credits from your specialization courses	3

**Total Credits 15****Third Semester**

METS1050	Quality Control	3
	Choose 3 credits from MnTC Goal Area 2	3
	Choose six credits from your specialization courses	6
	Choose one of the following:	
MATH1150	Applications of Quantitative Reasoning	3
MATH1250	Introduction to Statistics	3
MATH1400	College Algebra	4

**Fourth Semester**

METS2100	Statics and Strength of Materials	3
	General Education Electives	6
	Choose three credits from your specialization courses	3
	Choose one of the following:	
ENGL1070	Technical Writing	3
ENGL1100	Writing and Research	4

**Total Credits 15****Automation Robotics Engineering Technology Specialization - 15 Credits**

ARET1130	Maintenance Operations	2
ARET1155	Automation Controls	3
ARET1165	Vision Systems for QA/SPC	3
ARET1190	Programmable Logic Controllers	3
ARET1200	Introduction to Robotics	2
ARET2200	FANUC Robotics Operations	2

**Engineering CAD Technology Specialization - 15 Credits**

	Choose one of the following:	
ENGC1100	AutoCAD	4
ENGC1160	Inventor	4
ENGC1250	SOLIDWORKS I	4
ENGC2100	Basic Creo Parametric	4
	Choose at least eleven credits from:	
ENGC1021	Working Drawings	3
ENGC1041	Geometric Dimensioning & Tolerancing	3
ENGC1201	Industrial CAD Project	3
ENGC1255	SOLIDWORKS II	4

ENGC2110	Advanced Creo Parametric	4
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### Machine Tool Technology Specialization - 15 Credits

MACH1056	Blueprint Reading I	3
MACH1110	Turning Technology I	3
MACH1125	Milling Technology I	3
MACH2400	CNC Setup and Operation	3
MACH2406	CNC Programming	3

### Welding and Metal Fabrication Specialization - 15 Credits

WLDG1135	Gas Metal Arc Welding I	3
WLDG1182	Blueprint Reading for Welders	2
WLDG1220	Gas Tungsten Arc Welding I	3
WLDG1350	Flux Cored Arc Welding I	3
	Choose four additional WLDG credits	4

### Electronics Technology Specialization - 15 Credits

ELEC1000	DC Circuits	4
ELEC1050	AC Circuits	4
ELEC1100	Complex AC Circuits	3
ELEC1150	Diodes and Rectifiers	2
ELEC1200	Soldering Skills	1
	Choose one additional ELEC credit	1

### Fluid Power Specialization - 15 Credits

	Choose one of the following:	
ENGC1100	AutoCAD	4
ENGC1160	Inventor	4
ENGC1250	SOLIDWORKS I	4
ENGC2100	Basic Creo Parametric	4
	Choose at least eleven credits from:	
FLPW1106	Fluid Power Technology II	4
FLPW1181	Pumps, Actuators, and Conductors	4
FLPW1191	Hydraulic Components	3
FLPW1236	Industrial Electricity II	3
FLPW1320	Hydraulic Circuits	2
FLPW1340	Pneumatic Circuits and Air Logic	4
FLPW2000	Programmable Logic Controllers	3

### Plastics Engineering Technology Specialization - 15 Credits

PLST1008	Fundamentals of Plastics/Chemistry/Ingredients	4
PLST2007	Properties and Tests of Selected Plastics	4
PLST2011	Extrusion Molding Processes I	3
PLST2017	Extrusion Molding Processes II	4
PLST2035	Medical Device Polymer Processes	3
PLST2128	Injection Molding Process I	4
PLST2138	Injection Molding Process II	4
PLST2143	Injection Molding Process III	4

### MnTC Goal Area 2

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3

MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

**Choose a Total of: 3 Credits**

**General Education Electives**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Choose a Total of: 6 Credits**

**Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/10/2022: BP 4504 / EP 4505

## Manufacturing Technician (BP/EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

The Manufacturing Technician Certificate provides students with a multi-discipline education in manufacturing technologies. This award will educate the student in various aspects of hydraulic and pneumatic systems, industrial electrical and motor control circuits, machine-tool processes, print and schematic reading and troubleshooting practices. These skills are essential for individuals seeking entry level Manufacturing Engineering Technician positions. While this certificate is unique in that the student receives a broad-based manufacturing education, it is also your gateway to earning an Associate Degree in multiple manufacturing areas. Many of the required courses in this certificate transfer into A.A.S. degrees that specialize in Fluid Power Engineering Technology, Engineering CAD Technology and Plastics Engineering Technology. Individuals wishing to enter production support, research and development and engineering technician positions should consider this certificate.

#### Award Outcomes

Follow safety guidelines and practices as mandated by O.S.H.A.  
 Apply electrical concepts as they relate to N.E.M.A. and I.E.C. electrical standards and equipment  
 Develop PLC programs using Boolean algebra and software methods  
 Problem solve by analyzing data using SPC and QA theory and methods  
 Analyze fluid power applications in accordance with NFPA and industry standards and practices  
 Comprehend terms and methods that are used to communicate between manufacturing industry disciplines  
 Examine manufacturing engineering design concepts and processes  
 Use applied physics to investigate power transmission methods  
 Investigate production models using various data methods  
 Utilize software applications commonly found in the manufacturing industry

#### Career Opportunities

Career opportunities for manufacturing engineering technicians are found in a variety of diverse areas such as: assembly, automation, manufacturing, quality assurance, research and development, design, and field service. Job duties may include supervision, engineering, and product development along with customer relations and travel. Manufacturing Technicians are in high demand in small to large companies and within various government agencies. The Manufacturing Engineering Technician is well positioned for advancement opportunities as well as long-term employment

#### Program Requirements

##### Technical Studies Required 30 Credits

ENGC1011	Engineering Drawing	3
FLPW1101	Fluid Power Technology I	3
FLPW1231	Industrial Electricity I	3
FLPW2000	Programmable Logic Controllers	3
MACH1205	Machine Tool Technology	3
METS1020	Industrial Manufacturing Processes	3
METS1050	Quality Control	3
METS2000	Engineering Design Principles	3
METS2100	Statics and Strength of Materials	3
PLST1041	Introduction to Plastics Molding Processes	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 30

#### Semester Sequence

#### Offered at Brooklyn Park and Eden Prairie

##### First Semester

ENGC1011	Engineering Drawing	3
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FLPW1101	Fluid Power Technology I	3
FLPW1231	Industrial Electricity I	3
FLPW2000	Programmable Logic Controllers	3
METS2000	Engineering Design Principles	3

**Total Credits 15**

**Second Semester**

MACH1205	Machine Tool Technology	3
METS1020	Industrial Manufacturing Processes	3
METS1050	Quality Control	3
METS2100	Statics and Strength of Materials	3
PLST1041	Introduction to Plastics Molding Processes	3

**Total Credits 15**

**Graduation (30 of Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/10/2022 : BP 4521 / EP 4522

**Plastics Engineering Technology**

## Plastics Engineering Technology (BP) Diploma

### Overview and Award Outcomes

#### Overview

Plastics Technicians are needed for the demands of the rapidly growing plastics forming industry. These demands include the operation of processing equipment and the transforming of polymers (plastics) into usable products.

Plastics personnel perform such operations as compounding materials, molding, forming, troubleshooting, inspecting, testing raw materials and finishing products, assisting in mold design and modification and developing new polymers (plastics) applications. Plastics Technicians acquire an understanding of polymers (plastics) processing equipment and materials.

#### Award Outcomes

Utilize safe working practices  
 Identify steps and procedures in the Injection Molding processes  
 Identify steps and procedures in the Extrusion Molding processes  
 Perform quality control practices  
 Identify steps and procedures in Properties and Tests of Plastics  
 Operate various types of plastics manufacturing processes  
 Apply principles of Plastics, Chemistry and Ingredients  
 Demonstrate good manufacturing practices (GMP)  
 Demonstrate procedures used for plastics manufacturing processes  
 Demonstrate procedures used for plastics manufacturing auxiliary equipment  
 Demonstrate Communication in the Workplace  
 Demonstrate use of Computers in Manufacturing

#### Career Opportunities

There is a wide range of employment as well as advancement opportunities for the individual who seeks a career in the plastics forming industry. Plastics Technicians may find jobs in a variety of diverse areas such as; research and development, manufacturing, design and service. Employment potential lies in the following: supervision, molding technician, material handling, quality control, lab technician, engineering aids and in related areas such as the sale of plastics processing equipment and materials.

#### Program Requirements

##### Technical Studies Required 21 Credits

METS1050	Quality Control	3
PLST1008	Fundamentals of Plastics/Chemistry/Ingredients	4
PLST1041	Introduction to Plastics Molding Processes	3
PLST2007	Properties and Tests of Selected Plastics	4

##### Select from 12 credits of Injection Molding or 7 credits of Extrusion Molding

PLST2128	Injection Molding Process I	4
PLST2138	Injection Molding Process II	4
PLST2143	Injection Molding Process III or	4
PLST2011	Extrusion Molding Processes I	3
PLST2017	Extrusion Molding Processes II	4

##### General Education Required 5 Credits

COMM1050	Communication in the Workplace - Deleted Summer 2022	2
METS1000	Computers in Manufacturing	3

##### General Education Elective 0 Credits

##### Technical Studies Elective 10 Credits

Any ARET, ELEC, ENGC, FLPW, MACH, METS, PLST or WLDG course that is not required for this award may be used as an elective.

Recommended:

FLPW2112	Instrumentation of Fluid Power Systems	3
PLST1500	Plastics Processes Lab	1 - 3
PLST1900	Specialized Lab	1 - 4
PLST2030	Systematic Medical Device Protocol	3
PLST2035	Medical Device Polymer Processes	3
PLST2300	Plastics Engineering Technology Internship	4

**Total Diploma Credits 36****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

PLST1008	Fundamentals of Plastics/Chemistry/Ingredients	4
PLST1041	Introduction to Plastics Molding Processes	3
PLST2007	Properties and Tests of Selected Plastics	4
METS1000	Computers in Manufacturing	3
METS1050	Quality Control	3

**Total Credits 17****Second Semester**

(Select from 7 Credits of Extrusion Molding or 12 Credits of Injection Molding)

PLST2011	Extrusion Molding Processes I	3
PLST2017	Extrusion Molding Processes II or	4
PLST2128	Injection Molding Process I	4
PLST2138	Injection Molding Process II	4
PLST2143	Injection Molding Process III	4
PLST2300	Plastics Engineering Technology Internship Elective	4
COMM1050	Communication in the Workplace - Deleted Summer 2022 Technical Studies Electives	2 6

**Total Credits 19****Technical Studies Electives**

Any Automation Robotics Engineering Technology (ARET), Electronic Technology (ELEC), Engineering CAD Technology (ENGC), Fluid Power Technology (FLPW), Machine Tool Technology (MACH), Manufacturing Engineering Technology (METS), Plastics Engineering Technology (PLST), or Welding and Metal Fabrication (WLDG) course that is not required for this award may be used as an elective.

Recommended:

FLPW2112	Instrumentation of Fluid Power Systems	3
PLST1500	Plastics Processes Lab	1 - 3
PLST1900	Specialized Lab	1 - 4
PLST2030	Systematic Medical Device Protocol	3
PLST2035	Medical Device Polymer Processes	3
PLST2300	Plastics Engineering Technology Internship	4

**Choose a Total of: 10 Credits****Graduation (36 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/10/2022 : BP 4404 / EP

## Extrusion Molding (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

This certificate is designed for individuals requiring skills and knowledge in the Extrusion Molding Processes I, II, related Quality Assurance/Statistical Process Control, properties and tests of selected plastics and thermoplastics used in the plastics (forming) industry will be emphasized.

#### Award Outcomes

- Utilize safe working practices
- Demonstrate good manufacturing practices
- Perform quality control practices
- Apply Principles of Plastics, Chemistry and Ingredients
- Demonstrate procedures used for plastics Extrusion Molding processes
- Demonstrate procedures used for plastics Extrusion Molding auxiliary equipment
- Identify steps and procedures in the Extrusion Molding processes

#### Career Opportunities

This certificate is ideal for a new career or upgrading present knowledge and skills.

#### Program Requirements

##### Technical Studies Required 18 Credits

PLST1008	Fundamentals of Plastics/Chemistry/Ingredients	4
PLST2007	Properties and Tests of Selected Plastics	4
PLST2011	Extrusion Molding Processes I	3
PLST2017	Extrusion Molding Processes II	4
METS1050	Quality Control	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 18

#### Semester Sequence

#### Prerequisite Semester

#### First Semester

#### Second Semester

#### Third Semester

#### Fourth Semester

## Injection Molding (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

This certificate is designed for individuals requiring knowledge and skills in the Injection Molding Process I, II, and III related Quality Assurance, Statistical Process Control and Properties and tests of selected plastics and thermoplastics used in the plastics (forming) industry will be emphasized.

#### Award Outcomes

Utilize safe working practices  
 Demonstrate good manufacturing practices (GMP)  
 Perform quality control practices  
 Apply principles of Plastics, Chemistry and Ingredients  
 Demonstrate procedures used for plastics Injection Molding processes  
 Demonstrate procedures used for plastics Injection Molding auxiliary equipment  
 Identify steps and procedures in the Injection Molding process

#### Career Opportunities

This certificate is ideal for a new career or upgrading present knowledge and skills.

#### Program Requirements

##### Technical Studies Required 23 Credits

PLST1008	Fundamentals of Plastics/Chemistry/Ingredients	4
PLST2007	Properties and Tests of Selected Plastics	4
PLST2128	Injection Molding Process I	4
PLST2138	Injection Molding Process II	4
PLST2143	Injection Molding Process III	4
METS1050	Quality Control	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 23

#### Semester Sequence

##### Prerequisite Semester

##### First Semester

##### Second Semester

##### Third Semester

##### Fourth Semester

## Medical Device Molding (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

The Medical Device - Plastics Technology Certificate will prepare students for success in Minnesota's robust medical device industry. Students will gain applied skills and knowledge of: Plastics/Chemistry/Ingredients of Polymers; Properties and Tests; Quality Control, Instrument Sensor Devices; Systematic Medical Device Protocol; and Medical Micro-bore Extrusion Processes. Coursework will focus on the technical understanding and skills development in concepts, principals and specific requirements regarding Food and Drug Administration (FDA) and Good Manufacturing Practices (GMP) that strictly regulate how organizations are to produce medical devices.

#### Award Outcomes

Obtain FDA & GMP requirements and practices  
 Demonstrate proper installation of medical extrusion and injection molding systems  
 Demonstrate the ability to apply concepts, principals and requirements in the production of medical devices  
 Problem solve using analytical thinking  
 Demonstrate quality system practices  
 Use process control devices

#### Career Opportunities

This Medical Device Molding Certificate is ideal for an individual entering a new career or looking to upgrade their current industry knowledge and skills. Excellent opportunities exist as medical device injection and extrusion molding technicians, which are high-skill and high demand positions in the field of plastics technology.

#### Program Requirements

##### Technical Studies Required 17 Credits

METS1050	Quality Control	3
PLST1008	Fundamentals of Plastics/Chemistry/Ingredients	4
PLST2007	Properties and Tests of Selected Plastics	4
PLST2030	Systematic Medical Device Protocol	3
PLST2035	Medical Device Polymer Processes	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 17

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

PLST1008	Fundamentals of Plastics/Chemistry/Ingredients	4
PLST2007	Properties and Tests of Selected Plastics	4
PLST2035	Medical Device Polymer Processes	3

##### Total Credits 11

##### Second Semester

METS1050	Quality Control	3
PLST2030	Systematic Medical Device Protocol	3

**Total Credits 6**

**Graduation (17 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/15/2022 : BP 4410 / EP

## Scientific Injection Molding Specialist (BP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

Scientific/Decoupled Injection Molding is a strategy of molding from the “plastics point of view”. Process variables vs. plastics variables are revealed for you to develop, validate and document an optimized molding process. This strategy applies to medical, high-performance and critical tolerance injection molded parts. Emphasis will be targeted toward practical setup procedures that will optimize new or existing overall molding cycles.

Prerequisite: Graduation from or concurrent enrollment in a 1 year Plastics Manufacturing Technology related program or a minimum of 2 years of related work experience in the field of Injection Molding.

#### Award Outcomes

Demonstrate good manufacturing practices (GMP)  
Apply knowledge of materials, part design, molds and machine considerations  
Utilize skills in molding from the “Plastics Point of View”  
Apply universal processing parameters  
Perform Scientific/Decoupled II molding practices  
Perform Scientific/Decoupled III molding practices  
Operate computer data acquisition equipment  
Apply math skills for Scientific/Decoupled molding practices

#### Career Opportunities

The new Scientific Injection Molding Certificate provides a scientific molding strategy that the custom, proprietary and medical molding industries are seeking. This certificate is specifically designed for individuals who start up new molds or individuals who must optimize existing molding cycles.

#### Program Requirements

##### Technical Studies Required 12 Credits

PLST2240	Scientific Injection Molding I	4
PLST2245	Scientific Injection Molding II	4
PLST2250	Scientific Injection Molding III	4

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Advanced Technical Certificate Credits 12

#### Semester Sequence

##### Prerequisite Semester

##### First Semester

##### Second Semester

##### Third Semester

##### Fourth Semester

### Welding & Metal Fabrication

## Welding (BP) Diploma

### Overview and Award Outcomes

#### Overview

This diploma will provide students with the entry-level skills and knowledge to perform as a shielded metal arc welder (SWAW); gas tungsten arc welder (GTAW) and as a gas metal arc welder (GMAW) with a minimum of supervision in all positions on ferrous and non ferrous metals. You can obtain entry-level employment by just taking a few courses that will lead towards a certificate in MIG or TIG welding. Taking additional courses will provide you with the opportunity for job advancement as a welder. Welding courses are also valuable for persons who have careers or interests that require some welding knowledge.

#### Award Outcomes

Utilize safe working techniques and practices  
 Set-up welding and cutting equipment  
 Operate welding and cutting equipment  
 Produce welds with the Gas Metal Arc Welding Process in steel  
 Produce welds with the Flux Cored Arc Welding process in steel  
 Produce welds with the Shielded Metal Arc Welding process in steel  
 Produce welds with the Gas Tungsten Arc Welding process in steel, stainless steel, and aluminum  
 Interpret blueprints and welding symbols  
 Perform basic lay-outs on various materials  
 Apply metallurgical principles to welding and fabrication processes  
 Determine the quality of welds  
 Identify steps and procedures in the Flux Cored Arc Welding process  
 Identify steps and procedures in the Shielded Metal Arc Welding process  
 Identify steps and procedures in the Gas Metal Arc Welding process  
 Identify steps and procedures in Gas Tungsten Arc Welding process

#### Career Opportunities

There are many employment opportunities available in the following areas: construction, transportation, manufacturing industry, sheet metal industry, custom job shops, medical/pharmaceutical industry, pipe/tubing, food industry and the aerospace industry.

#### Program Requirements

##### Technical Studies Required 46 Credits

WLDG1010	Practical Application for Estimating and Layout	2
WLDG1135	Gas Metal Arc Welding I	3
WLDG1140	Gas Metal Arc Welding II	3
WLDG1165	Gas Metal Arc Welding III	3
WLDG1175	GMAW Fabrication Methods	3
WLDG1182	Blueprint Reading for Welders	2
WLDG1220	Gas Tungsten Arc Welding I	3
WLDG1225	Gas Tungsten Arc Welding II	3
WLDG1235	Gas Tungsten Arc Welding III	3
WLDG1245	GTAW Fabrication Methods	3
WLDG1310	Shielded Metal Arc Welding I	3
WLDG1320	Shielded Metal Arc Welding II	3
WLDG1330	Shielded Metal Arc Welding III	3
WLDG1340	Structural Iron Fabrication Methods	3
WLDG1350	Flux Cored Arc Welding I	3
WLDG1360	Flux Cored Arc Welding II	3

##### General Education Required 0 Credits

##### General Education Elective 6 Credits

Any HTC 1000 level or higher general education course may be used to satisfy the elective requirements.

##### Technical Studies Elective 3 Credits

Any WLDG course that is not required for this award may be used as an elective.

## Recommended:

WLDG1000	Cutting Processes	3
WLDG1100	Oxyacetylene Welding	3
WLDG1500	Welding Process Lab	1 - 3
WLDG1900	Specialized Lab	1 - 4
WLDG2050	Introduction to Automated Cutting and Welding	3

**Total Diploma Credits 55****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

WLDG1010	Practical Application for Estimating and Layout	2
WLDG1135	Gas Metal Arc Welding I	3
WLDG1182	Blueprint Reading for Welders	2
WLDG1220	Gas Tungsten Arc Welding I	3

**Total Credits 10****Second Semester**

WLDG1140	Gas Metal Arc Welding II	3
WLDG1165	Gas Metal Arc Welding III	3
WLDG1225	Gas Tungsten Arc Welding II	3

**Total Credits 9****Third Semester**

WLDG1175	GMAW Fabrication Methods	3
WLDG1235	Gas Tungsten Arc Welding III	3
WLDG1310	Shielded Metal Arc Welding I	3

**Total Credits 9****Fourth Semester**

WLDG1245	GTAW Fabrication Methods	3
WLDG1320	Shielded Metal Arc Welding II	3
WLDG1350	Flux Cored Arc Welding I	3

**Total Credits 9****Fifth Semester**

WLDG1330	Shielded Metal Arc Welding III	3
WLDG1340	Structural Iron Fabrication Methods	3
WLDG1360	Flux Cored Arc Welding II	3

**Total Credits 9****Sixth Semester**

Technical Studies Electives	3
General Education Electives	6

**Total Credits 9****Technical Studies Electives**

## Recommended:

WLDG1000	Cutting Processes	3
WLDG1100	Oxyacetylene Welding	3
WLDG1500	Welding Process Lab	1 - 3
WLDG1900	Specialized Lab	1 - 4
WLDG2050	Introduction to Automated Cutting and Welding	3

**Choose a Total of: 3 Credits****General Education Electives**

If a General Education course is required it may not be used as a General Education Elective.

Minnesota Transfer Curriculum (MnTC) may also be used to meet General Education Elective requirements. A complete list of MnTC courses can be found at [www.hennepintech.edu](http://www.hennepintech.edu).

CCDS1000	How to Succeed in College	1
CCDS1020	Interviewing Skills	1
CCDS1040	Job Seeking Skills	2
CCDS1100	Student Success	3
COMM1050	Communication in the Workplace - Deleted Summer 2022	2
CPLT1000	Computer Keyboarding	2
CPLT1005	Advanced Keyboarding and Document Processing	3
CPLT1100	Computer Essentials	3
CPLT1200	Introduction to Macintosh	3
EMSV1020	CPR/First Aid	1
ENGL1021	Essay Fundamentals	3
ENGL1026	Writing for Careers	3
MATH1007	Math for the Trades	2
MATH1020	Geometry and Trigonometry	2
MATH1050	Math Pathways Plus for College and Careers	4
MATH1060	Math Pathways for College and Careers	3
MATH1500	Beginning Algebra	3
MATH1650	Mathematical Literacy	4
MATH1700	Intermediate Algebra	3
METS1000	Computers in Manufacturing	3

**Choose a Total of: 6 Credits****Graduation (55 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/11/2022 : BP 4604 / EP

## GMAW Production Welder (MIG) (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

This certificate will provide the student with entry-level skills and knowledge to perform as a gas metal arc welder (GMAW) with minimum supervision in all positions in the following areas: production manufacturing, pipe/tubing, food industry, aero space, and ornamental/sculpture, on ferrous and non ferrous metals. You can obtain entry-level employment by just taking a few courses that will lead towards a certificate in MIG or TIG welding. Taking additional courses will provide you with the opportunity for job advancement as a welder. Welding courses are also valuable for persons who have careers or interests that require some welding knowledge.

#### Award Outcomes

Utilize safe working techniques and practices  
 Set-up welding and cutting equipment  
 Operate welding and cutting equipment  
 Produce welds with the Gas Metal Arc Welding Process in steel  
 Interpret blueprints and welding symbols  
 Perform basic lay-outs on various materials  
 Apply metallurgical principles to welding and fabrication processes  
 Determine the quality of welds  
 Identify steps and procedures in the Gas Metal Arc Welding process

#### Career Opportunities

There are many employment opportunities available in the following areas: construction, machinery manufacturing, sheet metal industry, and custom job shop.

#### Program Requirements

##### Technical Studies Required 16 Credits

WLDG1010	Practical Application for Estimating and Layout	2
WLDG1135	Gas Metal Arc Welding I	3
WLDG1140	Gas Metal Arc Welding II	3
WLDG1165	Gas Metal Arc Welding III	3
WLDG1175	GMAW Fabrication Methods	3
WLDG1182	Blueprint Reading for Welders	2

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 16

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

WLDG1135	Gas Metal Arc Welding I	3
WLDG1182	Blueprint Reading for Welders	2

##### Total Credits 5

##### Second Semester

WLDG1010	Practical Application for Estimating and Layout	2
WLDG1140	Gas Metal Arc Welding II	3

##### Total Credits 5

##### Third Semester

WLDG1165	Gas Metal Arc Welding III	3
WLDG1175	GMAW Fabrication Methods	3

**Total Credits 6****Graduation (16 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/11/2022 : BP 4606 / EP

## GTAW Production Welder (TIG) (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

This certificate will provide the student with entry-level skills and knowledge to perform as a gas tungsten arc welder (GTAW) with minimal supervision in all positions on ferrous and non ferrous metals. You can obtain entry-level employment by just taking a few courses that will lead towards a certificate in MIG or TIG welding. Taking additional courses will provide you with the opportunity for job advancement as a welder. Welding courses are also valuable for persons who have careers or interests that require some welding knowledge.

#### Award Outcomes

Utilize safe working techniques and practices  
 Set-up welding and cutting equipment  
 Operate welding and cutting equipment  
 Produce welds with the Gas Tungsten Arc Welding process in steel, stainless steel, and aluminum  
 Interpret blueprints and welding symbols  
 Perform basic lay-outs on various materials  
 Apply metallurgical principles to welding and fabrication processes  
 Determine the quality of welds  
 Identify steps and procedures in Gas Tungsten Arc Welding process

#### Career Opportunities

There are many employment opportunities available in the following areas manufacturing areas: medical/pharmaceutical, pipe/tubing, food and aerospace.

#### Program Requirements

##### Technical Studies Required 16 Credits

WLDG1010	Practical Application for Estimating and Layout	2
WLDG1182	Blueprint Reading for Welders	2
WLDG1220	Gas Tungsten Arc Welding I	3
WLDG1225	Gas Tungsten Arc Welding II	3
WLDG1235	Gas Tungsten Arc Welding III	3
WLDG1245	GTAW Fabrication Methods	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 16

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

WLDG1220	Gas Tungsten Arc Welding I	3
WLDG1182	Blueprint Reading for Welders	2

##### Total Credits 5

##### Second Semester

WLDG1010	Practical Application for Estimating and Layout	2
WLDG1225	Gas Tungsten Arc Welding II	3

##### Total Credits 5

##### Third Semester

WLDG1235	Gas Tungsten Arc Welding III	3
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WLDG1245

GTAW Fabrication Methods

3

**Total Credits 6**

**Graduation (16 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/11/2022 : BP 4607 / EP

# Structural Iron Fabrication and Repair (BP) Occupational Certificate

## Overview and Award Outcomes

### Overview

This program will provide the student with entry-level skills and knowledge to perform fabrication and repair in the following areas: structural iron fabrication, heavy equipment repair, industrial maintenance and precision layout and design.

### Award Outcomes

Utilize safe working techniques and practices  
 Set-up welding and cutting equipment  
 Operate welding and cutting equipment  
 Produce welds with the Flux Cored Arc Welding process in steel  
 Produce welds with the Shielded Metal Arc Welding process in steel  
 Interpret blueprints and welding symbols  
 Perform basic lay-outs on material  
 Apply metallurgical principles to welding and fabrication processes  
 Determine the quality of welds  
 Identify steps and procedures in the Flux Cored Arc Welding process  
 Identify steps and procedures in the Shielded Metal Arc Welding process

### Career Opportunities

There are many employment opportunities available in the following industries: agricultural, construction, heavy equipment repair and manufacturing, tank and pressure vessel repair.

### Program Requirements

#### Technical Studies Required 22 Credits

WLDG1010	Practical Application for Estimating and Layout	2
WLDG1182	Blueprint Reading for Welders	2
WLDG1310	Shielded Metal Arc Welding I	3
WLDG1320	Shielded Metal Arc Welding II	3
WLDG1330	Shielded Metal Arc Welding III	3
WLDG1340	Structural Iron Fabrication Methods	3
WLDG1350	Flux Cored Arc Welding I	3
WLDG1360	Flux Cored Arc Welding II	3

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Occupational Certificate Credits 22

### Semester Sequence

#### Offered at Brooklyn Park Only

#### First Semester

WLDG1310	Shielded Metal Arc Welding I	3
WLDG1182	Blueprint Reading for Welders	2

#### Total Credits 5

#### Second Semester

WLDG1010	Practical Application for Estimating and Layout	2
WLDG1350	Flux Cored Arc Welding I	3

**Total Credits 5****Third Semester**

WLDG1320	Shielded Metal Arc Welding II	3
WLDG1360	Flux Cored Arc Welding II	3

**Total Credits 6****Fourth Semester**

WLDG1330	Shielded Metal Arc Welding III	3
WLDG1340	Structural Iron Fabrication Methods	3

**Total Credits 6****Graduation (22 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/11/2022 : BP 4605 / EP

## Robotic Arc Welding (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

This certificate will provide the student with entry-level skills and knowledge to perform as a gas metal arc welder or robotic arc welding operator with minimum supervision. Students will be taught foundational and advanced techniques for programming and troubleshooting robotic welding cells, robot calibration and manipulation as well as integrating the welding power sources with a robotic welder. Students will become familiar with the robotic welding of components and assemblies using ferrous and non-ferrous metals in the aerospace, equipment and production manufacturing industries.

#### Award Outcomes

Utilize safe working techniques and practices  
 Set-up welding and cutting equipment  
 Operate robotic welding and cutting equipment  
 Produce manual welds with the Gas Metal Arc Welding Process in steel  
 Produce welds with a robotic welding cell.  
 Interpret blueprints and welding symbols  
 Perform basic lay-outs on various materials  
 Apply metallurgical principles to welding and fabrication processes  
 Determine the quality of welds  
 Identify steps and procedures in the manual Gas Metal Arc Welding process  
 Identify steps and procedures in the robotics Gas Metal Arc Welding process  
 Program basic robotic welding equipment

#### Career Opportunities

There are many employment opportunities available in the following areas: production manufacturing, machinery manufacturing, sheet metal industry, and in the job shop environment.

#### Program Requirements

##### Technical Studies Required 19 Credits

WLDG1010	Practical Application for Estimating and Layout	2
WLDG1135	Gas Metal Arc Welding I	3
WLDG1140	Gas Metal Arc Welding II	3
WLDG1165	Gas Metal Arc Welding III	3
WLDG1182	Blueprint Reading for Welders	2
WLDG2050	Introduction to Automated Cutting and Welding	3
WLDG2055	Advanced Robotic Welding	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 19

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

WLDG1010	Practical Application for Estimating and Layout	2
WLDG1135	Gas Metal Arc Welding I	3
WLDG1140	Gas Metal Arc Welding II	3
WLDG1182	Blueprint Reading for Welders	2

**Total Credits 10****Second Semester**

WLDG1165	Gas Metal Arc Welding III	3
WLDG2050	Introduction to Automated Cutting and Welding	3
WLDG2055	Advanced Robotic Welding	3

**Total Credits 9****Graduation (19 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/11/2022 : BP 4608 / EP

# Media Communication

## Audio Production

## Audio Production Specialist (EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

Audio engineers record and mix music, narration and sound effects for music and commercial productions, video, television, film and audiovisual projects. They are also involved with mastering and duplication to several audio formats, including compact disk and emerging mediums. Today's recording engineer needs to be well-versed in digital audio, including disk-based recording, MIDI and SMPTE applications, sampling and traditional analog tape recording technology.

#### Award Outcomes

- Exhibit professional and ethical behavior
- Utilize audio production software and hardware
- Understand MIDI, virtual instruments and synchronization
- Record music sound effects and ADR (automatic dialog replacement) for video (film)
- Produce music sound effects and ADR (automatic dialog replacement) for video (film)
- Mix music sound effects and ADR (automatic dialog replacement) for video (film)
- Understand roles and functions as a part of a production team
- Understand acoustics and studio design
- Record music projects for clients
- Produce music projects for clients
- Mix music projects for clients
- Master music projects for clients
- Understand location recording and sound design skills

#### Career Opportunities

Typical entry-level positions are often competitive and may involve long hours. Candidates who strive to advance beyond entry-level status must show a great degree of creativity, motivation and persistence. Well developed interpersonal skills are a must for success.

Entrepreneurism is alive and well in the audio field. Many engineers have secured permanent positions as a result of competent freelance work. Others have built their freelance work into successful businesses. Jobs exist in music and voice recording, location audio for video, corporate media production and live sound reinforcement. Many musicians/engineers specialize in advertising work, composing and recording exclusively for commercials and industrial clients. Relocation may be necessary to pursue your career as an audio recording specialist!

#### Program Requirements

##### Technical Studies Required 50 Credits

ARSP1100	Introduction to Recording	3
ARSP1110	Studio Operations	4
ARSP1130	Audio Transducers	3
ARSP1140	Critical Listening	1
ARSP1300	Multitrack Recording Theory I	3
ARSP1310	Multitrack Recording Lab I	3
ARSP1320	Audio Signal Processing	3
ARSP1331	Introduction to MIDI	3
ARSP1351	Music Fundamentals	1
ARSP1500	Multitrack Recording Theory II	3
ARSP1510	Multitrack Recording Lab II	3
ARSP1541	Acoustics and Recording Studio Design	2
ARSP2100	Multitrack Recording Theory III	1
ARSP2111	Multitrack Recording Lab III	3
ARSP2120	Digital Audio Theory (Pro Tools 101/110)	3
ARSP2150	Music Business	2
ARSP2325	Digital Audio Theory II (Pro Tools 201/210M)	3
ARSP2340	Audio Configuration and Troubleshooting	2
ARSP2580	Audio Recording Internship I	2
ARSP2585	Audio Recording Internship II	2

**General Education Required 15 Credits**

COMM1260	Small Group Communication	3
ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
PHIL1100	Critical Thinking for College Success	3
PHIL1200	Ethics	3
PHYS1005	Introductory Physics I	3

**General Education Elective 0 Credits****Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 65****Semester Sequence - Full-Time****Offered at Eden Prairie Only****First Semester**

ARSP1100	Introduction to Recording	3
ARSP1110	Studio Operations	4
ARSP1130	Audio Transducers	3
ARSP1140	Critical Listening	1
ARSP1351	Music Fundamentals	1
COMM1260	Small Group Communication	3

**Total Credits 15****Second Semester**

ARSP1300	Multitrack Recording Theory I	3
ARSP1310	Multitrack Recording Lab I	3
ARSP1320	Audio Signal Processing	3
ARSP1331	Introduction to MIDI	3
ARSP2120	Digital Audio Theory (Pro Tools 101/110)	3

**Total Credits 15****Summer Semester**

ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
PHIL1100	Critical Thinking for College Success	3

**Total Credits 6****Third Semester**

ARSP1500	Multitrack Recording Theory II	3
ARSP1510	Multitrack Recording Lab II	3
ARSP1541	Acoustics and Recording Studio Design	2
ARSP2325	Digital Audio Theory II (Pro Tools 201/210M)	3
ARSP2340	Audio Configuration and Troubleshooting	2

**Total Credits 13****Fourth Semester**

ARSP2100	Multitrack Recording Theory III	1
ARSP2111	Multitrack Recording Lab III	3
ARSP2150	Music Business	2
ARSP2580	Audio Recording Internship I	2
ARSP2585	Audio Recording Internship II	2

PHIL1200	Ethics	3
PHYS1005	Introductory Physics I	3

**Total Credits 16****Graduation (65 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/27/2022 : BP / EP 1004

**Semester Sequence - Part-Time****Offered at Eden Prairie Only****First Semester**

ARSP1100	Introduction to Recording	3
ARSP1110	Studio Operations	4
ARSP1130	Audio Transducers	3

**Total Credits 10****Second Semester**

ARSP1140	Critical Listening	1
ARSP1300	Multitrack Recording Theory I	3
ARSP1310	Multitrack Recording Lab I	3
ARSP1320	Audio Signal Processing	3

**Total Credits 10****Summer Semester**

ARSP1331	Introduction to MIDI	3
ARSP1351	Music Fundamentals	1
ARSP2120	Digital Audio Theory (Pro Tools 101/110)	3
PHYS1005	Introductory Physics I	3

**Total Credits 10****Third Semester**

ARSP1500	Multitrack Recording Theory II	3
ARSP1510	Multitrack Recording Lab II	3
ARSP2325	Digital Audio Theory II (Pro Tools 201/210M)	3

**Total Credits 9****Fourth Semester**

ARSP1541	Acoustics and Recording Studio Design	2
ARSP2100	Multitrack Recording Theory III	1
ARSP2111	Multitrack Recording Lab III	3
ARSP2150	Music Business	2
ARSP2340	Audio Configuration and Troubleshooting	2

**Total Credits 10****Summer Semester**

ARSP2580	Audio Recording Internship I	2
ARSP2585	Audio Recording Internship II	2
PHIL1200	Ethics	3

**Total Credits 9****Fifth Semester**

COMM1260	Small Group Communication	3
ENGL1070	Technical Writing	3
ENGL1100	or Writing and Research	4
PHIL1100	Critical Thinking for College Success	3

**Total Credits 9****Graduation (65 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/27/2022: BP / EP 1004

## Live Sound Production Specialist (EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

Live sound engineers work in a variety of productions and corporate events. The ability to be current with the equipment and techniques of live sound production are essential to being successful in this field. The live engineers will be able to setup and operate both audio systems and work as a member of the larger production team. A foundation of signal flow, gain structure, signal processing, mixing console/transducer theory, and troubleshooting principles are essential.

#### Award Outcomes

Understand electrical needs specific to event production  
 Utilize analog and digital equipment for live sound reinforcement  
 Design audio systems for multiple venue sizes and seating arrangements  
 Utilize audio software for aligning and optimizing sound reinforcement systems  
 Demonstrate the setup of various speaker systems  
 Utilize wired and wireless monitor systems  
 Function as part of a production team  
 Adapt to changing work environments  
 Troubleshoot problems within the system

#### Career Opportunities

Live sound engineers are needed in a variety of work environments that require sound reinforcement. Music venues are a common place to see live sound engineers but they also work in houses of worship, sports venues, and radio/television broadcasts. These work environments often require the engineer to think on their feet and react quickly to achieve the best sound for the application. A live sound engineer may be required to plan and implement the setup of sound systems for various applications as well as troubleshoot issues as they come up. Certain work environments may require lifting of heavy items such as speakers and road cases. It is not uncommon for there to be a need to record the events for archival or distribution. To be successful in this field you must be adaptable to changing work environments, be reliable, and have solid technical understanding of what goes into achieving the right sound for the right application.

### Program Requirements

#### Technical Studies Required 45 Credits

ARSP1100	Introduction to Recording	3
ARSP1110	Studio Operations	4
ARSP1130	Audio Transducers	3
ARSP1140	Critical Listening	1
ARSP1300	Multitrack Recording Theory I	3
ARSP1310	Multitrack Recording Lab I	3
ARSP1320	Audio Signal Processing	3
ARSP1351	Music Fundamentals	1
ARSP2120	Digital Audio Theory (Pro Tools 101/110)	3
ARSP2150	Music Business	2
ARSP2171	Sound Reinforcement I	4
ARSP2180	Wireless Systems	1
ARSP2185	Audio Visual and Intercom Systems	2
ARSP2270	Sound Reinforcement II	4
ARSP2310	Public Address Systems Design	2
ARSP2340	Audio Configuration and Troubleshooting	2
ARSP2580	Audio Recording Internship I	2
ARSP2585	Audio Recording Internship II	2

#### General Education Required 15 Credits

COMM1260	Small Group Communication	3
ENGL1070	Technical Writing	3

PHIL1100	Critical Thinking for College Success	3
PHIL1200	Ethics	3
PHYS1005	Introductory Physics I	3

**General Education Elective 0 Credits****Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 60****Semester Sequence****Offered at Eden Prairie Only****First Semester**

ARSP1100	Introduction to Recording	3
ARSP1110	Studio Operations	4
ARSP1130	Audio Transducers	3
ARSP1140	Critical Listening	1
ARSP1351	Music Fundamentals	1
PHYS1005	Introductory Physics I	3

**Total Credits 15****Second Semester**

ARSP1300	Multitrack Recording Theory I	3
ARSP1310	Multitrack Recording Lab I	3
ARSP1320	Audio Signal Processing	3
ARSP2120	Digital Audio Theory (Pro Tools 101/110)	3
ARSP2150	Music Business	2

**Total Credits 14****Summer Semester**

COMM1260	Small Group Communication	3
PHIL1100	Critical Thinking for College Success	3

**Total Credits 6****Third Semester**

ARSP2171	Sound Reinforcement I	4
ARSP2180	Wireless Systems	1
ARSP2270	Sound Reinforcement II	4
ARSP2310	Public Address Systems Design	2
ARSP2340	Audio Configuration and Troubleshooting	2

**Total Credits 13****Fourth Semester**

ARSP2185	Audio Visual and Intercom Systems	2
ARSP2580	Audio Recording Internship I	2
ARSP2585	Audio Recording Internship II	2
ENGL1070	Technical Writing	3
PHIL1200	Ethics	3

**Total Credits 12****Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/2/2022 : BP / EP 1007

## Audio Production Specialist (EP) Diploma

### Overview and Award Outcomes

#### Overview

Audio engineers record and mix music, narration and sound effects for music and commercial productions, video, television, film and audiovisual projects. They are also involved with mastering and duplication to several audio formats, including compact disk and emerging mediums. Today's recording engineer needs to be well-versed in digital audio, including disk-based recording, MIDI and SMPTE applications, sampling and traditional analog tape recording technology.

#### Award Outcomes

- Exhibit professional and ethical behavior
- Utilize audio production software and hardware
- Understand MIDI, virtual instruments and synchronization
- Record music sound effects and ADR (automatic dialog replacement) for video (film)
- Produce music sound effects and ADR (automatic dialog replacement) for video (film)
- Mix music sound effects and ADR (automatic dialog replacement) for video (film)
- Understand roles and functions as a part of a production team
- Understand acoustics and studio design
- Record music projects for clients
- Produce music projects for clients
- Mix music projects for clients
- Master music projects for clients
- Understand location recording and sound design skills

#### Career Opportunities

Typical entry-level positions are often competitive and may involve long hours. Candidates who strive to advance beyond entry-level status must show a great degree of creativity, motivation and persistence. Well developed interpersonal skills are a must for success.

Entrepreneurism is alive and well in the audio field. Many engineers have secured permanent positions as a result of competent freelance work. Others have built their freelance work into successful businesses. Jobs exist in music and voice recording, location audio for video, corporate media production and live sound reinforcement. Many musicians/engineers specialize in advertising work, composing and recording exclusively for commercials and industrial clients. Relocation may be necessary to pursue your career as an audio recording specialist!

#### Program Requirements

##### Technical Studies Required 52 Credits

ARSP1100	Introduction to Recording	3
ARSP1110	Studio Operations	4
ARSP1130	Audio Transducers	3
ARSP1140	Critical Listening	1
ARSP1300	Multitrack Recording Theory I	3
ARSP1310	Multitrack Recording Lab I	3
ARSP1320	Audio Signal Processing	3
ARSP1331	Introduction to MIDI	3
ARSP1340	Location Recording	2
ARSP1351	Music Fundamentals	1
ARSP1500	Multitrack Recording Theory II	3
ARSP1510	Multitrack Recording Lab II	3
ARSP1541	Acoustics and Recording Studio Design	2
ARSP2100	Multitrack Recording Theory III	1
ARSP2111	Multitrack Recording Lab III	3
ARSP2120	Digital Audio Theory (Pro Tools 101/110)	3
ARSP2150	Music Business	2
ARSP2325	Digital Audio Theory II (Pro Tools 201/210M)	3
ARSP2340	Audio Configuration and Troubleshooting	2
ARSP2580	Audio Recording Internship I	2
ARSP2585	Audio Recording Internship II	2

**General Education Required 6 Credits**

PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3

**General Education Elective 0 Credits****Technical Studies Elective 2 Credits**

Any ARSP course that is not required for this award may be used as an elective.

**Total Diploma Credits 60****Semester Sequence****Offered at Eden Prairie Only****First Semester**

ARSP1100	Introduction to Recording	3
ARSP1110	Studio Operations	4
ARSP1130	Audio Transducers	3
ARSP1140	Critical Listening	1
ARSP1351	Music Fundamentals	1
PHYS1005	Introductory Physics I	3

**Total Credits 15****Second Semester**

ARSP1300	Multitrack Recording Theory I	3
ARSP1310	Multitrack Recording Lab I	3
ARSP1320	Audio Signal Processing	3
ARSP1331	Introduction to MIDI	3
ARSP1340	Location Recording	2
ARSP2120	Digital Audio Theory (Pro Tools 101/110)	3

**Total Credits 17****Third Semester**

ARSP1500	Multitrack Recording Theory II	3
ARSP1510	Multitrack Recording Lab II	3
ARSP1541	Acoustics and Recording Studio Design	2
ARSP2325	Digital Audio Theory II (Pro Tools 201/210M)	3
ARSP2340	Audio Configuration and Troubleshooting	2
	Technical Studies Electives	2

**Total Credits 15****Fourth Semester**

ARSP2100	Multitrack Recording Theory III	1
ARSP2111	Multitrack Recording Lab III	3
ARSP2150	Music Business	2
ARSP2580	Audio Recording Internship I	2
ARSP2585	Audio Recording Internship II	2
PHIL1100	Critical Thinking for College Success	3

**Total Credits 13****Technical Studies Electives**

Any Audio Production Specialist (ARSP) course that is not required for this award may be used as an elective.

**Choose a Total of: 2 Credits**

**Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/2/2022 : BP / EP 1005

**Graphic Design and Web Design**

## Graphic Design: Creative (BP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

Graphic design by definition is the applied art of designing any information, thought, idea or message for print and digital media. Graphic designers skillfully master advanced technology to transform an idea or concept. The transformation procedure is an integral part of the print or digital media production process. Graphic designers have an inherent ability to create by utilizing basic design principles and color theory; applying typographical knowledge and techniques; capturing digital graphic images; and manipulating photos and illustrations through various industry standard software and hardware components. The finished design may be delivered via the printed piece or web.

The field of graphic design is an exciting and challenging career choice, a choice that gives the individual the power to be an effective participant in the world of media communications. This degree is also an excellent stepping-stone for those students who wish to pursue a four-year degree at some point in the future.

#### Award Outcomes

- Utilize the elements and principles of design
- Integrate the use of industry standard technology and design
- Develop visual solutions to communicate client's needs
- Exhibit proficient use of technology workflow
- Produce clean proofs and prints for press-ready documents
- Demonstrate the roles and functions of working on a team
- Develop a creative portfolio of work that demonstrates skills as a designer and visual communicator

#### Career Opportunities

Graphic design is an ever-changing and evolving professional career with many occupational categories and opportunities. One might find employment in a production environment, customer service, customer support, sales, creative production, consulting or training. Occupational titles include but are not limited to creative designer, graphic designer, print production artist, web designer, web producer, web developer, production artist, advertising artist, art typographer. Common working environments might include design or production, in a corporation, agency, advertising or marketing setting, printing company, or graphics service bureau.

#### Program Requirements

##### Technical Studies Required 51 Credits

MGDP1010	Basic Drawing	3
MGDP1205	Fundamentals of Graphic Design	3
MGDP1210	Graphic Design Essentials	3
MGDP1220	Concepts in Creativity	3
MGDP1230	Photoshop	3
MGDP1240	Illustrator	3
MGDP1310	InDesign	3
MGDP1330	Advanced Page Layout	3
MGDP1340	Advanced Photoshop	3
MGDP1350	Advanced Illustrator	3
MGDP1360	Acrobat	2
MMVP1640	Social Media Production I	2
MGDP1645	Social Media Production II	2
MGDP2010	Applied Graphic Design	3
MGDP2030	Packaging and Display Advertising	3
MGDP2040	Collateral Advertising	3
MGDP2080	Applied Typography	3
MGDP2200	Design Portfolio	3

##### General Education Required 12 Credits

COMM1250	Choose one of the following: Interpersonal Communication	3
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COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
	Choose one of the following:	
ENGL1070	Technical Writing	3
ENGL1100	Writing and Research	4
ENGL1300	Introduction to Creative Writing	3
	Choose any course from MnTC Goal Area 2	3
	Choose any course from MnTC Goal Area 5	3

### General Education Elective 3 Credits

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

### Technical Studies Elective 3 Credits

Any ARSP, ITEC, MGD, or MMVP course that is not required for this award may be used as an elective.

Recommended:

MGDP1120	Introduction to Digital Photography	2
MGDP2215	Graphic Design Internship	1 - 12

### Total Associate in Applied Science Degree Credits 69

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

MGDP1010	Basic Drawing	3
MGDP1205	Fundamentals of Graphic Design	3
MGDP1210	Graphic Design Essentials	3
MGDP1220	Concepts in Creativity	3
MGDP1310	InDesign	3
MGDP1360	Acrobat	2

##### Total Credits 17

##### Second Semester

MGDP1230	Photoshop	3
MGDP1240	Illustrator	3
MMVP1640	Social Media Production I	2
MGDP1645	Social Media Production II	2
MGDP2010	Applied Graphic Design	3
MGDP2080	Applied Typography	3
	Choose 3 credits from MnTC Goal Areas 3-10	3

##### Total Credits 19

##### Summer Semester

	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
	Choose one course from MnTC Goal Area 2	3

##### Total Credits 6

##### Third Semester

MGDP1330	Advanced Page Layout	3
MGDP1340	Advanced Photoshop	3
MGDP1350	Advanced Illustrator	3

MGDP2040	Collateral Advertising	3
	Choose one of the following:	
ENGL1070	Technical Writing	3
ENGL1100	Writing and Research	4
ENGL1300	Introduction to Creative Writing	3

**Total Credits 15****Fourth Semester**

MGDP2030	Packaging and Display Advertising	3
MGDP2200	Design Portfolio	3
	Technical Studies Electives	3
	Choose one course from MnTC Goal Area 5	3

**Total Credits 12****Technical Studies Electives**

Any Audio Production (ARSP), Information Technology (ITEC), Graphic Design (MGDP) or Interactive Design and Video Production (MMVP) course that is not required for this award may be used to satisfy an elective requirement.

Recommended:

MGDP1120	Introduction to Digital Photography	2
MGDP2215	Graphic Design Internship	1 - 12

**Choose a Total of: 3 Credits****General Education Electives**

A complete list of Minnesota Transfer Curriculum (MnTC) courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 3 Credits****MnTC Goal Area 2**

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3
MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

**MnTC Goal Area 5**

ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3

SOC1200	Marriage and Family	3
SOC1400	Race in America	3
SOC1500	Introduction to Criminal Justice	3
SOC1600	Food and Society	3

**Graduation (69 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/2/2022 : BP 1504 / EP

## Graphic Design: Creative (BP) Diploma

### Overview and Award Outcomes

#### Overview

Graphic design by definition is the applied art of designing any information, thought, idea or message for print and digital media. Graphic designers skillfully master advanced technology to transform an idea or concept. The transformation procedure is an integral part of the print or digital media production process.

Graphic designers have an inherent ability to create by utilizing basic design principles and color theory; applying typographical knowledge and techniques; capturing digital graphic images; and manipulating photos and illustrations through various industry standard software and hardware components.

The field of graphic design is an exciting and challenging career choice, a choice that gives the individual the power to be an effective participant in the world of media communications. This diploma prepares you for the creative Graphic Design field that works so closely with printing, web and multi-media industries.

#### Award Outcomes

Utilize the elements and principles of design  
 Integrate the use of industry standard technology and design  
 Develop visual solutions to communicate client's needs  
 Exhibit proficient use of technology workflow  
 Produce clean proofs and prints for press-ready documents  
 Demonstrate the roles and functions of working on a team  
 Develop a creative portfolio of work that demonstrates skills as a designer and visual communicator

#### Career Opportunities

Graphic design is an ever-changing and evolving professional career with many occupational categories and opportunities. One might find employment in a production environment, customer service, customer support, sales, creative production, consulting or training. Occupational titles include but are not limited to creative designer, graphic designer, print production artist, web designer, web producer, web developer, production artist, advertising artist, art typographer. Common working environments might include design or production, in a corporation, agency, advertising or marketing setting, printing company, or graphics service bureau.

#### Program Requirements

##### Technical Studies Required 51 Credits

MGDP1010	Basic Drawing	3
MGDP1205	Fundamentals of Graphic Design	3
MGDP1210	Graphic Design Essentials	3
MGDP1220	Concepts in Creativity	3
MGDP1230	Photoshop	3
MGDP1240	Illustrator	3
MGDP1310	InDesign	3
MGDP1330	Advanced Page Layout	3
MGDP1340	Advanced Photoshop	3
MGDP1350	Advanced Illustrator	3
MGDP1360	Acrobat	2
MMVP1640	Social Media Production I	2
MGDP1645	Social Media Production II	2
MGDP2010	Applied Graphic Design	3
MGDP2030	Packaging and Display Advertising	3
MGDP2040	Collateral Advertising	3
MGDP2080	Applied Typography	3
MGDP2200	Design Portfolio	3

##### General Education Required 9 Credits

ENGL1026	Writing for Careers	3
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Choose one of the following:

COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
	Choose one of the following:	
PHIL1100	Critical Thinking for College Success	3
PHIL1200	Ethics	3

**General Education Elective 0 Credits****Technical Studies Elective 4 Credits**

Any ARSP, ITEC, MGDP, or MMVP course that is not required for this award may be used as an elective.

Recommended:

MGDP1120	Introduction to Digital Photography	2
MGDP2215	Graphic Design Internship	1 - 12

**Total Diploma Credits 64****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

MGDP1010	Basic Drawing	3
MGDP1205	Fundamentals of Graphic Design	3
MGDP1210	Graphic Design Essentials	3
MGDP1220	Concepts in Creativity	3
MGDP1310	InDesign	3
MMVP1640	Social Media Production I	2
MGDP1645	Social Media Production II	2

**Total Credits 19****Second Semester**

MGDP1230	Photoshop	3
MGDP1240	Illustrator	3
MGDP1360	Acrobat	2
MGDP2010	Applied Graphic Design	3
MGDP2080	Applied Typography	3
ENGL1026	Writing for Careers	3

**Total Credits 17****Summer Semester**

	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
	Choose one of the following:	
PHIL1100	Critical Thinking for College Success	3
PHIL1200	Ethics	3

**Total Credits 6****Third Semester**

MGDP1330	Advanced Page Layout	3
MGDP1340	Advanced Photoshop	3
MGDP1350	Advanced Illustrator	3
MGDP2040	Collateral Advertising	3
	Technical Studies Electives	2

**Total Credits 14**

**Fourth Semester**

MGDP2030	Packaging and Display Advertising	3
MGDP2200	Design Portfolio	3
	Technical Studies Electives	2

**Total Credits 8**

**Technical Studies Electives**

Any Audio Production (ARSP), Information Technology (ITEC), Graphic Design (MGDP) or Interactive Design and Video Production (MMVP) course that is not required for this award may be used to satisfy an elective requirement.

Recommended:

MGDP1120	Introduction to Digital Photography	2
MGDP2215	Graphic Design Internship	1 - 12

**Choose a Total of: 4 Credits**

**Graduation (64 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/1/2022 : BP 1507 / EP

## Graphic Design: Production (BP) Diploma

### Overview and Award Outcomes

#### Overview

This diploma is an in-depth Graphic Design Production that offers the student technical hands-on skills. Upon completion this student will have numerous opportunities for employment in the printing and communications industry. Students will receive industry specific training on software programs designed to produce print media and electronic communications material. Examples of such software include: InDesign, Illustrator, Photoshop and Acrobat. Training will be provided using different computerized systems, printers and desktop scanners to produce basic publications, ads, or print materials. If you are creative and enjoy producing magazine ads, publications, books, brochures and advertisements, forms, business cards, or invitations, this degree is designed for you. This diploma is focused on training the student for the production workforce within the printing and publishing industry.

#### Award Outcomes

Utilize the elements and principles of design  
 Integrate the use of industry standard technology and design  
 Exhibit use of technology workflow  
 Perform troubleshooting strategies  
 Produce clean proofs and prints for press-ready documents

#### Career Opportunities

Graphic design is an ever-changing and evolving professional career with many occupational categories and opportunities. One might find employment in a production environment, customer service, customer support, sales, creative production, consulting or training. Occupational titles include but are not limited to creative designer, graphic designer, print production artist, web designer, web producer, web developer, production artist, advertising artist, art typographer. Common working environments might include design or production, in a corporation, agency, advertising or marketing setting, printing company, or graphics service bureau.

### Program Requirements

#### Technical Studies Required 44 Credits

MGDP1010	Basic Drawing	3
MGDP1205	Fundamentals of Graphic Design	3
MGDP1210	Graphic Design Essentials	3
MGDP1220	Concepts in Creativity	3
MGDP1230	Photoshop	3
MGDP1240	Illustrator	3
MGDP1250	Web Design & Development I	3
MGDP1310	InDesign	3
MGDP1330	Advanced Page Layout	3
MGDP1340	Advanced Photoshop	3
MGDP1350	Advanced Illustrator	3
MGDP1360	Acrobat	2
MGDP2010	Applied Graphic Design	3
MGDP2040	Collateral Advertising	3
MGDP2080	Applied Typography	3

#### General Education Required 6 Credits

	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
	Choose one of the following:	
PHIL1100	Critical Thinking for College Success	3
PHIL1200	Ethics	3

#### General Education Elective 0 Credits

**Technical Studies Elective 4 Credits**

Any ARSP, ITEC, MGDG, or MMVP course that is not required for this award may be used as an elective.

Recommended:

MGDP1120	Introduction to Digital Photography	2
MGDP2215	Graphic Design Internship	1 - 12

**Total Diploma Credits 54****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

MGDP1010	Basic Drawing	3
MGDP1205	Fundamentals of Graphic Design	3
MGDP1210	Graphic Design Essentials	3
MGDP1220	Concepts in Creativity	3
MGDP1310	InDesign	3

**Total Credits 15****Second Semester**

MGDP1230	Photoshop	3
MGDP1240	Illustrator	3
MGDP1360	Acrobat	2
MGDP2010	Applied Graphic Design	3
MGDP2080	Applied Typography	3

**Total Credits 14****Summer Semester**

	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
	Choose one of the following:	
PHIL1100	Critical Thinking for College Success	3
PHIL1200	Ethics	3

**Total Credits 6****Third Semester**

MGDP1250	Web Design & Development I	3
MGDP1330	Advanced Page Layout	3
MGDP1340	Advanced Photoshop	3
MGDP1350	Advanced Illustrator	3

**Total Credits 12****Fourth Semester**

MGDP2040	Collateral Advertising	3
	Technical Studies Electives	4

**Total Credits 7****Technical Studies Electives**

Any Audio Production (ARSP), Information Technology (ITEC), Graphic Design (MGDP) or Interactive Design and Video Production (MMVP) course that is not required for this award may be used to satisfy an elective requirement.

Recommended:

MGDP1120	Introduction to Digital Photography	2
MGDP2215	Graphic Design Internship	1 - 12

**Choose a Total of: 4 Credits**

**Graduation (54 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/1/2022 : BP 1510 / EP

# Graphic Design: Web Design (BP) Associate in Applied Science Degree

## Overview and Award Outcomes

### Overview

This degree is designed for individuals who wish to be involved in the design and implementation of web sites. Students will learn user interactivity and basic fundamentals of optimum Internet usage. These concepts are critical to the conception and design of a web site. The navigation, functionality, file size, image generation, and unity of design are stressed. Each student will design and develop a web portfolio or work as an intern in the industry as a requirement for graduation. There is an opportunity in this degree to take electives in Computer Careers or Creative Graphic Design to enhance student skills.

### Award Outcomes

Utilize the elements and principles of design  
 Integrate the use of industry standard technology and design  
 Develop solutions that meet client's needs  
 Exhibit proficient use of technology workflow  
 Produce web sites that meet the industry standards for usability  
 Demonstrate use of programming language(s) into web site design  
 Demonstrate the roles and functions of working on a team  
 Develop a creative portfolio of work that demonstrates skills as a designer and visual communicator

### Career Opportunities

Graphic design is an ever-changing and evolving professional career with many occupational categories and opportunities. One might find employment in a production environment, customer service, customer support, web production, consulting or training. Occupational titles include but are not limited to creative designer, graphic designer, web designer, web producer, web developer. Common working environments might include design or production in a corporation, agency, advertising, marketing, or web design studio.

### Program Requirements

#### Technical Studies Required 51 Credits

MGDP1205	Fundamentals of Graphic Design	3
MGDP1210	Graphic Design Essentials	3
MGDP1220	Concepts in Creativity	3
MGDP1230	Photoshop	3
MGDP1240	Illustrator	3
MGDP1250	Web Design & Development I	3
MGDP1360	Acrobat	2
MMVP1640	Social Media Production I	2
MGDP1645	Social Media Production II	2
MGDP2010	Applied Graphic Design	3
MGDP2050	Web Design & Development II	3
MGDP2060	Web Design & Development III	3
MGDP2100	Web Design/Production	3
MGDP2200	Design Portfolio	3
MMVP1500	Concepts of Interactive Media	3
MMVP1570	Introduction to Programming for Designers	3
MMVP1580	Animation	3
MMVP2010	JavaScript for Designers	3

#### General Education Required 12 Credits

	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3

Choose one of the following:

ENGL1070	Technical Writing	3
ENGL1100	Writing and Research	4
ENGL1300	Introduction to Creative Writing	3
	Choose any course from MnTC Goal Area 2	3
	Choose any course from MnTC Goal Area 5	3

### General Education Elective 3 Credits

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

### Technical Studies Elective 3 Credits

Any ARSP, ITEC, MGDP, or MMVP course that is not required for this award may be used as an elective.

Recommended:

MGDP1120	Introduction to Digital Photography	2
MGDP2215	Graphic Design Internship	1 - 12

### Total Associate in Applied Science Degree Credits 69

#### Semester Sequence

#### Offered at Brooklyn Park Only

#### First Semester

MGDP1205	Fundamentals of Graphic Design	3
MGDP1210	Graphic Design Essentials	3
MGDP1220	Concepts in Creativity	3
MGDP1250	Web Design & Development I	3
MMVP1500	Concepts of Interactive Media	3
MMVP1640	Social Media Production I	2
MGDP1645	Social Media Production II	2

#### Total Credits 19

#### Second Semester

MGDP1230	Photoshop	3
MGDP1360	Acrobat	2
MGDP2010	Applied Graphic Design	3
MMVP1570	Introduction to Programming for Designers	3
MMVP1580	Animation	3
	Technical Studies Electives	3

#### Total Credits 17

#### Summer Semester

	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
	Choose one course from MnTC Goal Area 2	3

#### Total Credits 6

#### Third Semester

MGDP1240	Illustrator	3
MGDP2050	Web Design & Development II	3
MGDP2100	Web Design/Production	3
MMVP2010	JavaScript for Designers	3

	Choose one of the following:	
ENGL1070	Technical Writing	3

ENGL1100	Writing and Research	4
ENGL1300	Introduction to Creative Writing	3

**Total Credits 15****Fourth Semester**

MGDP2060	Web Design & Development III	3
MGDP2200	Design Portfolio	3
	Choose one course from MnTC Goal Area 5	3
	Choose 3 credits from MnTC Goal Areas 3-10	3

**Total Credits 12****Technical Studies Electives**

Any Audio Production (ARSP), Information Technology (ITEC), Graphic Design (MGDP) or Interactive Design and Video Production (MMVP) course that is not required for this award may be used to satisfy an elective requirement.

Recommended:

MGDP1120	Introduction to Digital Photography	2
MGDP2215	Graphic Design Internship	1 - 12

**Choose a Total of: 3 Credits****General Education Electives**

A complete list of Minnesota Transfer Curriculum (MnTC) courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 3 Credits****MnTC Goal Area 2**

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3
MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

**MnTC Goal Area 5**

ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3

**Graduation (69 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/1/2022 : BP 1505 / EP

## Graphic Design: Web Design (BP) Diploma

### Overview and Award Outcomes

#### Overview

This diploma is designed for individuals who wish to be involved in the design and implementation of web sites. Students will learn user interactivity and basic fundamentals of optimum Internet usage. These concepts are critical to the conception and design of a web site. The navigation, functionality, file size, image generation, and unity of design are stressed. Each student will design and develop a web portfolio or work as an intern in the industry as a requirement for graduation. There is an opportunity in this diploma to take electives in Computer Careers or Creative Graphic Design to enhance student skills.

#### Award Outcomes

Utilize the elements and principles of design  
 Integrate the use of web technologies and design  
 Develop solutions that meet client's needs  
 Exhibit proficient use of technology workflow  
 Produce web sites that meet the industry standards for usability  
 Demonstrate use of programming language(s) into web site design  
 Demonstrate the roles and functions of working on a team  
 Develop a creative portfolio of work that demonstrates skills as a designer and visual communicator

#### Career Opportunities

Graphic design is an ever-changing and evolving professional career with many occupational categories and opportunities. One might find employment in a production environment, customer service, customer support, web production, consulting or training. Occupational titles include but are not limited to creative designer, graphic designer, web designer, web producer, web developer. Common working environments might include design or production in a corporation, agency, advertising, marketing, or web design studio.

### Program Requirements

#### Technical Studies Required 51 Credits

MGDP1205	Fundamentals of Graphic Design	3
MGDP1210	Graphic Design Essentials	3
MGDP1220	Concepts in Creativity	3
MGDP1230	Photoshop	3
MGDP1240	Illustrator	3
MGDP1250	Web Design & Development I	3
MGDP1360	Acrobat	2
MMVP1640	Social Media Production I	2
MGDP1645	Social Media Production II	2
MGDP2010	Applied Graphic Design	3
MGDP2050	Web Design & Development II	3
MGDP2060	Web Design & Development III	3
MGDP2100	Web Design/Production	3
MGDP2200	Design Portfolio	3
MMVP1500	Concepts of Interactive Media	3
MMVP1570	Introduction to Programming for Designers	3
MMVP1580	Animation	3
MMVP2010	JavaScript for Designers	3

#### General Education Required 9 Credits

ENGL1026	Writing for Careers	3
	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3

Choose one of the following:

PHIL1100	Critical Thinking for College Success	3
PHIL1200	Ethics	3

**General Education Elective 0 Credits****Technical Studies Elective 4 Credits**

Any ARSP, ITEC, MGDP, or MMVP course that is not required for this award may be used as an elective.

## Recommended:

MGDP1120	Introduction to Digital Photography	2
MGDP1340	Advanced Photoshop	3
MGDP2215	Graphic Design Internship	1 - 12

**Total Diploma Credits 64****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

MGDP1205	Fundamentals of Graphic Design	3
MGDP1210	Graphic Design Essentials	3
MGDP1220	Concepts in Creativity	3
MGDP1250	Web Design & Development I	3
MMVP1500	Concepts of Interactive Media	3
MMVP1640	Social Media Production I	2
MGDP1645	Social Media Production II	2

**Total Credits 19****Second Semester**

MGDP1230	Photoshop	3
MGDP1360	Acrobat	2
MGDP2010	Applied Graphic Design	3
MMVP1570	Introduction to Programming for Designers	3
MMVP1580	Animation	3
	Technical Studies Electives	1

**Total Credits 15****Summer Semester**

	Choose one of the following:	
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
	Choose one of the following:	
PHIL1100	Critical Thinking for College Success	3
PHIL1200	Ethics	3

**Total Credits 6****Third Semester**

MGDP1240	Illustrator	3
MGDP2050	Web Design & Development II	3
MGDP2100	Web Design/Production	3
MMVP2010	JavaScript for Designers	3
ENGL1026	Writing for Careers	3

**Total Credits 15****Fourth Semester**

MGDP1340	Advanced Photoshop Elective	3
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MGDP2060	Web Design & Development III	3
MGDP2200	Design Portfolio	3

**Total Credits 9**

**Technical Studies Electives**

Any Audio Production (ARSP), Information Technology (ITEC), Graphic Design (MGDP) or Interactive Design and Video Production (MMVP) course that is not required for this award may be used to satisfy an elective requirement.

Recommended:

MGDP1120	Introduction to Digital Photography	2
MGDP1340	Advanced Photoshop	3
MGDP2215	Graphic Design Internship	1 - 12

**Choose a Total of: 4 Credits**

**Graduation (64 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice

6/1/2022 : BP 1508 / EP

# Production Technician for Digital Publishing (BP) Occupational Certificate

## Overview and Award Outcomes

### Overview

Ever wonder how to produce a printed flyer, brochure, business card, letterhead or book? This certificate is designed for someone employed or self-employed in the publishing industry. The certificate is for the person who is a writer or works on the fringe of the printing and publishing industry and wants to acquire the skills necessary to produce their own printed materials.

Prerequisites: Testing score equivalent or CPLT1100 Essential Computer Applications, CPLT1200 Introduction to Macintosh.

### Award Outcomes

Utilize the elements and principles of design  
 Integrate the use of industry standard technology and design  
 Exhibit use of technology workflow  
 Perform troubleshooting strategies  
 Produce clean proofs and prints for press-ready documents

### Career Opportunities

Graphic design is an ever-changing and evolving professional career with many occupational categories and opportunities. One might find employment in a production environment, customer service, customer support, sales, creative production, consulting or training. Occupational titles include but are not limited to creative designer, graphic designer, print production artist, web designer, web producer, web developer, production artist, advertising artist, art typographer. Common working environments might include design or production, in a corporation, agency, advertising or marketing setting, printing company, or graphics service bureau.

## Program Requirements

### Technical Studies Required 26 Credits

MGDP1230	Photoshop	3
MGDP1240	Illustrator	3
MGDP1310	InDesign	3
MGDP1330	Advanced Page Layout	3
MGDP1340	Advanced Photoshop	3
MGDP1350	Advanced Illustrator	3
MGDP1360	Acrobat	2
MGDP2010	Applied Graphic Design	3
MGDP2040	Collateral Advertising	3

### General Education Required 0 Credits

### General Education Elective 0 Credits

### Technical Studies Elective 3 Credits

Any ARSP, ITEC, MGDP, or MMVP course that is not required for this award may be used as an elective.

Recommended:

MGDP1120	Introduction to Digital Photography	2
MGDP2215	Graphic Design Internship	1 - 12

### Total Occupational Certificate Credits 29

## Semester Sequence

### Offered at Brooklyn Park Only

#### First Semester

MGDP1230	Photoshop	3
MGDP1240	Illustrator	3
MGDP1310	InDesign	3

MGDP1360	Acrobat	2
MGDP2010	Applied Graphic Design	3

**Total Credits 14**

**Second Semester**

MGDP1330	Advanced Page Layout	3
MGDP1340	Advanced Photoshop	3
MGDP1350	Advanced Illustrator	3
MGDP2040	Collateral Advertising	3
	Technical Studies Electives	3

**Total Credits 15**

**Technical Studies Electives**

Any Audio Production (ARSP), Information Technology (ITEC), Graphic Design (MGDP) or Interactive Design and Video Production (MMVP) course that is not required for this award may be used to satisfy an elective requirement.

Recommended:

MGDP1120	Introduction to Digital Photography	2
MGDP2215	Graphic Design Internship	1 - 12

**Choose a Total of: 3 Credits**

**Graduation (29 credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Basic Web Technologies (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

This certificate is designed for the student as an overview of Web Technologies. The coursework is designed to meet the needs of personnel already employed in a related industry who wish to enhance their skills for job advancement, change, or comprehension. Students will complete introductory-level coursework and obtain the skills necessary for them to understand the technologies related to web design and development.

Prerequisite: Basic computer literacy, familiarity with the Internet, college-level reading and communication ability, and proficiency in basic mathematics.

All students must pass the Computer Literacy assessment test before being admitted.

#### Award Outcomes

Utilize the elements and principles of design  
 Integrate the use of web technologies and design  
 Exhibit proficient use of technology workflow  
 Produce web sites that meet the industry standards for usability  
 Demonstrate use of programming language(s)  
 Demonstrate the roles and functions of working on a team

#### Career Opportunities

Web Design and Programming is an ever-changing and evolving professional career with many occupational categories and opportunities. One might find employment in a production environment, web development, web programming, customer service, customer support, sales, creative production, consulting or training.

#### Program Requirements

##### Technical Studies Required 27 Credits

MGDP1205	Fundamentals of Graphic Design	3
MGDP1210	Graphic Design Essentials	3
MGDP1250	Web Design & Development I	3
MGDP2050	Web Design & Development II	3
MGDP2100	Web Design/Production	3
MMVP1500	Concepts of Interactive Media	3
MMVP1570	Introduction to Programming for Designers	3
MMVP1580	Animation	3
MMVP2010	JavaScript for Designers	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 3 Credits

Any ARSP, ITEC, MGDP, or MMVP course that is not required for this award may be used as an elective.

Recommended:

MGDP1120	Introduction to Digital Photography	2
MGDP2215	Graphic Design Internship	1 - 12

##### Total Occupational Certificate Credits 30

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

MGDP1205	Fundamentals of Graphic Design	3
MGDP1210	Graphic Design Essentials	3
MGDP1250	Web Design & Development I	3
MMVP1500	Concepts of Interactive Media	3

MMVP1570	Introduction to Programming for Designers	3
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**Total credits 15**

**Second Semester**

MGDP2050	Web Design & Development II	3
MGDP2100	Web Design/Production	3
MMVP1580	Animation	3
MMVP2010	JavaScript for Designers	3
	Technical Studies Electives	3

**Total Credits 15**

**Technical Studies Electives**

Any Audio production (ARSP), Information Technology (ITEC), Graphic Design (MGDP) or Interactive Design and Video Production (MMVP) course that is not required for this award may be used to satisfy an elective requirement.

Recommended:

MGDP1120	Introduction to Digital Photography	2
MGDP2215	Graphic Design Internship	1 - 12

**Choose a Total of: 3 credits**

**Graduation (30 Credits)**

**Prerequisite:** Basic computer literacy, familiarity with the internet, college-level reading and communication ability, and proficiency in basic mathematics.

All students must pass the computer literacy assessment test before being admitted.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/1/2022 : BP 1516 / EP

**Interactive Design and Video Production**

## Animation and Motion Graphic Artist (BP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

Animators and motion graphics artists work for advertising companies, the film and video industry, and for digital design firms. They create the animations and visual effects in films, TV shows, video games, and commercials. The designer must be able to use professional written, verbal and visual communication skills, both with clients and other team members. Some jobs will require independent work and others will be part of a team effort.

#### Award Outcomes

Create assets for film, video, and games  
 Demonstrate the ability to generate mood, emotion, character, and story  
 Demonstrate mastery of animation and motion graphics software and technology  
 Create animations using both 2D and 3D techniques  
 Understand workflow and production processes in animation and motion graphics  
 Communicate ideas and production direction in both written and spoken forms  
 Produce a professional portfolio up to industry standards

#### Career Opportunities

Animators and motion graphic artists are needed to work on video games, movie and television special effects, and interactive media. They are also needed to work on 2D and 3D animated movies. In addition, growth will occur due to an increasing need for computer graphics in the growing number of mobile technologies. Occupational titles include animator, motion graphics artist, special effects designer, effects artists, digital artist, media designer, media artist, 3D designer, 3D artist, 2D and 3D animator, and concept artist.

### Program Requirements

#### Technical Studies Required 45 Credits

MMVP1500	Concepts of Interactive Media	3
MMVP1505	Introduction to Visual Communications	3
MMVP1511	Production Planning	4
MMVP1545	3D Basics	3
MMVP1562	Audio for Media	3
MMVP1580	Animation	3
	Choose either 2D Track	
MMVP1575	Storyboarding for Animation	3
MMVP2580	2D Animation Rigging and Compositing	3
	Or the 3D Track	
MMVP2045	3D Modeling	3
MMVP2055	3D Animation	3
MMVP2065	Advanced Animation Production	4
MMVP2560	After Effects	3
MMVP2565	Advanced After Effects	3
MMVP2600	Digital Post Production	4
MMVP2641	Portfolio Production	3
MGDP1340	Advanced Photoshop	3

#### General Education Required 15 Credits

COMM1280	Public Speaking	3
ENGL1300	Introduction to Creative Writing	3
	Choose three credits from MnTC Goal Area 2	3
	Choose three credits from MnTC Goal Areas 3, 4, or 5	3

Choose three credits from MnTC Goal Areas 6-10	3
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**General Education Elective 0 Credits****Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 60****Fall Start Semester Sequence****Offered at Brooklyn Park Only****First Semester**

MMVP1500	Concepts of Interactive Media	3
MMVP1505	Introduction to Visual Communications	3
MMVP1511	Production Planning	4
MMVP1580	Animation	3

Choose 3 credits from MnTC Goal Area 2	3
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**Total Credits 16****Second Semester**

MMVP1545	3D Basics	3
MMVP1562	Audio for Media	3
MMVP2560	After Effects	3
MMVP2600	Digital Post Production	4

COMM1280	Public Speaking	3
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**Total Credits 16****Third Semester**

MGDP1340	Advanced Photoshop	3
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	Choose either 2D Track	
MMVP1575	Storyboarding for Animation	3
MMVP2580	2D Animation Rigging and Compositing	3

	Or the 3D Track	
MMVP2045	3D Modeling	3
MMVP2055	3D Animation	3

MMVP2565	Advanced After Effects	3
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Choose three credits from MnTC Goal Areas 3, 4, or 5	3
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**Total Credits 15****Fourth Semester**

MMVP2065	Advanced Animation Production	4
MMVP2641	Portfolio Production	3

ENGL1300	Introduction to Creative Writing	3
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Choose three credits from MnTC Goal Areas 6-10	3
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**Total Credits 13****MnTC Goal Area 2**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

### Choose a Total of: 3 Credits

#### MnTC Goal Areas 3-5

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

### Choose a Total of: 3 Credits

#### MnTC Goal Area 6-10

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

### Choose a Total of: 3 Credits

#### Graduation (60 Credits)

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

3/30/2022 : BP 1109 / EP

### Spring Start Semester Sequence

#### Offered at Brooklyn Park Only

##### First Semester

MMVP1500	Concepts of Interactive Media	3
MMVP1511	Production Planning	4
MMVP1545	3D Basics	3
MMVP2560	After Effects	3
COMM1280	Public Speaking	3

#### Total Credits 16

##### Second Semester

MMVP1505	Introduction to Visual Communications	3
MMVP2600	or Digital Post Production	4
MMVP1575	Following 2D Track Storyboarding for Animation	3
	Choose three credits from MnTC Goal Areas 6-10	3
MMVP2045	Following 3D Track 3D Modeling	3
MMVP2055	3D Animation	3
MMVP1580	Animation	3
MMVP2565	Advanced After Effects	3

#### Total Credits 15 or 16

##### Third Semester

MGDP1340	Advanced Photoshop	3
MMVP1562	Audio for Media	3
MMVP2065	Advanced Animation Production	4
MMVP2641	Portfolio Production	3

Choose three credits from MnTC Goal Areas 3, 4, or 5 3

**Total Credits 16**

**Fourth Semester**

MMVP1505	Introduction to Visual Communications	3
	or	
MMVP2600	Digital Post Production	4
	Following 2D Track	
MMVP2580	2D Animation Rigging and Compositing	3
	Following 3D Track	
	Choose three credits from MnTC Goal Areas 6-10	3
ENGL1300	Introduction to Creative Writing	3
	Choose three credits from MnTC Goal Area 2	3

**Total Credits 12 or 13**

**MnTC Goal Area 2**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 3 Credits**

**MnTC Goal Areas 3-5**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 3 Credits**

**MnTC Goal Areas 6-10**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 3 Credits**

**Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Animation and Motion Graphic Artist (BP) Diploma

### Overview and Award Outcomes

#### Overview

Animators and motion graphics artists work for advertising companies, the film and video industry, and for digital design firms. They create the animations and visual effects in films, TV shows, video games, and commercials. The designer must be able to use professional written, verbal and visual communication skills, both with clients and other team members. Some jobs will require independent work and others will be part of a team effort.

#### Award Outcomes

Create assets for film, video, and games  
 Demonstrate the ability to generate mood, emotion, character, and story  
 Demonstrate mastery of animation and motion graphics software and technology  
 Create animations using both 2D and 3D techniques  
 Understand workflow and production processes in animation and motion graphics  
 Communicate ideas and production direction in both written and spoken forms  
 Produce a professional portfolio up to industry standards

#### Career Opportunities

Animators and motion graphic artists are needed to work on video games, movie and television special effects, and interactive media. They are also needed to work on 2D and 3D animated movies. In addition, growth will occur due to an increasing need for computer graphics in the growing number of mobile technologies. Occupational titles include animator, motion graphics artist, special effects designer, effects artists, digital artist, media designer, media artist, 3D designer, 3D artist, 2D and 3D animator, and concept artist.

### Program Requirements

#### Technical Studies Required 45 Credits

MMVP1500	Concepts of Interactive Media	3
MMVP1505	Introduction to Visual Communications	3
MMVP1511	Production Planning	4
MMVP1545	3D Basics	3
MMVP1562	Audio for Media	3
MMVP1580	Animation	3
	Choose either 2D Track	
MMVP1575	Storyboarding for Animation	3
MMVP2580	2D Animation Rigging and Compositing	3
	Or the 3D Track	
MMVP2045	3D Modeling	3
MMVP2055	3D Animation	3
MMVP2065	Advanced Animation Production	4
MMVP2560	After Effects	3
MMVP2565	Advanced After Effects	3
MMVP2600	Digital Post Production	4
MMVP2641	Portfolio Production	3
MGDP1340	Advanced Photoshop	3

#### General Education Required 6 Credits

COMM1280	Public Speaking	3
ENGL1300	Introduction to Creative Writing	3

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Diploma Credits 51

**Fall Start Semester Sequence****Offered at Brooklyn Park Only****First Semester**

MMVP1500	Concepts of Interactive Media	3
MMVP1505	Introduction to Visual Communications	3
MMVP1511	Production Planning	4
MMVP1580	Animation	3

**Total Credits 13****Second Semester**

MMVP1545	3D Basics	3
MMVP1562	Audio for Media	3
MMVP2560	After Effects	3
MMVP2600	Digital Post Production	4

**Total Credits 13****Third Semester**

MGDP1340	Advanced Photoshop	3
	Choose either 2D Track	
MMVP1575	Storyboarding for Animation	3
MMVP2580	2D Animation Rigging and Compositing	3
	Or the 3D Track	
MMVP2045	3D Modeling	3
MMVP2055	3D Animation	3
MMVP2565	Advanced After Effects	3

**Total Credits 12****Fourth Semester**

MMVP2065	Advanced Animation Production	4
MMVP2641	Portfolio Production	3
COMM1280	Public Speaking	3
ENGL1300	Introduction to Creative Writing	3

**Total Credits 13****Graduation (51 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/1/2022 : BP 1110 / EP

**Spring Start Semester Sequence****Offered at Brooklyn Park Only****First Semester**

MMVP1500	Concepts of Interactive Media	3
MMVP1511	Production Planning	4
MMVP1545	3D Basics	3
MMVP2560	After Effects	3
COMM1280	Public Speaking	3

**Total Credits 16****Second Semester**

MMVP1505	Introduction to Visual Communications	3
	or	
MMVP2600	Digital Post Production	4
	Following 2D Track	
MMVP1575	Storyboarding for Animation	3
ENGL1300	Introduction to Creative Writing	3
	Following 3D Track	
MMVP2045	3D Modeling	3
MMVP2055	3D Animation	3
MMVP1580	Animation	3
MMVP2565	Advanced After Effects	3

**Total Credits 15 or 16****Third Semester**

MGDP1340	Advanced Photoshop	3
MMVP1562	Audio for Media	3
MMVP2065	Advanced Animation Production	4
MMVP2641	Portfolio Production	3

**Total Credits 13****Fourth Semester**

MMVP1505	Introduction to Visual Communications	3
	or	
MMVP2600	Digital Post Production	4
	Following 2D Track	
MMVP2580	2D Animation Rigging and Compositing	3
	Following 3D Track	
ENGL1300	Introduction to Creative Writing	3

**Total Credits 9 or 10****Graduation (51 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Interactive Designer (BP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

The Interactive Designer is responsible for bringing design to digital screens. Design content is created for the web, apps, games, and movies. Focusing on the user interface and user experience (UI/UX) the Interactive Designer will create content that is user-centered, while showcasing design principles, color theory, and typography. The designer will develop written, verbal and visual communication skills, to use with both clients and other team members. Some projects will require independent work and others will be part of a team effort. This production work may include storyboards, wireframes, high-fidelity prototypes, websites, interactive kiosks, e-learning content, 2D and 3D animations, videos, and print materials.

#### Award Outcomes

Produce media solutions for clients  
 Analyze end-user needs  
 Demonstrate proficiency with industry-standard media production hardware and software  
 Demonstrate production workflows  
 Develop creative solutions with visual and audio techniques  
 Understand roles and function as a part of a production team  
 Develop positive and accurate written communications  
 Apply legal and ethical principles to personal, social, and professional behaviors

#### Career Opportunities

Interactive Designers with good artistic design skills are in high demand by media producers, film and animation companies, production houses, government agencies, printing houses, ad agencies, educational institutions and businesses who are engaged in local and global communications with outside customers or company employees.

### Program Requirements

#### Technical Studies Required 49 Credits

MMVP1500	Concepts of Interactive Media	3
MMVP1505	Introduction to Visual Communications	3
MMVP1511	Production Planning	4
MMVP1545	3D Basics	3
MMVP1562	Audio for Media	3
MMVP1570	Introduction to Programming for Designers	3
MMVP1580	Animation	3
MMVP2010	JavaScript for Designers	3
MMVP2030	UI/UX for Designers	3
MMVP2530	Advanced UI/UX for Designers	3
MMVP2560	After Effects	3
MMVP2641	Portfolio Production	3
MGDP1240	Illustrator	3
MGDP1250	Web Design & Development I	3
MGDP1340	Advanced Photoshop	3
MGDP2050	Web Design & Development II	3

#### General Education Required 15 Credits

COMM1280	Public Speaking	3
ENGL1300	Introduction to Creative Writing	3
	Choose three credits from MnTC Goal Area 2	3
	Choose three credits from MnTC Goal Areas 3, 4, or 5	3
	Choose three credits from MnTC Goal Areas 6-10	3

#### General Education Elective 0 Credits

**Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 64****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

MGDP1250	Web Design & Development I	3
MMVP1500	Concepts of Interactive Media	3
MMVP1505	Introduction to Visual Communications	3
MMVP1570	Introduction to Programming for Designers	3
MMVP1580	Animation	3

**Total Credits 15****Second Semester**

MGDP2050	Web Design & Development II	3
MMVP1511	Production Planning	4
MMVP1562	Audio for Media	3
MMVP2010	JavaScript for Designers	3
COMM1280	Public Speaking	3

**Total Credits 16****Summer Semester**

Choose three credits from MnTC Goal Areas 3, 4, or 5	3
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**Total Credits 3****Third Semester**

MGDP1240	Illustrator	3
MGDP1340	Advanced Photoshop	3
MMVP1545	3D Basics	3
MMVP2030	UI/UX for Designers	3
ENGL1300	Introduction to Creative Writing	3

**Total Credits 15****Fourth Semester**

MMVP2530	Advanced UI/UX for Designers	3
MMVP2560	After Effects	3
MMVP2641	Portfolio Production	3
Choose three credits from MnTC Goal Area 2	3	
Choose three credits from MnTC Goal Areas 6-10	3	

**Total Credits 15****MnTC Goal Area 2**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 3 Credits****MnTC Goal Areas 3, 4, or 5**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at

[www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 3 Credits**

**MnTC Goal Areas 6-10**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 3 Credits**

**Graduation (64 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/4/2022 : BP 1104 / EP

## Interactive Designer (BP) Diploma

### Overview and Award Outcomes

#### Overview

The Interactive Designer is responsible for bringing design to digital screens. Design content is created for the web, apps, games, and movies. Focusing on the user interface and user experience (UI/UX) the Interactive Designer will create content that is user-centered, while showcasing design principles, color theory, and typography. The designer will develop written, verbal and visual communication skills, to use with both clients and other team members. Some projects will require independent work and others will be part of a team effort. This production work may include storyboards, wireframes, high-fidelity prototypes, websites, interactive kiosks, e-learning content, 2D and 3D animations, videos, and print materials.

#### Award Outcomes

Produce media solutions for clients  
 Analyze end-user needs  
 Demonstrate proficiency with industry-standard media production hardware and software  
 Demonstrate production workflows  
 Develop creative solutions with visual and audio techniques  
 Understand roles and function as a part of a production team  
 Develop positive and accurate written communications  
 Apply legal and ethical principles to personal, social, and professional behaviors

#### Career Opportunities

Interactive Designers with good artistic design skills are in high demand by media producers, film and animation companies, production houses, government agencies, printing houses, ad agencies, educational institutions and businesses who are engaged in local and global communications with outside customers or company employees.

### Program Requirements

#### Technical Studies Required 49 Credits

MMVP1500	Concepts of Interactive Media	3
MMVP1505	Introduction to Visual Communications	3
MMVP1511	Production Planning	4
MMVP1545	3D Basics	3
MMVP1562	Audio for Media	3
MMVP1570	Introduction to Programming for Designers	3
MMVP1580	Animation	3
MMVP2010	JavaScript for Designers	3
MMVP2030	UI/UX for Designers	3
MMVP2530	Advanced UI/UX for Designers	3
MMVP2560	After Effects	3
MMVP2641	Portfolio Production	3
MGDP1240	Illustrator	3
MGDP1250	Web Design & Development I	3
MGDP1340	Advanced Photoshop	3
MGDP2050	Web Design & Development II	3

#### General Education Required 6 Credits

COMM1280	Public Speaking	3
ENGL1300	Introduction to Creative Writing	3

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Diploma Credits 55

#### Semester Sequence

**Offered at Brooklyn Park Only****First Semester**

MGDP1250	Web Design & Development I	3
MMVP1500	Concepts of Interactive Media	3
MMVP1505	Introduction to Visual Communications	3
MMVP1570	Introduction to Programming for Designers	3
MMVP1580	Animation	3

**Total Credits 15****Second Semester**

MGDP2050	Web Design & Development II	3
MMVP1511	Production Planning	4
MMVP1562	Audio for Media	3
MMVP2010	JavaScript for Designers	3
COMM1280	Public Speaking	3

**Total Credits 16****Third Semester**

MGDP1240	Illustrator	3
MGDP1340	Advanced Photoshop	3
MMVP1545	3D Basics	3
MMVP2030	UI/UX for Designers	3

**Total Credits 12****Fourth Semester**

MMVP2530	Advanced UI/UX for Designers	3
MMVP2560	After Effects	3
MMVP2641	Portfolio Production	3
ENGL1300	Introduction to Creative Writing	3

**Total Credits 12****Graduation (55 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Video Production Specialist (BP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

The Video Production Specialist will perform an ever-changing variety of video production tasks from writing scripts, capturing video and lighting, to digital non-linear editing. This person must have an understanding and ability to work with the latest technologies. Computers are a common tool and the Video Specialist must not only be creative, but have a technical grasp of new and evolving hardware and software applications as they relate to video production.

#### Award Outcomes

Produce media solutions for clients  
 Analyze end-user needs  
 Demonstrate proficiency with industry-standard media production hardware and software  
 Demonstrate production workflows  
 Develop creative solutions with visual and audio techniques  
 Define roles and function as a part of a production team  
 Develop positive and accurate written communications  
 Apply legal and ethical principles to personal, social, and professional behaviors

#### Career Opportunities

A Video Production Specialist has the potential for finding employment in the following areas: video production and animation houses, multimedia, web development companies, law firms, training departments in large and mid-size corporations, hospitals, television broadcast and cable stations. Related positions can also be found in sales as account executives for production companies or equipment rental suppliers/vendors.

### Program Requirements

#### Technical Studies Required 54 Credits

MMVP1500	Concepts of Interactive Media	3
MMVP1505	Introduction to Visual Communications	3
MMVP1511	Production Planning	4
MMVP1562	Audio for Media	3
MMVP1600	Introduction to Video Production	4
MMVP1605	Videography and Directing	4
MMVP1640	Social Media Production I	2
MGDP1645	Social Media Production II	2
MMVP1700	DSLR Video Production	3
MMVP2001	Advanced Lighting	3
MMVP2550	Video Field Production	3
MMVP2560	After Effects	3
MMVP2600	Digital Post Production	4
MMVP2605	Corporate Video Production	4
MMVP2615	DaVinci Resolve	3
MMVP2641	Portfolio Production	3
MGDP1230	Photoshop	3

#### General Education Required 15 Credits

COMM1280	Public Speaking	3
ENGL1300	Introduction to Creative Writing	3
	Choose three credits from MnTC Goal Area 2	3
	Choose three credits from MnTC Goal Areas 3, 4, or 5	3
	Choose three credits from MnTC Goal Areas 6-10	3

**General Education Elective 0 Credits****Technical Studies Elective 3 Credits**

Any Graphic Design (MGDP) or Interactive Design and Video Production (MMVP) course that is not required for this award may be used as an elective.

Recommended:

MMVP2630	Advanced Production Lab	1 - 8
MMVP2650	Interactive Design Video Production Internship	1 - 8

**Total Associate in Applied Science Degree Credits 72****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

MMVP1500	Concepts of Interactive Media	3
MMVP1505	Introduction to Visual Communications	3
MMVP1511	Production Planning	4
MMVP1600	Introduction to Video Production	4
MMVP1640	Social Media Production I	2
MGDP1645	Social Media Production II	2

**Total Credits 18****Second Semester**

MMVP1562	Audio for Media	3
MMVP1700	DSLR Video Production	3
MMVP2001	Advanced Lighting	3
MMVP2600	Digital Post Production	4
COMM1280	Public Speaking	3

**Total Credits 16****Summer Semester**

ENGL1300	Introduction to Creative Writing	3
	Choose three credits from MnTC Goal Areas 3, 4, or 5	3

**Total Credits 6****Third Semester**

MGDP1230	Photoshop	3
MMVP1605	Videography and Directing	4
MMVP2550	Video Field Production	3
	Technical Studies Electives	3
	Choose three credits from MnTC Goal Area 2	3

**Total Credits 16****Fourth Semester**

MMVP2560	After Effects	3
MMVP2605	Corporate Video Production	4
MMVP2615	DaVinci Resolve	3
MMVP2641	Portfolio Production	3
	Choose three credits from MnTC Goal Areas 6-10	3

**Total Credits 16****Technical Studies Electives**

Any Graphic Design (MGDP) or Interactive Design and Video Production (MMVP) course that are not required for this award may be used as an elective.

Recommended:

MMVP2630	Advanced Production Lab	1 - 8
MMVP2650	Interactive Design Video Production Internship	1 - 8

**Choose a Total of: 3 Credits****MnTC Goal Area 2**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 3 Credits****MnTC Goal Areas 3, 4, or 5**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 3 Credits****MnTC Goal Areas 6-10**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

**Choose a Total of: 3 Credits****Graduation (72 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Video Production Specialist (BP) Diploma

### Overview and Award Outcomes

#### Overview

The Video Production Specialist will perform an ever-changing variety of video production tasks from writing scripts, capturing video and lighting, to digital non-linear editing. This person must have an understanding and ability to work with the latest technologies. Computers are a common tool and the Video Specialist must not only be creative, but have a technical grasp of new and evolving hardware and software applications as they relate to video production.

#### Award Outcomes

Produce media solutions for clients  
 Analyze end-user needs  
 Demonstrate proficiency with industry-standard media production hardware and software  
 Demonstrate production workflows  
 Develop creative solutions with visual and audio techniques  
 Define roles and function as a part of a production team  
 Develop positive and accurate written communications  
 Apply legal and ethical principles to personal, social, and professional behaviors

#### Career Opportunities

A Video Production Specialist has the potential for finding employment in the following areas: video production and animation houses, multimedia, web development companies, law firms, training departments in large and mid-size corporations, hospitals, television broadcast and cable stations. Related positions can also be found in sales as account executives for production companies or equipment rental suppliers/vendors.

### Program Requirements

#### Technical Studies Required 54 Credits

MMVP1500	Concepts of Interactive Media	3
MMVP1505	Introduction to Visual Communications	3
MMVP1511	Production Planning	4
MMVP1562	Audio for Media	3
MMVP1600	Introduction to Video Production	4
MMVP1605	Videography and Directing	4
MMVP1640	Social Media Production I	2
MGDP1645	Social Media Production II	2
MMVP1700	DSLR Video Production	3
MMVP2001	Advanced Lighting	3
MMVP2550	Video Field Production	3
MMVP2560	After Effects	3
MMVP2600	Digital Post Production	4
MMVP2605	Corporate Video Production	4
MMVP2615	DaVinci Resolve	3
MMVP2641	Portfolio Production	3
MGDP1230	Photoshop	3

#### General Education Required 6 Credits

COMM1280	Public Speaking	3
ENGL1300	Introduction to Creative Writing	3

#### General Education Elective 0 Credits

#### Technical Studies Elective 4 Credits

Any Graphic Design (MGDP) or Interactive Design and Video Production (MMVP) course that is not required for this award may be used as an elective.

#### Recommended:

MMVP2630	Advanced Production Lab	1 - 8
MMVP2650	Interactive Design Video Production Internship	1 - 8

**Total Diploma Credits 64****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

MMVP1500	Concepts of Interactive Media	3
MMVP1505	Introduction to Visual Communications	3
MMVP1511	Production Planning	4
MMVP1600	Introduction to Video Production	4
MMVP1640	Social Media Production I	2
MGDP1645	Social Media Production II	2

**Total Credits 18****Second Semester**

MMVP1562	Audio for Media	3
MMVP1700	DSLR Video Production	3
MMVP2001	Advanced Lighting	3
MMVP2600	Digital Post Production	4
COMM1280	Public Speaking	3

**Total Credits 16****Third Semester**

MGDP1230	Photoshop	3
MMVP1605	Videography and Directing	4
MMVP2550	Video Field Production	3
ENGL1300	Introduction to Creative Writing	3

**Total Credits 13****Fourth Semester**

MMVP2560	After Effects	3
MMVP2605	Corporate Video Production	4
MMVP2615	DaVinci Resolve	3
MMVP2641	Portfolio Production	3
	Technical Studies Electives	4

**Total Credits 17****Technical Studies Electives**

Any Graphic Design (MGDP) or Interactive Video Design Production (MMVP) course that is not required for this award may be used as an elective.

**Recommended:**

MMVP2630	Advanced Production Lab	1 - 8
MMVP2650	Interactive Design Video Production Internship	1 - 8

**Choose a Total of: 1 Credit****Graduation (64 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Media Producer (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

This certificate provides training for setup, operation and preventative maintenance of multimedia equipment including sound systems, video and computer presentation equipment, speaker support and lighting equipment. These positions often require communication with presenters and other personnel to facilitate the use of media. It is necessary to have good problem solving skills, work well under pressure and have the ability to lift and move heavy equipment.

#### Award Outcomes

Demonstrate proficiency with industry-standard media production hardware and software

Demonstrate production workflows

Develop creative solutions with visual and audio techniques

Define roles and function as a part of a production team

Apply legal and ethical principles to personal, social, and professional behaviors

#### Career Opportunities

Primary employers include conference and convention centers, hotels and rental agencies, but any company or educational institution that has presentation facilities may also be a possible employer. Schedules may vary because of the seven day per week, as well as the evening operation of those facilities.

#### Program Requirements

##### Technical Studies Required 24 Credits

MMVP1500	Concepts of Interactive Media	3
MMVP1562	Audio for Media	3
MMVP1580	Animation	3
MMVP1600	Introduction to Video Production	4
MMVP1640	Social Media Production I	2
MGDP1645	Social Media Production II	2
MMVP2560	After Effects	3
MMVP2600	Digital Post Production	4

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 1 Credit

Any Graphic Design (MGDP) or Interactive Video Design Production (MMVP) course that is not required for this award may be used as an elective.

Recommended:

MMVP2650	Interactive Design Video Production Internship	1 - 8
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##### Total Occupational Certificate Credits 25

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

MMVP1500	Concepts of Interactive Media	3
MMVP1600	Introduction to Video Production	4
MMVP1640	Social Media Production I	2
MGDP1645	Social Media Production II	2
MMVP2600	Digital Post Production	4

##### Total Credits 15

##### Second Semester

MMVP1562	Audio for Media	3
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MMVP1580	Animation	3
MMVP2560	After Effects	3
	Technical Studies Electives	1

**Total Credits 10****Technical Studies Electives**

Any Graphic Design (MGDP) or Interactive Video Design Production (MMVP) course that is not required for this award may be used to satisfy an elective requirement.

Recommended:

MMVP2650	Interactive Design Video Production Internship	1 - 8
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**Choose a Total of: 1 Credit****Graduation (25 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/14/2022 : BP 1108 / EP

## Motion Graphics (BP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

In this advanced certificate students will learn 2D and 3D animation, visual effects, motion graphics, and 3D modeling. This certificate is for the student who already has a background in film or video.

Prerequisite: Video production and editing experience is required to enroll in this certificate program.

#### Award Outcomes

Create assets for film, video, and games

Demonstrate the ability to generate mood, emotion, character, and story

Demonstrate mastery of animation and motion graphics software and technology

Create animations using both 2D and 3D techniques

Understand workflow and production processes in animation and motion graphics

#### Career Opportunities

Animators and motion graphic artists are needed to work on video games, movie and television special effects, and interactive media. They are also needed to work on 3D animated movies. In addition, growth will occur due to an increasing need for computer graphics in the growing number of mobile technologies. Occupational titles include animator, motion graphics artist, special effects designer, effects artists, digital artist, media designer, media artist, 3D designer, 3D artist, and 3D animator, and concept artist.

#### Program Requirements

##### Technical Studies Required 15 Credits

MMVP1545	3D Basics	3
MMVP1580	Animation	3
MMVP2045	3D Modeling	3
MMVP2560	After Effects	3
MMVP2565	Advanced After Effects	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 3 Credits

Any ARSP, MGDP, or MMVP course not required for this award can be used as an elective.

##### Total Advanced Technical Certificate Credits 18

#### Spring Start Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

MMVP1545	3D Basics	3
MMVP1580	Animation	3
MMVP2560	After Effects	3

##### Total Credits 9

##### Second Semester

MMVP2045	3D Modeling	3
MMVP2565	Advanced After Effects	3
	Technical Studies Electives	3

##### Total Credits 9

#### Technical Studies Electives

Any Audio Production (ARSP), Graphic Design (MGDP), or Interactive Video Design Production (MMVP) course that is not

required for this award may be used to satisfy an elective requirement.

**Choose a Total of: 3 Credits**

**Graduation (18 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/14/2022 : BP 1111 / EP

# Service and Education

## Child Development

## Child Development (BP/EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

This degree is designed to prepare individuals for employment in a variety of early child care and educational settings as teachers, family child care providers or nannies. Persons working in this profession provide a healthy, safe and developmentally appropriate environment in support of families. Students learn how to plan age appropriate activities which recognize the diversity of children and families. This degree expands the student's knowledge of child development in areas of communication, writing and developmental skills.

#### Award Outcomes

Develop self-reflective habits as an early childhood professional  
 Implement developmentally appropriate curriculum and teaching practices  
 Apply developmental theories and practices  
 Implement assessment and curriculum cycle  
 Cultivate family and community relationships  
 Develop an environment that honors diversity

#### Career Opportunities

Job opportunities are available in child care centers, special needs programs, in home care (nanny), family child care, schoolage care, recreational and parent/child programs.

### Program Requirements

#### Technical Studies Required 44 Credits

CDEV1000	Introduction to Early Childhood Education	3
CDEV1010	Child Growth and Development	3
CDEV1020	Observation and Assessment	3
CDEV1030	Creative Activities and Environments	3
CDEV1520	Guiding Children's Behavior	3
CDEV1530	Health, Safety and Nutrition	3
CDEV1550	Curriculum Planning	3
CDEV1725	Practicum I	3
CDEV1750	Practicum II	3
CDEV2000	Children with Differing Abilities	3
CDEV2016	Leadership in Early Childhood	3
CDEV2075	Working with Diverse Families and Children	3
CDEV2125	Infant/Toddler Development and Learning	3
CDEV2500	Introduction to Language and Literacy	3
CDEV2230	Preschool Development and Learning	2
	or	
CDEV2255	Schoolage Development and Learning	2
	or	
CDEV2300	Multicultural Learning Experiences	2

#### General Education Required 16 Credits

ENGL1100	Writing and Research	4
	Choose one course from MnTC Goal Area 2	3
	Choose two courses from MnTC Goal Area 5	6
	Choose one course from MnTC Goal Area 7	3

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Associate in Applied Science Degree Credits 60

#### Semester Sequence - Full-Time

**Offered at Brooklyn Park and Eden Prairie****First Semester**

CDEV1000	Introduction to Early Childhood Education	3
CDEV1010	Child Growth and Development	3
CDEV1020	Observation and Assessment	3
CDEV1030	Creative Activities and Environments	3
ENGL1100	Writing and Research	4

**Total Credits 16****Second Semester**

CDEV1550	Curriculum Planning	3
CDEV2230	Preschool Development and Learning	2
	or	
CDEV2255	Schoolage Development and Learning	2
	or	
CDEV2300	Multicultural Learning Experiences	2
	Choose 3 credits from MnTC Goal Area 2	3
	Choose 6 credits from MnTC Goal Area 5	

**Total Credits 14****Third Semester**

CDEV1520	Guiding Children's Behavior	3
CDEV1530	Health, Safety and Nutrition	3
CDEV1725	Practicum I	3
CDEV2000	Children with Differing Abilities	3
CDEV2016	Leadership in Early Childhood	3

**Total Credits 15****Fourth Semester**

CDEV1750	Practicum II	3
CDEV2075	Working with Diverse Families and Children	3
CDEV2125	Infant/Toddler Development and Learning	3
CDEV2500	Introduction to Language and Literacy	3
	Choose 3 credits from MnTC Goal Area 7	3

**Total Credits 15****MnTC Goal Area 2**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3
MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

**Choose a Total of: 3 Credits****MnTC Goal Area 5**

ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3

**Choose a Total of: 6 Credits****MnTC Goal Area 7**

COMM1200	Intercultural Communication	3
COMM1250	Interpersonal Communication	3
MUSC1010	Influence of Pop/Rock Music	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3

**Choose a Total of: 3 Credits****Graduation (60 Credits)**

Criminal Background Studies: Minnesota law requires that any person who provides services that involve direct contact with children, patients, and residents at a health or child care facility licensed by the State of Minnesota must have a background study conducted by the state. Individuals with specified felony convictions are prohibited from having direct contact with children, patients, and residents of licensed facilities. Anyone refusing to cooperate in the criminal background study cannot participate in coursework that requires direct contact with children, patients or residents. Students who are disqualified from having direct patient/resident/child contact will not be able to participate in coursework which includes a practical experience. Therefore, completion of coursework for the program major will not be possible without documentation of a cleared background study.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice

5/23/2022 : BP 7004 / EP 7005

**Semester Sequence - Part-Time****Offered at Brooklyn Park and Eden Prairie****First Semester**

CDEV1000	Introduction to Early Childhood Education	3
CDEV1010	Child Growth and Development	3
CDEV1030	Creative Activities and Environments	3

**Total Credits 9****Second Semester**

CDEV1520	Guiding Children's Behavior	3
CDEV1530	Health, Safety and Nutrition	3
CDEV2230	Preschool Development and Learning or	2
CDEV2255	Schoolage Development and Learning or	2
CDEV2300	Multicultural Learning Experiences	2

**Total Credits 8****Summer Semester**

ENGL1100	Writing and Research	4
	Choose one course from MnTC Goal Area 5	3

**Total Credits 7****Third Semester**

CDEV1020	Observation and Assessment	3
CDEV2000	Children with Differing Abilities	3
CDEV2075	Working with Diverse Families and Children	3

**Total Credits 9****Fourth Semester**

CDEV1725	Practicum I	3
CDEV2125	Infant/Toddler Development and Learning	3
CDEV2500	Introduction to Language and Literacy	3

**Total Credits 9****Summer Semester**

	Choose one course from MnTC Goal Area 5	3
	Choose one course from MnTC Goal Area 7	3

**Total Credits 6****Fifth Semester**

CDEV1550	Curriculum Planning	3
CDEV1750	Practicum II	3

**Total Credits 6****Sixth Semester**

CDEV2016	Leadership in Early Childhood	3
	Choose one course from MnTC Goal Area 2	3

**Total Credits 6****MnTC Goal Area 2**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3
MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

**Choose a Total of: 3 Credits****MnTC Goal Area 5**

ECON1200	Principles of Microeconomics	3
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ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3

**Choose a Total of: 6 Credits****MnTC Goal Area 7**

COMM1200	Intercultural Communication	3
COMM1250	Interpersonal Communication	3
MUSC1010	Influence of Pop/Rock Music	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3

**Choose a Total of: 3 Credits****Graduation (60 Credits)**

Criminal Background Studies: Minnesota law requires that any person who provides services that involve direct contact with children, patients, and residents at a health or child care facility licensed by the State of Minnesota must have a background study conducted by the state. Individuals with specified felony convictions are prohibited from having direct contact with children, patients, and residents of licensed facilities. Anyone refusing to cooperate in the criminal background study cannot participate in coursework that requires direct contact with children, patients or residents. Students who are disqualified from having direct patient/resident/child contact will not be able to participate in coursework which includes a practical experience. Therefore, completion of coursework for the program major will not be possible without documentation of a cleared background study.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice

## Early Childhood Education Transfer Pathway (BP/EP) Associate of Science Degree

### Overview and Award Outcomes

#### Overview

The Early Childhood Education Transfer Pathway AS offers students a powerful option: the opportunity to complete an Associate of Science degree with course credits that directly transfer to designated Early Childhood Education bachelor's degree programs at Minnesota State universities. The curriculum has been specifically designed so that students completing this pathway degree and transferring to four of the seven Minnesota State universities\* enter the university with junior-year status. All courses in the Transfer Pathway associate degree will directly transfer and apply to the designated bachelor's degree programs in a related field.

\*Universities offering this degree within the Minnesota State system include Metropolitan State University; Minnesota State University Moorhead; Southwest Minnesota State University; and Winona State University.

#### Award Outcomes

Develop self-assessment habits as an early childhood professional  
 Implement developmentally appropriate curriculum and teaching practices  
 Apply developmental theories and practices  
 Implement assessment and curriculum cycle  
 Cultivate family and community relationships  
 Develop an environment that honors diversity

#### Career Opportunities

Job opportunities are available in child care centers, special needs programs, in home care (nanny), family child care, school age care, recreational and parent/child programs. Upon completion of an articulated bachelor's degree, there are expanded opportunities in early childhood programs, as well as the ability to teach through third grade in public school systems when a license is granted.

#### Program Requirements

##### Technical Studies Required 30 Credits

CDEV1000	Introduction to Early Childhood Education	3
CDEV1010	Child Growth and Development	3
CDEV1020	Observation and Assessment	3
CDEV1030	Creative Activities and Environments	3
CDEV1520	Guiding Children's Behavior	3
CDEV1530	Health, Safety and Nutrition	3
CDEV1725	Practicum I	3
CDEV2000	Children with Differing Abilities	3
CDEV2075	Working with Diverse Families and Children	3
CDEV2500	Introduction to Language and Literacy	3

##### General Education Required 30 Credits

BIOL1000	Biology in Society	4
	or	
PHYS2005	College Physics I	4
COMM1280	Public Speaking	3
ENGL1100	Writing and Research	4
MATH1400	College Algebra	4
PHIL1100	Critical Thinking for College Success	3
PSYC1000	General Psychology	3
	or	
PSYC1200	Psychology Throughout the Lifespan	3
	or	

PSYC1300	Abnormal Psychology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
	or	
	Choose one course from MnTC Goal Area 7	3
	Choose one course from MnTC Goal Area 6 or 8	3

**General Education Elective 0 Credits****Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 60****Semester Sequence - Full-Time****Offered at Brooklyn Park and Eden Prairie****First Semester**

CDEV1000	Introduction to Early Childhood Education	3
CDEV1010	Child Growth and Development	3
CDEV1020	Observation and Assessment	3
CDEV1030	Creative Activities and Environments	3
ENGL1100	Writing and Research	4

**Total Credits 16****Second Semester**

COMM1280	Public Speaking	3
MATH1400	College Algebra	4
PHIL1100	Critical Thinking for College Success	3
PSYC1000	General Psychology	3
	or	
PSYC1200	Psychology Throughout the Lifespan	3
	or	
PSYC1300	Abnormal Psychology	3

**Total Credits 13****Third Semester**

CDEV1520	Guiding Children's Behavior	3
CDEV1530	Health, Safety and Nutrition	3
CDEV2000	Children with Differing Abilities	3
BIOL1000	Biology in Society	4
	or	
PHYS2005	College Physics I	4
SOCI1200	Marriage and Family	3

**Total Credits 16****Fourth Semester**

CDEV1725	Practicum I	3
CDEV2075	Working with Diverse Families and Children	3
CDEV2500	Introduction to Language and Literacy	3
	Choose one course from MnTC Goal Area 6 or 8	3
	Choose one course from MnTC Goal Area 7	3

**Total Credits 15****MnTC Goal Area 6 or MnTC Goal Area 8**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

	MnTC Goal Area 6	
ARTS1000	Elements of Design	3
ARTS1005	Art and Social Justice	3
ARTS1050	Introduction to Art	3
ENGL1060	Food in Literature and Film	3
ENGL1300	Introduction to Creative Writing	3
MUSC1010	Influence of Pop/Rock Music	3
MUSC1015	World Music	3
MUSC1020	Class Guitar	3
PHIL1200	Ethics	3
PHIL1400	Medical Ethics	4
PHIL1500	World Religions	3
	or	
	MnTC Goal Area 8	
ARTS1050	Introduction to Art	3
BIOL1100	Nutrition and Health	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
MUSC1015	World Music	3
PHIL1500	World Religions	3

**Choose a Total of: 3 Credits****MnTC Goal Area 7**

COMM1200	Intercultural Communication	3
COMM1250	Interpersonal Communication	3
MUSC1010	Influence of Pop/Rock Music	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3

**Choose a Total of: 3 Credits****Graduation (60 Credits)**

60 credits completed with a 2.8 GPA or better

Criminal Background Studies: Minnesota law requires that any person who provides services that involve direct contact with children, patients, and residents at a health or child care facility licensed by the State of Minnesota must have a background study conducted by the state. Individuals with specified felony convictions are prohibited from having direct contact with children, patients, and residents of licensed facilities. Anyone refusing to cooperate in the criminal background study cannot participate in coursework that requires direct contact with children, patients or residents. Students who are disqualified from having direct patient/resident/child contact will not be able to participate in coursework which includes a practical experience. Therefore, completion of coursework for the program major will not be possible without documentation of a cleared background study.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice

5/23/2022 : BP BTEA / EP ETEA

**Semester Sequence - Part-Time****Offered at Brooklyn Park and Eden Prairie****First Semester**

CDEV1000	Introduction to Early Childhood Education	3
CDEV1010	Child Growth and Development	3
ENGL1100	Writing and Research	4
<b>Total Credits 10</b>		
<b>Second Semester</b>		
CDEV1030	Creative Activities and Environments	3
CDEV2500	Introduction to Language and Literacy	3
PHIL1100	Critical Thinking for College Success	3
<b>Total Credits 9</b>		
<b>Summer Semester</b>		
	Choose one course from MnTC Goal Area 6 or 8	3
<b>Total Credits 3</b>		
<b>Third Semester</b>		
CDEV1020	Observation and Assessment	3
CDEV1520	Guiding Children's Behavior	3
CDEV2000	Children with Differing Abilities	3
<b>Total Credits 9</b>		
<b>Fourth Semester</b>		
CDEV1530	Health, Safety and Nutrition	3
BIOL1000	Biology in Society	4
PHYS2005	or College Physics I	4
COMM1280	Public Speaking	3
<b>Total Credits 10</b>		
<b>Summer Semester</b>		
SOCI1400	Race in America	3
	or Choose one course from MnTC Goal Area 7	3
<b>Total Credits 3</b>		
<b>Fifth Semester</b>		
CDEV2075	Working with Diverse Families and Children	3
MATH1400	College Algebra	4
SOCI1200	Marriage and Family	3
<b>Total Credits 10</b>		
<b>Sixth Semester</b>		
CDEV1725	Practicum I	3
PSYC1000	General Psychology	3
PSYC1200	or Psychology Throughout the Lifespan	3
PSYC1300	or Abnormal Psychology	3

**Total Credits 6****MnTC Goal Area 6 or MnTC Goal Area 8**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

	MnTC Goal Area 6	
ARTS1000	Elements of Design	3
ARTS1005	Art and Social Justice	3
ARTS1050	Introduction to Art	3
ENGL1060	Food in Literature and Film	3
ENGL1300	Introduction to Creative Writing	3
MUSC1010	Influence of Pop/Rock Music	3
MUSC1015	World Music	3
MUSC1020	Class Guitar	3
PHIL1200	Ethics	3
PHIL1400	Medical Ethics	4
PHIL1500	World Religions	3
	or	
	MnTC Goal Area 8	
ARTS1050	Introduction to Art	3
BIOL1100	Nutrition and Health	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
MUSC1015	World Music	3
PHIL1500	World Religions	3

**Choose a Total of: 3 Credits****MnTC Goal Area 7**

COMM1200	Intercultural Communication	3
COMM1250	Interpersonal Communication	3
MUSC1010	Influence of Pop/Rock Music	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3

**Choose a Total of: 3 Credits****Graduation (60 Credits)**

60 credits completed with a 2.8 GPA or better

Criminal Background Studies: Minnesota law requires that any person who provides services that involve direct contact with children, patients, and residents at a health or child care facility licensed by the State of Minnesota must have a background study conducted by the state. Individuals with specified felony convictions are prohibited from having direct contact with children, patients, and residents of licensed facilities. Anyone refusing to cooperate in the criminal background study cannot participate in coursework that requires direct contact with children, patients or residents. Students who are disqualified from having direct patient/resident/child contact will not be able to participate in coursework which includes a practical experience. Therefore, completion of coursework for the program major will not be possible without documentation of a cleared background study.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice

## Child Development (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

This diploma provides students with the skills necessary to work in a variety of child care careers. Skills to be developed include planning age appropriate activities which recognize the diversity of children and families. In addition, students will practice guidance techniques and supervise snack, cleanup and other daily routines to provide for a safe and healthy environment.

#### Award Outcomes

Develop self-reflective habits as an early childhood professional  
 Implement developmentally appropriate curriculum and teaching practices  
 Apply developmental theories and practices  
 Implement assessment and curriculum cycle

#### Career Opportunities

Job opportunities are available in child care centers, special needs programs, in home care (nanny), family child care, schoolage care, recreational and parent/child programs.

### Program Requirements

#### Technical Studies Required 24 Credits

CDEV1000	Introduction to Early Childhood Education	3
CDEV1010	Child Growth and Development	3
CDEV1020	Observation and Assessment	3
CDEV1030	Creative Activities and Environments	3
CDEV1520	Guiding Children's Behavior	3
CDEV1530	Health, Safety and Nutrition	3
CDEV1550	Curriculum Planning	3
CDEV1725	Practicum I	3

#### General Education Required 4 Credits

ENGL1100	Writing and Research	4
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#### General Education Elective 0 Credits

#### Technical Studies Elective 3 Credits

	Recommended:	
CDEV1750	Practicum II	3
CDEV2000	Children with Differing Abilities	3
CDEV2016	Leadership in Early Childhood	3
CDEV2075	Working with Diverse Families and Children	3
CDEV2125	Infant/Toddler Development and Learning	3
CDEV2500	Introduction to Language and Literacy	3

### Total Diploma Credits 31

### Semester Sequence - Full-Time

#### Offered at Brooklyn Park and Eden Prairie

#### First Semester

CDEV1000	Introduction to Early Childhood Education	3
CDEV1010	Child Growth and Development	3
CDEV1020	Observation and Assessment	3
CDEV1530	Health, Safety and Nutrition	3
ENGL1100	Writing and Research	4

### Total Credits 16

#### Second Semester

CDEV1030	Creative Activities and Environments	3
CDEV1520	Guiding Children's Behavior	3
CDEV1550	Curriculum Planning	3
CDEV1725	Practicum I	3
	Technical Studies Electives	3

**Total Credits 15****Technical Studies Electives**

	Recommended:	
CDEV1750	Practicum II	3
CDEV2000	Children with Differing Abilities	3
CDEV2075	Working with Diverse Families and Children	3
CDEV2125	Infant/Toddler Development and Learning	3
CDEV2500	Introduction to Language and Literacy	3

**Choose a Total of: 3 Credits****Graduation (31 Credits)****Criminal Background Studies:**

Minnesota law requires that any person who provides services that involve direct contact with children, patients, and residents at a health or child care facility licensed by the State of Minnesota must have a background study conducted by the state. Individuals with specified felony convictions are prohibited from having direct contact with children, patients, and residents of licensed facilities. Anyone refusing to cooperate in the criminal background study cannot participate in coursework that requires direct contact with children, patients or residents. Students who are disqualified from having direct patient/resident/child contact will not be able to participate in coursework which includes a practical experience. Therefore, completion of coursework for the program major will not be possible without documentation of a cleared background study.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

5/23/2022 : BP 7006 / EP 7007

**Semester Sequence - Part-Time****Offered at Brooklyn Park and Eden Prairie****First Semester**

CDEV1000	Introduction to Early Childhood Education	3
CDEV1010	Child Growth and Development	3

**Total Credits 6****Second Semester**

CDEV1520	Guiding Children's Behavior	3
	Technical Studies Electives	3

**Total Credits 6****Summer Semester**

ENGL1100	Writing and Research	4
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**Total Credits 4****Third Semester**

CDEV1020	Observation and Assessment	3
CDEV1550	Curriculum Planning	3

**Total Credits 6****Fourth Semester**

CDEV1530	Health, Safety and Nutrition	3
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**Total Credits 3**

**Fifth Semester**

CDEV1030	Creative Activities and Environments	3
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**Total Credits 3**

**Sixth Semester**

CDEV1725	Practicum I	3
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**Total Credits 3**

**Technical Studies Electives**

	Recommended:	
CDEV1750	Practicum II	3
CDEV2000	Children with Differing Abilities	3
CDEV2075	Working with Diverse Families and Children	3
CDEV2125	Infant/Toddler Development and Learning	3
CDEV2500	Introduction to Language and Literacy	3

**Choose a Total of: 3 Credits**

**Graduation (31 Credits)**

**Criminal Background Studies:**

Minnesota law requires that any person who provides services that involve direct contact with children, patients, and residents at a health or child care facility licensed by the State of Minnesota must have a background study conducted by the state. Individuals with specified felony convictions are prohibited from having direct contact with children, patients, and residents of licensed facilities. Anyone refusing to cooperate in the criminal background study cannot participate in coursework that requires direct contact with children, patients or residents. Students who are disqualified from having direct patient/resident/child contact will not be able to participate in coursework which includes a practical experience. Therefore, completion of coursework for the program major will not be possible without documentation of a cleared background study.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

5/23/2022 : BP 7006 / EP 7007

**Culinary Arts**

## Culinary Arts (BP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

The Culinary Arts A.A.S. degree prepares individuals for career opportunities in hotels, restaurants, clubs and institutional food service facilities. Responsibilities may include menu planning, purchasing food, equipment, and supplies, selecting, and developing recipes, selecting and using various food preparation methods and techniques. Management duties may include, but are not limited to financial planning, hiring, training and supervising employees.

#### Award Outcomes

Prepare high quality food in a cost effective and efficient manner as utilized in professional foodservice operations

Demonstrate ability to meet Certified Culinarian requirements of the American Culinary Federation

Exhibit knowledge and hands-on ability to perform the activities of all key personnel engaged in food service production operations

Design a variety of menus, select recipes, plan food consumption, procure appropriate products, properly store items and prepare them to American Culinary Federation accepted professional standards

Apply mathematical, reading, and communication skills essential to the food service industry

Practice positive human relationship skills with the diverse population of the hospitality industry employees and guests

Create a professional career plan utilizing portfolio format

#### Career Opportunities

Employment may be found in hotels, restaurants, clubs, health care facilities, schools, resorts and many other food related operations. Depending on qualifications and experience numerous positions are available to graduates such as restaurant cooks, banquet cooks, bakers, assistant pastry chefs, pantry personnel, kitchen managers, food salespersons, personal chefs, purchasing clerks, caterers, and entry-level chef/managers are some of the many career positions possible upon course completion. Students who complete the Culinary Arts program are eligible to pursue American Culinary Federation certification. The American Culinary Federation accrediting commission nationally accredits the curriculum at Hennepin Technical College.

### Program Requirements

#### Technical Studies Required 50 Credits

CULA1000	Culinary Calculations	1
CULA1106	Culinary Culture and Industry	2
CULA1117	Sanitation and Safety	2
CULA1126	Foundations of Baking and Pastry	4
CULA1136	Garde Manger and Entremétier	4
CULA1156	Classic Culinary Techniques	4
CULA1290	International and Regional Pastry	4
CULA1301	Culinary Arts Nutrition	2
CULA1321	Decorative Work and Showpieces	2
CULA1325	Menu Planning	2
CULA1335	Purchasing and Cost Control	2
CULA1526	Dining Experience and Expectations	3
CULA1535	Advanced Garde Manger and Entremétier	4
CULA1540	Advanced Culinary Techniques	4
CULA1700	Human Relations Management	2
CULA1710	Beverage Management	2
CULA2056	Global Cuisine	4
CULA2075	Catering	2

#### General Education Required 15 Credits

COMM1250	Interpersonal Communication	3
ENGL1060	Food in Literature and Film	3
ENGL1070	Technical Writing	3
PHIL1100	Critical Thinking for College Success	3
SOCI1600	Food and Society	3

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

**Total Associate in Applied Science Degree Credits 65****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

CULA1000	Culinary Calculations	1
CULA1106	Culinary Culture and Industry	2
CULA1117	Sanitation and Safety	2
CULA1126	Foundations of Baking and Pastry	4
CULA1136	Garde Manger and Entremétier	4
CULA1156	Classic Culinary Techniques	4

**Total Credits 17****Second Semester**

CULA1301	Culinary Arts Nutrition	2
CULA1325	Menu Planning	2
CULA1335	Purchasing and Cost Control	2
CULA2056	Global Cuisine	4
PHIL1100	Critical Thinking for College Success	3
SOCI1600	Food and Society	3

**Total Credits 16****Third Semester**

CULA1290	International and Regional Pastry	4
CULA1526	Dining Experience and Expectations	3
CULA1535	Advanced Garde Manger and Entremétier	4
CULA1540	Advanced Culinary Techniques	4

**Total Credits 15****Fourth Semester**

CULA1321	Decorative Work and Showpieces	2
CULA1700	Human Relations Management	2
CULA1710	Beverage Management	2
CULA2075	Catering	2
COMM1250	Interpersonal Communication	3
ENGL1060	Food in Literature and Film	3
ENGL1070	Technical Writing	3

**Total Credits 17****Graduation (65 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Culinary Entrepreneur (BP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

The Culinary Entrepreneur A.A.S. degree prepares individuals for career opportunities in restaurants, institutional food service facilities, food trucks, and other entrepreneur opportunities. Culinary responsibilities include menu planning, purchasing food, equipment, and supplies, selecting, and developing recipes, selecting and using various food preparation methods and techniques. Entrepreneur training will provide students with the innovation, management, marketing, communication and financial skills required to successfully start and run a culinary business. The program gives students a basic background in the theory, process and practice of culinary entrepreneurship. Courses for the program are delivered in a mix of classroom and online formats.

#### Award Outcomes

Prepare high quality food in a cost effective and efficient manner as utilized in professional foodservice operations  
Exhibit knowledge and hands-on ability to perform the activities of all key personnel engaged in food service production operations

Design a variety of menus, select recipes, plan food consumption, procure appropriate products, properly store items and prepare them to accepted professional standards

Demonstrate interpersonal and team building skills

Demonstrate oral and written communications skills

Practice inclusive human relationship skills with the diverse populations throughout the hospitality industry

Create a professional career plan utilizing portfolio format

Demonstrate innovative thinking in the development of culinary business models, products and services

Apply operations concepts to solving business problems

#### Career Opportunities

Starting, buying, or managing a culinary business is a solid career option for students. In recent years, the allure of entrepreneurship has increased in the food industry, particularly in the food truck sector. In addition to entrepreneur opportunities, and depending on qualifications and experience, numerous positions are also available to graduates such as restaurant cooks, banquet cooks, bakers, assistant pastry chefs, pantry personnel, kitchen managers, food salespersons, personal chefs, purchasing clerks, caterers, and entry-level chef/managers are some of the many career positions possible upon course completion.

### Program Requirements

#### Technical Studies Required 45 Credits

CULA1000	Culinary Calculations	1
CULA1106	Culinary Culture and Industry	2
CULA1117	Sanitation and Safety	2
CULA1126	Foundations of Baking and Pastry	4
CULA1136	Garde Manger and Entremétier	4
CULA1156	Classic Culinary Techniques	4
CULA1260	Food Truck Foundations	3
CULA1301	Culinary Arts Nutrition	2
CULA1325	Menu Planning	2
CULA1335	Purchasing and Cost Control	2
CULA1700	Human Relations Management	2
CULA2060	Food Truck Operations	4
ACCT1000	Introduction to Accounting	3
BUSN1510	Entrepreneurship	3
BUSN2015	Marketing Applications	3
BUSN2085	Small Business Operations	4

#### General Education Required 15 Credits

COMM1250	Interpersonal Communication	3
ENGL1060	Food in Literature and Film	3
ENGL1070	Technical Writing	3
PHIL1100	Critical Thinking for College Success	3
SOCI1600	Food and Society	3

**General Education Elective 0 Credits****Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 60****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

CULA1000	Culinary Calculations	1
CULA1106	Culinary Culture and Industry	2
CULA1117	Sanitation and Safety	2
CULA1126	Foundations of Baking and Pastry	4
CULA1136	Garde Manger and Entremétier	4
CULA1156	Classic Culinary Techniques	4

**Total Credits 17****Second Semester**

CULA1260	Food Truck Foundations	3
CULA1301	Culinary Arts Nutrition	2
CULA1325	Menu Planning	2
CULA1335	Purchasing and Cost Control	2
PHIL1100	Critical Thinking for College Success	3
SOCI1600	Food and Society	3

**Total Credits 15****Third Semester**

CULA1700	Human Relations Management	2
CULA2060	Food Truck Operations	4
ACCT1000	Introduction to Accounting	3
BUSN1510	Entrepreneurship	3
COMM1250	Interpersonal Communication	3

**Total Credits 15****Fourth Semester**

BUSN2015	Marketing Applications	3
BUSN2085	Small Business Operations	4
ENGL1060	Food in Literature and Film	3
ENGL1070	Technical Writing	3

**Total Credits 13****Graduation (65 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

# Baking and Pastry Entrepreneur (BP) Associate in Applied Science Degree

## Overview and Award Outcomes

### Overview

The Baking and Pastry Entrepreneur A.A.S. degree prepares individuals for career opportunities to run independently-owned bakeries and restaurants, as well as leadership opportunities in other food service businesses. Baking and pastry students will learn cake decorating, chocolates and confection sugars, plate presentation, fundamentals of baking, cost control, nutritional components of food and desserts, and basic supervisory skills. Additionally, entrepreneur training will provide students with the innovation, management, marketing, communication, and financial skills required to successfully start and run a culinary business. The program provides students a basic background in the theory, process and practice of culinary entrepreneurship. Courses for the program are delivered through a combination of classroom and online formats.

### Award Outcomes

Prepare high quality baked goods, pastries, and sauces in a cost effective and efficient manner as utilized in professional foodservice operations

Develop knowledge in baking and pastry production operations

Create a variety of menus, based on selected recipes for baked goods consumption

Demonstrate accepted safety and sanitation standards when storing and preparing baked goods

Demonstrate interpersonal and team building skills

Demonstrate oral and written communications skills

Practice inclusive human relationship skills as part of the diverse hospitality industry

Create a professional career plan utilizing a portfolio format

Demonstrate innovative thinking in the development of culinary business models, products, and services

Apply operations concepts to solving business problems

### Career Opportunities

Starting, buying, or managing a culinary business is a solid career option for students. In recent years, the allure of entrepreneurship has increased in the food industry, particularly in the food truck sector. In addition to entrepreneur opportunities, and depending on qualifications and experience, numerous positions are available to graduates such as restaurant cooks, banquet cooks, bakers, assistant pastry chefs, pantry personnel, kitchen managers, food salespersons, personal chefs, purchasing clerks, caterers, and entry-level chef/managers.

### Program Requirements

#### Technical Studies Required 45 Credits

CULA1117	Sanitation and Safety	2
CULA1126	Foundations of Baking and Pastry	4
CULA1270	Creams, Custards, Mousses, and Sauces	2
CULA1275	Artisan Breads	4
CULA1280	Chocolates and Confections	2
CULA1290	International and Regional Pastry	4
CULA1295	Entremets and Specialty Cakes	2
CULA1301	Culinary Arts Nutrition	2
CULA1325	Menu Planning	2
CULA1335	Purchasing and Cost Control	2
CULA1700	Human Relations Management	2
CULA2090	Advanced Baking for Health and Special-Needs	2
CULA2185	Baking and Pastry Capstone	2
ACCT1000	Introduction to Accounting	3
BUSN1510	Entrepreneurship	3
BUSN2015	Marketing Applications	3
BUSN2085	Small Business Operations	4

#### General Education Required 15 Credits

COMM1250	Interpersonal Communication	3
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ENGL1060	Food in Literature and Film	3
ENGL1070	Technical Writing	3
PHIL1100	Critical Thinking for College Success	3
SOCI1600	Food and Society	3

**General Education Elective 0 Credits****Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 60****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

CULA1117	Sanitation and Safety	2
CULA1126	Foundations of Baking and Pastry	4
CULA1270	Creams, Custards, Mousses, and Sauces	2
CULA1275	Artisan Breads	4
PHIL1100	Critical Thinking for College Success	3

**Total Credits 15****Second Semester**

BUSN1510	Entrepreneurship	3
CULA1280	Chocolates and Confections	2
CULA1290	International and Regional Pastry	4
CULA1295	Entremets and Specialty Cakes	2
CULA1301	Culinary Arts Nutrition	2
ENGL1060	Food in Literature and Film	3

**Total Credits 16****Third Semester**

CULA1325	Menu Planning	2
CULA1335	Purchasing and Cost Control	2
CULA1700	Human Relations Management	2
CULA2090	Advanced Baking for Health and Special-Needs	2
COMM1250	Interpersonal Communication	3
SOCI1600	Food and Society	3

**Total Credits 14****Fourth Semester**

ACCT1000	Introduction to Accounting	3
BUSN2015	Marketing Applications	3
BUSN2085	Small Business Operations	4
CULA2185	Baking and Pastry Capstone	2
ENGL1070	Technical Writing	3

**Total Credits 15****Graduation (60 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Baking and Pastry Entrepreneur (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

The Baking and Pastry certificate prepares individuals for entry into the baking and pastry industry, including opportunities to work in independently-owned bakeries and restaurants, as well as opportunities in other food service businesses. Baking and pastry students will learn cake decorating, chocolates and confection sugars, plate presentation, and fundamentals of baking and pastry.

#### Award Outcomes

Prepare high quality baked goods, pastries, and sauces in a cost effective and efficient manner as utilized in professional foodservice operations

Develop knowledge in baking and pastry production operations

Create a variety of menus, based on selected recipes for baked goods consumption

Follow accepted safety and sanitation standards when storing and preparing baked goods

#### Career Opportunities

Starting, buying, or managing a baking and pastry business is a rewarding career option for students. In addition to entrepreneur opportunities, and depending on qualifications and experience, numerous positions are also available to graduates such as restaurant bakers, assistant pastry chefs, pantry personnel, kitchen managers, food salespersons, personal chefs, purchasing clerks, caterers, and entry-level chef/managers.

#### Program Requirements

##### Technical Studies Required 20 Credits

CULA1117	Sanitation and Safety	2
CULA1126	Foundations of Baking and Pastry	4
CULA1270	Creams, Custards, Mousses, and Sauces	2
CULA1275	Artisan Breads	4
CULA1280	Chocolates and Confections	2
CULA1290	International and Regional Pastry	4
CULA1295	Entremets and Specialty Cakes	2

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 20

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

CULA1117	Sanitation and Safety	2
CULA1126	Foundations of Baking and Pastry	4
CULA1270	Creams, Custards, Mousses, and Sauces	2
CULA1275	Artisan Breads	4

##### Total Credits 12

##### Second Semester

CULA1280	Chocolates and Confections	2
CULA1290	International and Regional Pastry	4
CULA1295	Entremets and Specialty Cakes	2

**Total Credits 8**

**Graduation (20 credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/9/2022 : BP 7120 / EP

## Pastry Entrepreneur (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

The Pastry Entrepreneur certificate builds upon baking and pastry foundational skills, preparing students for career opportunities to run independently-owned bakeries and restaurants, as well as leadership opportunities in other food service businesses. Baking and pastry students learn more specialty baking skills, cost control, menu planning, nutritional components of foods and desserts, and basic supervisory skills. Additionally, entrepreneur training provide students with the innovation, management, marketing, communication, and financial skills required to successfully start and run a culinary business. The program gives students a basic background in the theory, process, and practice of culinary entrepreneurship. Courses for the program are delivered in a mix of classroom and online formats.

#### Award Outcomes

Prepare high quality baked goods, pastries, and sauces in a cost effective and efficient manner as utilized in professional foodservice operations

Develop knowledge in baking and pastry production operations

Create a variety of menus, based on selected recipes for baked goods consumption

Follow accepted safety and sanitation standards when storing and preparing baked goods

Practice inclusive human relationship skills as part of the diverse hospitality industry

Create a professional career plan utilizing portfolio format

Demonstrate innovative thinking in the development of culinary business models, products and services

Apply operations concepts to solving business problems

#### Career Opportunities

Starting, buying, or managing a culinary business is a solid career option for students. In recent years, the allure of entrepreneurship has increased in the food industry, particularly in the food truck sector. In addition to entrepreneur opportunities, and depending on qualifications and experience, numerous positions are also available to graduates such as restaurant cooks, banquet cooks, bakers, assistant pastry chefs, pantry personnel, kitchen managers, food salespersons, personal chefs, purchasing clerks, caterers, and entry-level chef/managers.

#### Program Requirements

##### Technical Studies Required 25 Credits

CULA1301	Culinary Arts Nutrition	2
CULA1325	Menu Planning	2
CULA1335	Purchasing and Cost Control	2
CULA1700	Human Relations Management	2
CULA2090	Advanced Baking for Health and Special-Needs	2
CULA2185	Baking and Pastry Capstone	2
ACCT1000	Introduction to Accounting	3
BUSN1510	Entrepreneurship	3
BUSN2015	Marketing Applications	3
BUSN2085	Small Business Operations	4

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 25

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

BUSN1510	Entrepreneurship	3
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CULA1301	Culinary Arts Nutrition	2
CULA1325	Menu Planning	2
CULA1335	Purchasing and Cost Control	2
CULA1700	Human Relations Management	2
CULA2090	Advanced Baking for Health and Special-Needs	2

**Total Credits 13**

**Second Semester**

ACCT1000	Introduction to Accounting	3
BUSN2015	Marketing Applications	3
BUSN2085	Small Business Operations	4
CULA2185	Baking and Pastry Capstone	2

**Total Credits 12**

**Graduation (25 credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/6/2022 : BP 7121 / EP

## Culinary Assistant (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

Completion of this certificate will prepare students who are primarily interested in immediate entry-level employment in the foodservice industry. Areas of study will include, but are not limited to: foodservice related mathematics, weights and measures, use of knives and foodservice equipment, product identification, basic baking techniques, product fabricating, preparations of stocks, sauces and soups and fundamental cooking methods and techniques.

#### Award Outcomes

Prepare high quality food in a cost effective and efficient manner as utilized in professional foodservice operations  
Exhibit knowledge and hands-on ability to perform the activities of all key personnel engaged in food service production operations

Apply mathematical, reading, and communication skills essential to the food service industry

Practice inclusive human relationship skills with the diverse populations throughout the hospitality industry

#### Career Opportunities

Career opportunities may be found in hotels, restaurants, clubs, health care facilities, schools, resorts and many other food related operations. Numerous positions are available to graduates with this certificate, such as restaurant cooks, banquet cooks, bakers, assistant pastry chefs, pantry personnel, kitchen managers, food salespersons, personal chefs, purchasing clerks, caterers, and entry-level chef/managers. Completion of this certificate is a strong foundation on which to build your culinary career.

#### Program Requirements

##### Technical Studies Required 17 Credits

CULA1000	Culinary Calculations	1
CULA1106	Culinary Culture and Industry	2
CULA1117	Sanitation and Safety	2
CULA1126	Foundations of Baking and Pastry	4
CULA1136	Garde Manger and Entremétier	4
CULA1156	Classic Culinary Techniques	4

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 17

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

CULA1000	Culinary Calculations	1
CULA1106	Culinary Culture and Industry	2
CULA1117	Sanitation and Safety	2
CULA1126	Foundations of Baking and Pastry	4
CULA1136	Garde Manger and Entremétier	4
CULA1156	Classic Culinary Techniques	4

##### Total Credits 17

#### Graduation (17 credits)

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/6/2022 : BP 7110 / EP

## Culinary and Food Truck Entrepreneur (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

This Culinary and Food Truck Entrepreneur certificate prepares individuals for career opportunities in restaurants, institutional food service facilities, food trucks, and other entrepreneur opportunities. Culinary responsibilities include menu planning; purchasing food, equipment, and supplies; selecting and developing recipes; and selecting and using various food preparation methods and techniques. Entrepreneur training will provide students with the innovation, management, marketing, communication and financial skills required to successfully start and run a culinary business. This certificate gives students a basic background in the theory, process and practice of culinary entrepreneurship.

#### Award Outcomes

- Prepare high quality food in a cost effective and efficient manner as utilized in professional foodservice operations
- Exhibit knowledge and hands-on ability to perform the activities of all key personnel engaged in food service production operations
- Design a variety of menus, select recipes, plan food consumption, procure appropriate products, properly store items and prepare them to accepted professional standards
- Demonstrate interpersonal and team building skills
- Demonstrate oral and written communications skills necessary in the culinary industry
- Practice inclusive human relationship skills with the diverse populations throughout the hospitality industry
- Demonstrate innovative thinking in the development of culinary business models, products and services
- Apply operations concepts to solving business problems

#### Career Opportunities

Starting, buying, or managing a culinary business is a solid career option for students. In recent years, the allure of entrepreneurship has increased in the food industry, particularly in the food truck sector. In addition to entrepreneur opportunities, and depending on qualifications and experience, numerous positions are also available to graduates such as restaurant cooks, banquet cooks, bakers, assistant pastry chefs, pantry personnel, kitchen managers, food salespersons, personal chefs, purchasing clerks, caterers, and entry-level chef/managers.

#### Program Requirements

##### Technical Studies Required 30 Credits

CULA1117	Sanitation and Safety	2
CULA1260	Food Truck Foundations	3
CULA1301	Culinary Arts Nutrition	2
CULA1325	Menu Planning	2
CULA1335	Purchasing and Cost Control	2
CULA1700	Human Relations Management	2
CULA2060	Food Truck Operations	4
ACCT1000	Introduction to Accounting	3
BUSN1510	Entrepreneurship	3
BUSN2015	Marketing Applications	3
BUSN2085	Small Business Operations	4

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 30

##### Semester Sequence

**Offered at Brooklyn Park Only****First Semester**

CULA1117	Sanitation and Safety	2
CULA1260	Food Truck Foundations	3
CULA1700	Human Relations Management	2
ACCT1000	Introduction to Accounting	3
BUSN1510	Entrepreneurship	3
BUSN2015	Marketing Applications	3

**Total Credits 16****Second Semester**

CULA1301	Culinary Arts Nutrition	2
CULA1325	Menu Planning	2
CULA1335	Purchasing and Cost Control	2
CULA2060	Food Truck Operations	4
BUSN2085	Small Business Operations	4

**Total Credits 14****Graduation (30 credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/9/2022 : BP 7118 / EP

## Culinary Manager (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

Completion of this certificate will prepare students who are primarily interested in obtaining leadership and management skills essential in the food service industry. Areas of study will include, but are not limited to: menu planning; purchasing food, equipment, and supplies; selecting and developing recipes; selecting and using various food preparation methods and techniques. Management duties may include, but are not limited to: financial planning; human resource development; employee training; and employee supervision.

#### Award Outcomes

Prepare high quality food in a cost effective and efficient manner as utilized in professional food service operations

Exhibit knowledge and hands-on ability to perform the activities of all key personnel engaged in food service production operations

Design a variety of menus, select recipes, plan food consumption, procure appropriate products, properly store items and prepare them to American Culinary Federation accepted professional standards

Apply mathematical, reading, and communication skills essential to the food service industry

Practice positive human relationship skills with the diverse population of the hospitality industry employees and guests

#### Career Opportunities

Employment may be found in hotels, restaurants, clubs, health care facilities, schools, resorts and many other food related operations. Depending on qualifications and experience numerous positions are available to graduates such as restaurant cooks, banquet cooks, bakers, assistant pastry chefs, pantry personnel, kitchen managers, food salespersons, personal chefs, purchasing clerks, caterers, and entry-level chef/managers.

#### Program Requirements

##### Technical Studies Required 18 Credits

CULA1117	Sanitation and Safety	2
CULA1301	Culinary Arts Nutrition	2
CULA1321	Decorative Work and Showpieces	2
CULA1325	Menu Planning	2
CULA1335	Purchasing and Cost Control	2
CULA1700	Human Relations Management	2
CULA1710	Beverage Management	2
CULA2056	Global Cuisine	4

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Occupational Certificate Credits 18

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

CULA1117	Sanitation and Safety	2
CULA1301	Culinary Arts Nutrition	2
CULA1325	Menu Planning	2
CULA1335	Purchasing and Cost Control	2
CULA2056	Global Cuisine	4

##### Total Credits 12

##### Second Semester

CULA1321	Decorative Work and Showpieces	2
CULA1700	Human Relations Management	2
CULA1710	Beverage Management	2

**Total Credits 6****Graduation (18 credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

6/9/2022 : BP 7119 / EP

## Culinarian (BP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

This Culinarian Certificate presents a hands-on focused experience that builds on fundamental culinary and leadership skills. Giving students an opportunity to apply those basic skills, this certificate has students engaging with actual customers in the campus restaurant, with opportunities to plan, organize, prepare menus, while serving the public.

#### Award Outcomes

Prepare high quality food in a cost effective manner  
 Execute a variety of menus  
 Demonstrate the ability to plan a variety of menu  
 Apply mathematical skills essential to the food service industry  
 Create a professional career plan  
 Perform the duties of operational personnel in food service industry

#### Career Opportunities

Employment may be found in hotels, restaurants, clubs, health care facilities, schools, resorts and many other food related operations. Depending on qualifications and experience numerous positions are available to graduates such as restaurant cooks, banquet cooks, bakers, assistant pastry chefs, pantry personnel, kitchen managers, food salespersons, personal chefs, purchasing clerks, caterers, and entry-level chef/managers.

#### Program Requirements

##### Technical Studies Required 17 Credits

CULA1290	International and Regional Pastry	4
CULA1526	Dining Experience and Expectations	3
CULA1535	Advanced Garde Manger and Entremétier	4
CULA1540	Advanced Culinary Techniques	4
CULA2075	Catering	2

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Advanced Technical Certificate Credits 17

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

CULA1290	International and Regional Pastry	4
CULA1526	Dining Experience and Expectations	3
CULA1535	Advanced Garde Manger and Entremétier	4
CULA1540	Advanced Culinary Techniques	4
CULA2075	Catering	2

##### Total Credits 17

#### Graduation (17 Credits)

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

# Transportation

## Auto Body Collision Technology

## Auto Body Technician (BP/EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

Auto Body Repair and Refinishing Technicians repair vehicles that are damaged as a result of collisions, corrosion and wear. They provide customers with cost estimates for repair, replace or repair body parts and paint vehicles using various materials, equipment and methods.

#### Award Outcomes

Demonstrate electrical circuit repairs  
 Perform repairs on plastics  
 Create damage report utilizing the procedure pages  
 Perform proper replacement techniques on structural parts  
 Apply straightening techniques on structural parts  
 Demonstrate stationary glass replacement  
 Solve paint application problems  
 Apply primer surfacer to paint company and industry standards  
 Perform techniques for removing and replacing bolt-on parts  
 Body fill a one hour dent to industry standards  
 Execute MIG welding metal procedures according to I-CAR standards  
 Demonstrate metal cutting using an oxy/acetylene torch

#### Career Opportunities

Auto Body Technicians work for automotive dealerships, independent auto shops, government agencies and other organizations that maintain their own fleets of trucks and cars. There are also opportunities to be employed as an insurance adjuster, manufacturer's representative, auto service and sales person or wholesale parts and tool sales person.

### Program Requirements

#### Technical Studies Required 57 Credits

ABCT1145	Cutting, Heating and MIG Welding	3
ABCT1150	Trim, Moveable Glass and Hardware	2
ABCT1155	Metal Straightening and Body Filler I	4
ABCT1160	Bolt-on, Weld-on Panel Replacement and Alignment	4
ABCT1165	Using Body Filler II	2
ABCT1240	Detailing	2
ABCT1255	Environmental Health, Safety and Equipment Preparation for Finishes	4
ABCT1260	Surface Preparing and Finish Application	4
ABCT1265	Tinting and Blending	4
ABCT2006	Stationary Glass Replacement	1
ABCT2015	Steering and Suspension	2
ABCT2040	Restraint Systems	1
ABCT2051	Damage Analysis and Straightening Structural Parts	4
ABCT2055	Panel Replacement and Restoring Corrosion Protection	4
ABCT2146	Electrical and Electronic Systems	2
ABCT2150	Brake Systems	1
ABCT2175	Analyzing Damage/Creating a Manual Damage Report	2
ABCT2185	Plastic Adhesive and Welding Repairs	2
ABCT2190	Air Conditioning and Cooling Systems	2
ABCT2495	Auto Body Internship I	4
ABCT2505	Auto Body Internship III	3

**General Education Required 9 Credits**

ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
	Choose one course from MnTC Goal Area 2	3
	Choose one course from MnTC Goal Area 5	3

**General Education Elective 6 Credits**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 72****Semester Sequence - Fall Start****Offered at Brooklyn Park and Eden Prairie****First Semester**

ABCT1145	Cutting, Heating and MIG Welding	3
ABCT1150	Trim, Moveable Glass and Hardware	2
ABCT1155	Metal Straightening and Body Filler I	4
ABCT1160	Bolt-on, Weld-on Panel Replacement and Alignment	4
ABCT2146	Electrical and Electronic Systems	2

**Total Credits 15****Second Semester**

ABCT1240	Detailing	2
ABCT1255	Environmental Health, Safety and Equipment Preparation for Finishes	4
ABCT1260	Surface Preparing and Finish Application	4
ABCT1265	Tinting and Blending	4
ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4

**Total Credits 17****Summer Semester**

General Education Electives	6
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**Total Credits 6****Third Semester**

ABCT2006	Stationary Glass Replacement	1
ABCT2015	Steering and Suspension	2
ABCT2040	Restraint Systems	1
ABCT2051	Damage Analysis and Straightening Structural Parts	4
ABCT2055	Panel Replacement and Restoring Corrosion Protection	4
ABCT2150	Brake Systems	1
ABCT2190	Air Conditioning and Cooling Systems	2
	Choose 3 credits from MnTC Goal Area 2	3

**Total Credits 18****Fourth Semester**

ABCT1165	Using Body Filler II	2
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ABCT2175	Analyzing Damage/Creating a Manual Damage Report	2
ABCT2185	Plastic Adhesive and Welding Repairs	2
ABCT2495	Auto Body Internship I	4
ABCT2505	Auto Body Internship III	3
	Choose 3 credits from MnTC Goal Area 5	3

**Total Credits 16****MnTC Goal Area 2**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3
MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

**Choose a Total of: 3 Credits****MnTC Goal Area 5**

ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3

**Choose a Total of: 3 Credits****General Education Electives**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Choose a Total of: 6 Credits****Graduation (72 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

5/23/2022 : BP 5004 / EP 5005

**Semester Sequence - Spring Start**

**Offered at Brooklyn Park and Eden Prairie****First Semester**

ABCT1240	Detailing	2
ABCT1255	Environmental Health, Safety and Equipment Preparation for Finishes	4
ABCT1260	Surface Preparing and Finish Application	4
ABCT1265	Tinting and Blending	4
ENGL1070	Technical Writing or	3
ENGL1100	Writing and Research	4

**Total Credits 17****Summer Semester**

General Education Electives	6
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**Total Credits 6****Second Semester**

ABCT1145	Cutting, Heating and MIG Welding	3
ABCT1150	Trim, Moveable Glass and Hardware	2
ABCT1155	Metal Straightening and Body Filler I	4
ABCT1160	Bolt-on, Weld-on Panel Replacement and Alignment	4
ABCT2146	Electrical and Electronic Systems	2

**Total Credits 15****Third Semester**

ABCT2006	Stationary Glass Replacement	1
ABCT2015	Steering and Suspension	2
ABCT2040	Restraint Systems	1
ABCT2051	Damage Analysis and Straightening Structural Parts	4
ABCT2055	Panel Replacement and Restoring Corrosion Protection	4
ABCT2150	Brake Systems	1
ABCT2190	Air Conditioning and Cooling Systems	2
	Choose 3 credits from MnTC Goal Area 2	3

**Total Credits 18****Fourth Semester**

ABCT1165	Using Body Filler II	2
ABCT2175	Analyzing Damage/Creating a Manual Damage Report	2
ABCT2185	Plastic Adhesive and Welding Repairs	2
ABCT2495	Auto Body Internship I	4
ABCT2505	Auto Body Internship III	3
	Choose 3 credits from MnTC Goal Area 5	3

**Total Credits 16****MnTC Goal Area 2**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4

BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3
MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

**Choose a Total of: 3 Credits**

**MnTC Goal Area 5**

ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3

**Choose a Total of: 3 Credits**

**General Education Electives**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Choose a Total of: 6 Credits**

**Graduation (72 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Auto Body Technician (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

Auto Body Repair and Refinishing Technicians repair vehicles that are damaged as a result of collisions, corrosion and wear. They provide customers with cost estimates for repair, replace or repair body parts and paint vehicles using various materials, equipment and methods.

#### Award Outcomes

Demonstrate electrical circuit repairs  
 Perform repairs on plastics  
 Create damage report utilizing the procedure pages  
 Perform proper replacement techniques on structural parts  
 Apply straightening techniques on structural parts  
 Demonstrate stationary glass replacement  
 Solve paint application problems  
 Apply primer surfacer to paint company and industry standards  
 Perform techniques for removing and replacing bolt-on parts  
 Body fill a one hour dent to industry standards  
 Execute MIG welding metal procedures according to I-CAR standards  
 Demonstrate metal cutting using an oxy/act torch

#### Career Opportunities

Auto Body Technicians work for automotive dealerships, independent auto shops, government agencies and other organizations that maintain their own fleets of trucks and cars. There are also opportunities to be employed as an insurance adjuster, manufacturer's representative, auto service and sales person or wholesale parts and tool sales person.

### Program Requirements

#### Technical Studies Required 58 Credits

ABCT1145	Cutting, Heating and MIG Welding	3
ABCT1150	Trim, Moveable Glass and Hardware	2
ABCT1155	Metal Straightening and Body Filler I	4
ABCT1160	Bolt-on, Weld-on Panel Replacement and Alignment	4
ABCT1165	Using Body Filler II	2
ABCT1240	Detailing	2
ABCT1255	Environmental Health, Safety and Equipment Preparation for Finishes	4
ABCT1260	Surface Preparing and Finish Application	4
ABCT1265	Tinting and Blending	4
ABCT2006	Stationary Glass Replacement	1
ABCT2015	Steering and Suspension	2
ABCT2040	Restraint Systems	1
ABCT2051	Damage Analysis and Straightening Structural Parts	4
ABCT2055	Panel Replacement and Restoring Corrosion Protection	4
ABCT2146	Electrical and Electronic Systems	2
ABCT2150	Brake Systems	1
ABCT2175	Analyzing Damage/Creating a Manual Damage Report	2
ABCT2185	Plastic Adhesive and Welding Repairs	2
ABCT2190	Air Conditioning and Cooling Systems	2
ABCT2495	Auto Body Internship I	4
ABCT2501	Auto Body Internship II	4

#### General Education Required 2 Credits

CCDS1040	Job Seeking Skills	2
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**General Education Elective 4 Credits**

Any HTC 1000 level or higher general education course may be used to satisfy the elective requirements.

**Technical Studies Elective 0 Credits****Total Diploma Credits 64****Semester Sequence - Fall Start****Offered at Brooklyn Park and Eden Prairie****First Semester**

ABCT1145	Cutting, Heating and MIG Welding	3
ABCT1150	Trim, Moveable Glass and Hardware	2
ABCT1155	Metal Straightening and Body Filler I	4
ABCT1160	Bolt-on, Weld-on Panel Replacement and Alignment	4
ABCT2146	Electrical and Electronic Systems	2

**Total Credits 15****Second Semester**

ABCT1240	Detailing	2
ABCT1255	Environmental Health, Safety and Equipment Preparation for Finishes	4
ABCT1260	Surface Preparing and Finish Application	4
ABCT1265	Tinting and Blending	4
	General Education Electives	2

**Total Credits 16****Third Semester**

ABCT2006	Stationary Glass Replacement	1
ABCT2015	Steering and Suspension	2
ABCT2040	Restraint Systems	1
ABCT2051	Damage Analysis and Straightening Structural Parts	4
ABCT2055	Panel Replacement and Restoring Corrosion Protection	4
ABCT2150	Brake Systems	1
ABCT2190	Air Conditioning and Cooling Systems	2
CCDS1040	Job Seeking Skills	2

**Total Credits 17****Fourth Semester**

ABCT1165	Using Body Filler II	2
ABCT2175	Analyzing Damage/Creating a Manual Damage Report	2
ABCT2185	Plastic Adhesive and Welding Repairs	2
ABCT2495	Auto Body Internship I	4
ABCT2501	Auto Body Internship II	4
	General Education Electives	2

**Total Credits 16****General Education Electives**

If a General Education course is required it may not be used as a General Education Elective.

Minnesota Transfer Curriculum (MnTC) may also be used to meet General Education Elective requirements. A complete list of MnTC courses can be found at [www.hennepintech.edu](http://www.hennepintech.edu).

CCDS1000	How to Succeed in College	1
CCDS1020	Interviewing Skills	1

CCDS1040	Job Seeking Skills	2
CCDS1100	Student Success	3
CPLT1000	Computer Keyboarding	2
CPLT1005	Advanced Keyboarding and Document Processing	3
CPLT1100	Computer Essentials	3
CPLT1200	Introduction to Macintosh	3
EMSV1020	CPR/First Aid	1
ENGL1010	Business English - Deleted - May 2022	3
ENGL1021	Essay Fundamentals	3
ENGL1026	Writing for Careers	3
MATH1007	Math for the Trades	2
MATH1020	Geometry and Trigonometry	2
MATH1050	Math Pathways Plus for College and Careers	4
MATH1060	Math Pathways for College and Careers	3
MATH1500	Beginning Algebra	3
MATH1650	Mathematical Literacy	4
MATH1700	Intermediate Algebra	3
METS1000	Computers in Manufacturing	3

**Choose a Total of: 4 Credits**

**Graduation (64 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

5/23/2022 : BP 5006 / EP 5007

**Semester Sequence - Spring Start**

**Offered at Brooklyn Park and Eden Prairie**

**First Semester**

ABCT1240	Detailing	2
ABCT1255	Environmental Health, Safety and Equipment Preparation for Finishes	4
ABCT1260	Surface Preparing and Finish Application	4
ABCT1265	Tinting and Blending	4

**Total Credits 16**

**Second Semester**

ABCT1145	Cutting, Heating and MIG Welding	3
ABCT1150	Trim, Moveable Glass and Hardware	2
ABCT1155	Metal Straightening and Body Filler I	4
ABCT1160	Bolt-on, Weld-on Panel Replacement and Alignment	4
ABCT2146	Electrical and Electronic Systems	2

**Total Credits 15**

**Third Semester**

ABCT2006	Stationary Glass Replacement	1
ABCT2015	Steering and Suspension	2
ABCT2040	Restraint Systems	1
ABCT2051	Damage Analysis and Straightening Structural Parts	4
ABCT2055	Panel Replacement and Restoring Corrosion Protection	4
ABCT2150	Brake Systems	1
ABCT2190	Air Conditioning and Cooling Systems	2

CCDS1040	Job Seeking Skills	2
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**Total Credits 17****Fourth Semester**

ABCT1165	Using Body Filler II	2
ABCT2175	Analyzing Damage/Creating a Manual Damage Report	2
ABCT2185	Plastic Adhesive and Welding Repairs	2
ABCT2495	Auto Body Internship I	4
ABCT2501	Auto Body Internship II	4
	General Education Electives	2

**Total Credits 16****General Education Electives**

If a General Education course is required it may not be used as a General Education Elective.

Minnesota Transfer Curriculum (MnTC) may also be used to meet General Education Elective requirements. A complete list of MnTC courses can be found at [www.hennepintech.edu](http://www.hennepintech.edu).

CCDS1000	How to Succeed in College	1
CCDS1020	Interviewing Skills	1
CCDS1040	Job Seeking Skills	2
CCDS1100	Student Success	3
CPLT1000	Computer Keyboarding	2
CPLT1005	Advanced Keyboarding and Document Processing	3
CPLT1100	Computer Essentials	3
CPLT1200	Introduction to Macintosh	3
EMSV1020	CPR/First Aid	1
ENGL1010	Business English - Deleted - May 2022	3
ENGL1021	Essay Fundamentals	3
ENGL1026	Writing for Careers	3
MATH1007	Math for the Trades	2
MATH1020	Geometry and Trigonometry	2
MATH1050	Math Pathways Plus for College and Careers	4
MATH1060	Math Pathways for College and Careers	3
MATH1500	Beginning Algebra	3
MATH1650	Mathematical Literacy	4
MATH1700	Intermediate Algebra	3
METS1000	Computers in Manufacturing	3

**Choose a Total of: 4 Credits****Graduation (64 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

# Custom Fabrication and Finishing (BP/EP) Occupational Certificate

## Overview and Award Outcomes

### Overview

Auto Body Repair and Refinishing Technicians repair vehicles that are damaged as a result of corrosion and wear. They provide customers with cost estimates for repair, replace or repair body parts and paint vehicles using various materials, equipment and methods.

### Award Outcomes

Perform proper replacement techniques on structural parts  
 Solve paint application problems  
 Apply primer surfacer to paint company and industry standards  
 Body fill a one hour dent to industry standards  
 Execute MIG welding metal procedures according to I-CAR standards  
 Demonstrate metal cutting using an oxy/act torch

### Career Opportunities

The student will have the ability to learn how to restore older model vehicles.

### Program Requirements

#### Technical Studies Required 19 Credits

ABCT1145	Cutting, Heating and MIG Welding	3
ABCT1155	Metal Straightening and Body Filler I	4
ABCT1255	Environmental Health, Safety and Equipment Preparation for Finishes	4
ABCT1260	Surface Preparing and Finish Application	4
ABCT1265	Tinting and Blending	4

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Occupational Certificate Credits 19

#### Semester Sequence

#### Prerequisite Semester

#### First Semester

#### Second Semester

#### Third Semester

#### Fourth Semester

# Non-Structural Repair Technician Assistant (BP/EP) Occupational Certificate

## Overview and Award Outcomes

### Overview

This certificate prepares students to perform non-structural repairs. This includes panel repairs of four hours or less, bolt-on panel replacements and weld-on panel replacements.

### Award Outcomes

- Demonstrate electrical circuit repairs
- Perform repairs on plastics
- Create damage report utilizing the procedure pages
- Perform proper replacement techniques on structural parts
- Apply straightening techniques on structural parts
- Demonstrate stationary glass replacement
- Solve paint application problems
- Apply primer surfacer to paint company and industry standards
- Perform techniques for removing and replacing bolt-on parts
- Body fill a one hour dent to industry standards
- Execute MIG welding metal procedures according to I-CAR standards
- Demonstrate metal cutting using an oxy/ac torch

### Career Opportunities

Auto Body Technician Assistants work for automotive dealerships, independent auto shops, government agencies and other organizations that maintain their own fleets of trucks and cars. As a Non-structural Repair Technician Assistant the student will assist the Journeyman in repairing and replacing components in the day-to-day operations of vehicle repair.

### Program Requirements

#### Technical Studies Required 13 Credits

ABCT1145	Cutting, Heating and MIG Welding	3
ABCT1150	Trim, Moveable Glass and Hardware	2
ABCT1155	Metal Straightening and Body Filler I	4
ABCT1160	Bolt-on, Weld-on Panel Replacement and Alignment	4

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 3 Credits

Recommended:

ABCT1165	Using Body Filler II	2
ABCT2495	Auto Body Internship I	4
ABCT2600	Collision Lab	1 - 8

#### Total Occupational Certificate Credits 16

### Semester Sequence

#### Prerequisite Semester

#### First Semester

#### Second Semester

#### Third Semester

#### Fourth Semester

# Refinishing Technician Assistant (BP/EP) Occupational Certificate

## Overview and Award Outcomes

### Overview

Refinishing Assistants buff cars and trucks, install detail, sand, tape, mix paint and paint small jobs and used cars.

### Award Outcomes

Solve paint application problems

Apply primer surfacer to paint company and industry standards

### Career Opportunities

Auto Body Technicians work for automotive dealerships, independent auto shops, government agencies and other organizations that maintain their own fleets of trucks and cars. As a Refinishing Technician's Assistant the student will work with a Journeyman Painter who will direct the student in the refinish environment. There are also opportunities to be employed as an insurance adjuster, manufacturer's representative, auto service and sales person or wholesale parts and tool sales person.

## Program Requirements

### Technical Studies Required 14 Credits

ABCT1240	Detailing	2
ABCT1255	Environmental Health, Safety and Equipment Preparation for Finishes	4
ABCT1260	Surface Preparing and Finish Application	4
ABCT1265	Tinting and Blending	4

### General Education Required 0 Credits

### General Education Elective 0 Credits

### Technical Studies Elective 3 Credits

Recommended:

ABCT1235	Finish Defects	2
ABCT1250	Auto Body Painting Internship	1 - 4
ABCT2600	Collision Lab	1 - 8

### Total Occupational Certificate Credits 17

### Semester Sequence

### Prerequisite Semester

### First Semester

### Second Semester

### Third Semester

### Fourth Semester

## Structural Repair Technician Assistant (BP/EP) Advanced Technical Certificate

### Overview and Award Outcomes

#### Overview

Structural Assistants perform wheel alignments, replace suspension parts, prepare vehicles for structural repairs, perform minor structural repairs and replace panels.

Prerequisite: Completion of Non-Structural Repair Technician Assistant certificate or two years related experience in industry.

#### Award Outcomes

- Demonstrate electrical circuit repairs
- Perform proper replacement techniques on structural parts
- Apply straightening techniques on structural parts
- Demonstrate stationary glass replacement
- Perform techniques for removing and replacing bolt-on parts
- Body fill a one hour dent to industry standards
- Execute MIG welding metal procedures according to I-CAR standards
- Demonstrate metal cutting using an oxy/act torch

#### Career Opportunities

Auto Body Technicians work for automotive dealerships, independent auto shops, government agencies and other organizations that maintain their own fleets of trucks and cars. As a Structural Repair Technician the student will work with a Body Repair Technician who will guide the student in the repair, replacement and alignments of vehicles needing these repairs.

### Program Requirements

#### Technical Studies Required 12 Credits

ABCT2006	Stationary Glass Replacement	1
ABCT2015	Steering and Suspension	2
ABCT2040	Restraint Systems	1
ABCT2051	Damage Analysis and Straightening Structural Parts	4
ABCT2055	Panel Replacement and Restoring Corrosion Protection	4

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 4 Credits

Recommended:

ABCT2000	Advanced Welding Methods	1
ABCT2060	Straightening Structural Parts II	1
ABCT2495	Auto Body Internship I	4
ABCT2501	Auto Body Internship II	4
ABCT2600	Collision Lab	1 - 8

#### Total Advanced Technical Certificate Credits 16

#### Semester Sequence

#### Prerequisite Semester

#### First Semester

#### Second Semester

#### Third Semester

**Fourth Semester**

**Automotive Technology**

# Automotive Technician (BP/EP) Associate in Applied Science Degree

## Overview and Award Outcomes

### Overview

The Automotive Technology degree prepares the student in all areas of automobile and light truck service, diagnosis and repair at an entry level. An Automotive Technician will diagnose, determine condition, estimate cost of repair and replace or repair various components in engines, powertrains, suspensions, brakes, electrical systems, fuel systems, emission controls and computer controlled systems.

### Award Outcomes

- Evaluate scan tool readings
- Evaluate vehicle suspension systems
- Evaluate engine condition using precision instruments
- Interpret wiring diagrams
- Perform digital multimeter (DMM) measurements
- Use transmission test equipment
- Analyze heating ventilation/air conditioning systems
- Interpret electronic service information
- Diagnose hydraulic system components
- Analyze driveline components
- Determine customer vehicle repair needs

### Career Opportunities

Due to increased vehicle ownership, longer useful life of vehicles and increased maintenance requirements of new and complicated automotive systems, the demand for trained automotive technicians is at an extremely high level and is increasing annually. A wide range of employment opportunities exist in dealerships, fleets, mass merchandisers, independent garages and service stations.

The degree program also provides opportunities for advancement into shop management positions such as shop foreman, service manager and shop owner.

## Program Requirements

### Technical Studies Required 57 Credits

ATEC1050	Introduction to Automotive Technology	2
ATEC1105	Engine Repair I	3
ATEC1110	Engine Repair II	3
ATEC1205	Automatic Transmissions I	3
ATEC1210	Automatic Transmissions II	3
ATEC1305	Manual Drive Train & Axles	4
ATEC1405	Steering and Suspension	4
ATEC1505	Brakes	4
ATEC1615	Basic Electrical	3
ATEC1620	Starting and Charging Systems	3
ATEC1625	Chassis Electrical	3
ATEC1705	Heating and Air Conditioning	4
ATEC1820	Hybrid Electric Vehicle Systems	1
ATEC1850	Ignition Systems	4
ATEC1855	Fuel Systems	4
ATEC1860	Engine Performance	4
ATEC2685	Automotive Industry Internship I	5

### General Education Required 12 Credits

ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
PHYS1005	Introductory Physics I	3

Choose one course from MnTC Goal Area 5	3
Choose one course from MnTC Goal Area 7	3

**General Education Elective 3 Credits**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 72****Semester Sequence - Full Time****Offered at Brooklyn Park and Eden Prairie****First Semester**

ATEC1050	Introduction to Automotive Technology	2
ATEC1405	Steering and Suspension	4
ATEC1505	Brakes	4
ATEC1615	Basic Electrical	3
ATEC1620	Starting and Charging Systems	3

**Total Credits 16****Second Semester**

ATEC1105	Engine Repair I	3
ATEC1110	Engine Repair II	3
ATEC1625	Chassis Electrical	3
ATEC2685	Automotive Industry Internship I	5
PHYS1005	Introductory Physics I	3

**Total Credits 17****Summer Semester**

ENGL1070	Technical Writing	3
	or	
ENGL1100	Writing and Research	4
	Choose 3 credits from MnTC Goal Area 7	3

**Total Credits 6****Third Semester**

ATEC1205	Automatic Transmissions I	3
ATEC1210	Automatic Transmissions II	3
ATEC1305	Manual Drive Train & Axles	4
ATEC1705	Heating and Air Conditioning	4
	Choose 3 credits from MnTC Goal Area 5	3

**Total Credits 17****Fourth Semester**

ATEC1820	Hybrid Electric Vehicle Systems	1
ATEC1850	Ignition Systems	4
ATEC1855	Fuel Systems	4
ATEC1860	Engine Performance	4
	General Education Electives	3

**Total Credits 16****General Education Electives**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Choose a Total of: 3 credits**

**MnTC Goal Area 5**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3

**Choose a Total of: 3 Credits**

**MnTC Goal Area 7**

COMM1200	Intercultural Communication	3
COMM1250	Interpersonal Communication	3
MUSC1010	Influence of Pop/Rock Music	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3

**Choose a Total of: 3 Credits**

**Graduation (72 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Automotive Technician (BP/EP) Diploma

### Overview and Award Outcomes

#### Overview

The Automotive Mechanics Technician diploma prepares the student in all areas of automobile and light truck service, diagnosis and repair at an entry level. An automotive technician will diagnose, determine condition, estimate cost of repair and replace or repair various components in engines, powertrains, suspensions, brakes, electrical systems, fuel systems, emission controls and computer controlled systems.

#### Award Outcomes

Evaluate scan tool readings  
 Evaluate vehicle suspension systems  
 Evaluate engine condition using precision instruments  
 Interpret wiring diagrams  
 Perform digital multimeter (DMM) measurements  
 Use transmission test equipment  
 Analyze heating ventilation/air conditioning systems  
 Interpret electronic service information  
 Diagnose hydraulic system components  
 Analyze driveline components  
 Determine customer vehicle repair needs

#### Career Opportunities

Due to increased vehicle ownership, longer useful life of vehicles and increased maintenance requirements of new and complicated automotive systems, the demand for trained automotive technicians is at an extremely high level and is increasing annually. A wide range of employment opportunities exist in dealerships, fleets, mass merchandisers, independent garages and service stations.

### Program Requirements

#### Technical Studies Required 59 Credits

ATEC1050	Introduction to Automotive Technology	2
ATEC1105	Engine Repair I	3
ATEC1110	Engine Repair II	3
ATEC1205	Automatic Transmissions I	3
ATEC1210	Automatic Transmissions II	3
ATEC1305	Manual Drive Train & Axles	4
ATEC1405	Steering and Suspension	4
ATEC1505	Brakes	4
ATEC1615	Basic Electrical	3
ATEC1620	Starting and Charging Systems	3
ATEC1625	Chassis Electrical	3
ATEC1705	Heating and Air Conditioning	4
ATEC1820	Hybrid Electric Vehicle Systems	1
ATEC1850	Ignition Systems	4
ATEC1855	Fuel Systems	4
ATEC1860	Engine Performance	4
ATEC2100	Automotive Professional Service	2
ATEC2685	Automotive Industry Internship I	5

#### General Education Required 6 Credits

CCDS1040	Job Seeking Skills	2
EMSV1020	CPR/First Aid	1
PHYS1005	Introductory Physics I	3

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Diploma Credits 65

**Semester Sequence - Fall Start****Offered at Brooklyn Park and Eden Prairie****First Semester**

ATEC1050	Introduction to Automotive Technology	2
ATEC1405	Steering and Suspension	4
ATEC1505	Brakes	4
ATEC1615	Basic Electrical	3
ATEC1620	Starting and Charging Systems	3

**Total Credits 16****Second Semester**

ATEC1105	Engine Repair I	3
ATEC1110	Engine Repair II	3
ATEC1625	Chassis Electrical	3
ATEC2685	Automotive Industry Internship I	5
PHYS1005	Introductory Physics I	3

**Total Credits 17****Third Semester**

ATEC1205	Automatic Transmissions I	3
ATEC1210	Automatic Transmissions II	3
ATEC1305	Manual Drive Train & Axles	4
ATEC1705	Heating and Air Conditioning	4
ATEC1820	Hybrid Electric Vehicle Systems	1
CCDS1040	Job Seeking Skills	2

**Total Credits 17****Fourth Semester**

ATEC1850	Ignition Systems	4
ATEC1855	Fuel Systems	4
ATEC1860	Engine Performance	4
ATEC2100	Automotive Professional Service	2
EMSV1020	CPR/First Aid	1

**Total Credits 15****Graduation (65 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

5/23/2022 : BP 5106 / EP 5107

**Ford ASSET**

## Automotive Technology (Ford ASSET) (BP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

The Ford Automotive Student Service Educational Training (ASSET) program is a factory authorized training program that is jointly sponsored by Ford Motor Company, Ford and Lincoln-Mercury Dealers, and Hennepin Technical College. It is designed to train automotive technicians to repair all the newer model Ford Motor Company vehicles. Students can only enter this program by special application and by the sponsorship of a Ford or Lincoln-Mercury dealership.

#### Award Outcomes

Analyze customer concerns  
 Demonstrate safe service and repair procedures  
 Navigate electronic service information  
 Apply communication skills in the workplace  
 Demonstrate a commitment to ethical and professional responsibilities in repair  
 Utilize electronic service equipment  
 Complete current Ford STST certifications  
 Evaluate systems components using precision measuring equipment  
 Identify problem-solving techniques used in Ford service repair  
 Apply principles of mechanical concepts

#### Career Opportunities

All students who successfully complete this program will be Ford certified in all STST specialty areas. They will be employed by Ford and/or Lincoln-Mercury dealers as dealership repair technicians. A large number of jobs exist for qualified automotive technicians in the metropolitan and rural communities. The potential to advance to service writer, service manager, sales positions, company representatives or other dealership management is excellent.

### Program Requirements

#### Technical Studies Required 81 Credits

FMLR1200	Ford Electrical Systems	3
FDAS1250	Ford Gasoline Engine Performance I	2
FDAS1260	Ford Gasoline Engine Performance II	3
FMLR1301	Related Mechanical Skills	2
FDAS1420	Ford Driveline	3
FDAS1500	Engine Repair	3
FDAS1550	Engine Operation	2
FMLR1601	Ford Suspension and Alignment	3
FDAS1611	Noise Vibration Harshness (NVH)	3
FMLR1650	Ford Steering and Balance	2
FDAS1701	Ford Climate Control	3
FDAS1750	Ford Fuel Systems	2
FMLR1810	Ford Dealership Internship I	6
FMLR1820	Ford Dealership Internship II	6
FDAS2030	Ford Dealership Internship III	6
FDAS2040	Ford Dealership Internship IV	6
FDAS2055	Ford Dealership Summer Internship I	4
FDAS2060	Ford Dealership Summer Internship II	4
FDAS2230	Ford Car Transmissions	3
FDAS2240	Ford Truck Transmissions	3
FDAS2502	Ford Advanced Engine Performance	3
FDAS2552	Ford Diesel	4
FMLR2600	Ford Braking Systems	3
FDAS2650	Ford New Technology	2

#### General Education Required 15 Credits

COMM1250	Interpersonal Communication	3
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ENGL1070	Technical Writing	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
SOCI1100	Introduction to Sociology	3

**General Education Elective 0 Credits****Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 96****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

FMLR1200	Ford Electrical Systems	3
FMLR1301	Related Mechanical Skills	2
FMLR1650	Ford Steering and Balance	2
FMLR1810	Ford Dealership Internship I	6
FMLR2600	Ford Braking Systems	3
PHIL1100	Critical Thinking for College Success	3

**Total Credits 19****Second Semester**

FDAS1500	Engine Repair	3
FDAS1550	Engine Operation	2
FDAS1750	Ford Fuel Systems	2
FMLR1601	Ford Suspension and Alignment	3
FMLR1820	Ford Dealership Internship II	6
COMM1250	Interpersonal Communication	3
SOCI1100	Introduction to Sociology	3

**Total Credits 22****Summer Semester**

FDAS1250	Ford Gasoline Engine Performance I	2
FDAS1701	Ford Climate Control	3
FDAS2055	Ford Dealership Summer Internship I	4

**Total Credits 9****Third Semester**

FDAS1260	Ford Gasoline Engine Performance II	3
FDAS2030	Ford Dealership Internship III	6
FDAS2230	Ford Car Transmissions	3
FDAS2240	Ford Truck Transmissions	3
PHYS1005	Introductory Physics I	3

**Total Credits 18****Fourth Semester**

FDAS1420	Ford Driveline	3
FDAS1611	Noise Vibration Harshness (NVH)	3
FDAS2040	Ford Dealership Internship IV	6
FDAS2552	Ford Diesel	4
ENGL1070	Technical Writing	3

**Total Credits 19****Summer Semester**

FDAS2060	Ford Dealership Summer Internship II	4
FDAS2502	Ford Advanced Engine Performance	3

FDAS2650

Ford New Technology

2

**Total Credits 9**

**Graduation (96 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

5/24/2022 : BP 5304 / EP

## Maintenance Light Repair (BP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

The Ford Maintenance Light Repair certificate is designed to provide students with the skills necessary to successfully perform light maintenance service on domestic and import cars and light trucks. This one-year certificate will allow students to enter the automotive industry with advanced skills in basic service procedures and receive up to 25% of Ford training specialty training.

#### Award Outcomes

Demonstrate safe service and repair procedures  
 Navigate electronic service information  
 Utilize electronic service equipment  
 Complete Ford STST certifications for the Quick Lane  
 Identify problem solving techniques used in Ford service repair

#### Career Opportunities

Maintenance and light service repair technicians will be able to perform jobs in the automotive light service industry such as Ford dealership quicklanes, independent service shops, and other franchise dealerships that perform light-duty maintenance. As a light service maintenance technician, the student will perform basic automotive maintenance and light repair such as oil changes, transmission flushes, tune-ups, and brake service. Furthermore, maintenance light repair technicians will assist journeyman in the day-to-day operations of vehicle repair.

#### Program Requirements

##### Technical Studies Required 13 Credits

FMLR1200	Ford Electrical Systems	3
FMLR1301	Related Mechanical Skills	2
FMLR1601	Ford Suspension and Alignment	3
FMLR1650	Ford Steering and Balance	2
FMLR2600	Ford Braking Systems	3

##### General Education Required 0 Credits

##### General Education Elective 0 Credits

##### Technical Studies Elective 17 Credits

Any FDAS or FMLR course that is not required for this award may be used as an elective.

Recommended:

FMLR1810	Ford Dealership Internship I	6
FMLR1820	Ford Dealership Internship II	6

##### Total Occupational Certificate Credits 30

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

FMLR1200	Ford Electrical Systems	3
FMLR1301	Related Mechanical Skills	2
FMLR1650	Ford Steering and Balance	2
FMLR2600	Ford Braking Systems	3
	Technical Studies Electives	8

##### Total Credits 18

##### Second Semester

FMLR1601	Ford Suspension and Alignment	3
	Technical Studies Electives	9

**Total Credits 12****Technical Studies Electives**

Any FDAS or FMLR course that is not required for this award may be used as an elective.

Recommended:

FMLR1810	Ford Dealership Internship I	6
FMLR1820	Ford Dealership Internship II	6

**Choose a Total of: 9 Credits****Graduation (30 Credits)**

A one-time \$150.00 fee is added for access to Ford Web-based training.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

4/28/2022 : BP 5305 / EP

**Marine, Motorsport and Outdoor Power Equipment Technology**

## Marine, Motorsport and Outdoor Power Equipment Technician (EP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

The Marine, Motorsport and Outdoor Power Equipment Technology degree prepares the student in all areas of the Marine, Motor Sports and Power Equipment as a repair and service technician. A marine/motor sports technician will diagnose, evaluate, estimate repair costs and repair various types of marine, motorcycle, power equipment and small engines.

#### Award Outcomes

Demonstrate ability to measure engine parts  
 Employ skills and procedures to identify parts  
 Service fuel Systems  
 Service ignition systems  
 Demonstrate troubleshooting and diagnostic skills  
 Integrate technology into work processes such as scan tools, service manuals online, etc.  
 Employ safety standards  
 Service drive systems  
 Explain air and liquid cooling systems  
 Integrate customer service and communication skills into repair work

#### Career Opportunities

The Marine, Motorsport and Outdoor Power Equipment Technology Associate in Applied Science degree will allow the graduate the opportunities to advance to careers in the major manufacturer's research and development departments. Service or sales representative positions would be available to a person holding an A.A.S. also. Another possible opportunity would be for a promotion to a supervisory position.

### Program Requirements

#### Technical Studies Required 54 Credits

MMST1100	Introduction to Marine and Motorsport Technology	3
MMST1105	Introduction to Engine Theory	3
MMST1110	Introduction to Fuel Systems	3
MMST1115	Introduction to Electrical Systems	3
MMST1120	Introduction to Ignition Systems	3
MMST1125	Service Management	3
MMST1130	Introduction to Drive Systems	3
MMST1145	Trailer Maintenance	3
MMST2105	Motorcycle Transmissions and Clutch Service	3
MMST2110	Motorcycle Wheels and Suspension	3
MMST2126	Marine Lower Unit and Cooling System Service	3
MMST2140	Marine Tilt/Trim and Controls	3
MMST2175	Power Equipment Drive Systems	3
MMST2180	Power Equipment Accessory Maintenance	3
MMST2300	Advanced Fuel Systems	3
MMST2305	Advanced Electrical Systems	3
MMST2310	Engine Overhaul	3
MMST2315	Tune Up	3

#### General Education Required 3 Credits

Choose 3 credits from MnTC Goal Area 2 3

#### General Education Elective 12 Credits

Choose twelve credits of General Education from any three MnTC Goal Areas 12

#### Technical Studies Elective 3 Credits

Any Marine, Motorsport and Outdoor Power Equipment Technology (MMST) course that is not required for this award may be used as an elective.

Recommended:

MMST2320	Customizing Lab	1 - 3
MMST2325	EETC/Advanced Troubleshooting	3
MMST2340	Repair and Accessory Lab	3
MMST2350	Internship	1 - 3
MMST2400	Fuel Injection Systems	3

**Total Associate in Applied Science Degree Credits 72**

**Semester Sequence**

**Offered at Eden Prairie Only**

**First Semester**

MMST1100	Introduction to Marine and Motorsport Technology	3
MMST1105	Introduction to Engine Theory	3
MMST1110	Introduction to Fuel Systems	3
MMST1115	Introduction to Electrical Systems	3
MMST1130	Introduction to Drive Systems	3
	Choose 3 credits from MnTC Goal Area 2	3

**Total Credits 18**

**Second Semester**

MMST1120	Introduction to Ignition Systems	3
MMST1125	Service Management	3
MMST1145	Trailer Maintenance	3
MMST2175	Power Equipment Drive Systems	3
MMST2315	Tune Up	3
	General Education Electives	3

**Total Credits 18**

**Third Semester**

MMST2300	Advanced Fuel Systems	3
MMST2305	Advanced Electrical Systems	3
MMST2310	Engine Overhaul	3
	Technical Studies Electives	3
	General Education Electives	6

**Total Credits 18**

**Fourth Semester**

MMST2105	Motorcycle Transmissions and Clutch Service	3
MMST2110	Motorcycle Wheels and Suspension	3
MMST2126	Marine Lower Unit and Cooling System Service	3
MMST2140	Marine Tilt/Trim and Controls	3
MMST2180	Power Equipment Accessory Maintenance	3
	General Education Electives	3

**Total Credits 18**

**Technical Studies Electives**

Any Marine, Motorsport and Outdoor Power Equipment Technology (MMST) course that is not required for this award may be used as an elective.

Recommended:

MMST2320	Customizing Lab	1 - 3
MMST2325	EETC/Advanced Troubleshooting	3
MMST2340	Repair and Accessory Lab	3

MMST2350	Internship	1 - 3
MMST2400	Fuel Injection Systems	3

**Choose a Total of: 3 Credits****General Education Electives**

Choose credits from Hennepin Technical College's Minnesota Transfer Curriculum (MnTC) general education courses.

**Choose a Total of: 12 Credits****MnTC Goal Area 2**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3
MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

**Choose a Total of: 3 Credits****Graduation (64 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

# Marine, Motorsport and Outdoor Power Equipment Technician (EP) Diploma

## Overview and Award Outcomes

### Overview

The Marine, Motorsport and Outdoor Power Equipment Technology degree prepares the student in all areas of the Marine, Motor Sports and Power Equipment as a repair and service technician. A marine/motor sports technician will diagnose, evaluate, estimate repair costs and repair various types of marine, motorcycle, power equipment and small engines.

### Award Outcomes

Demonstrate ability to measure engine parts  
 Employ skills and procedures to identify parts  
 Service fuel Systems  
 Service ignition systems  
 Demonstrate troubleshooting and diagnostic skills  
 Integrate technology into work processes such as scan tools, service manuals online, etc.  
 Employ safety standards  
 Service drive systems  
 Explain air and liquid cooling systems  
 Integrate customer service and communication skills into repair work

### Career Opportunities

Marine, Motorsport and Outdoor Power Equipment Technicians find employment at marine, motorcycle or snowmobile dealerships, distributors and manufacturers. Technicians are also in demand at service repair shops and businesses that service and repair motorcycles, outboard and inboard boat motors and lawn and garden equipment.

## Program Requirements

### Technical Studies Required 54 Credits

MMST1100	Introduction to Marine and Motorsport Technology	3
MMST1105	Introduction to Engine Theory	3
MMST1110	Introduction to Fuel Systems	3
MMST1115	Introduction to Electrical Systems	3
MMST1120	Introduction to Ignition Systems	3
MMST1125	Service Management	3
MMST1130	Introduction to Drive Systems	3
MMST1145	Trailer Maintenance	3
MMST2105	Motorcycle Transmissions and Clutch Service	3
MMST2110	Motorcycle Wheels and Suspension	3
MMST2126	Marine Lower Unit and Cooling System Service	3
MMST2140	Marine Tilt/Trim and Controls	3
MMST2175	Power Equipment Drive Systems	3
MMST2180	Power Equipment Accessory Maintenance	3
MMST2300	Advanced Fuel Systems	3
MMST2305	Advanced Electrical Systems	3
MMST2310	Engine Overhaul	3
MMST2315	Tune Up	3

### General Education Required 2 Credits

CCDS1040	Job Seeking Skills	2
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### General Education Elective 5 Credits

Any HTC 1000 level or higher general education course may be used to satisfy the elective requirements.

### Technical Studies Elective 3 Credits

Any Marine, Motorsport and Outdoor Power Equipment Technology (MMST) course that is not required for this award may be used as an elective.

## Recommended:

MMST2320	Customizing Lab	1 - 3
MMST2325	EETC/Advanced Troubleshooting	3
MMST2340	Repair and Accessory Lab	3
MMST2350	Internship	1 - 3
MMST2400	Fuel Injection Systems	3

**Total Diploma Credits 64****Semester Sequence****Offered at Eden Prairie Only****First Semester**

MMST1100	Introduction to Marine and Motorsport Technology	3
MMST1105	Introduction to Engine Theory	3
MMST1110	Introduction to Fuel Systems	3
MMST1115	Introduction to Electrical Systems	3
MMST1130	Introduction to Drive Systems	3

**Total Credits 15****Second Semester**

MMST1120	Introduction to Ignition Systems	3
MMST1125	Service Management	3
MMST1145	Trailer Maintenance	3
MMST2175	Power Equipment Drive Systems	3
MMST2315	Tune Up	3
	General Education Electives	3

**Total Credits 18****Third Semester**

MMST2300	Advanced Fuel Systems	3
MMST2305	Advanced Electrical Systems	3
MMST2310	Engine Overhaul	3
CCDS1040	Job Seeking Skills	2
	Technical Studies Electives	3
	General Education Electives	2

**Total Credits 16****Fourth Semester**

MMST2105	Motorcycle Transmissions and Clutch Service	3
MMST2110	Motorcycle Wheels and Suspension	3
MMST2126	Marine Lower Unit and Cooling System Service	3
MMST2140	Marine Tilt/Trim and Controls	3
MMST2180	Power Equipment Accessory Maintenance	3

**Total Credits 15****Technical Studies Electives**

Any Marine/Motorsport and Outdoor Power Equipment Technology (MMST) course that is not required for this award may be used as an elective.

## Recommended:

MMST2320	Customizing Lab	1 - 3
MMST2325	EETC/Advanced Troubleshooting	3
MMST2340	Repair and Accessory Lab	3
MMST2350	Internship	1 - 3
MMST2400	Fuel Injection Systems	3

**Choose a Total of: 3 Credits****General Education Electives**

If a General Education course is required it may not be used as a General Education Elective.

Minnesota Transfer Curriculum (MnTC) may also be used to meet General Education Elective requirements. A complete list of MnTC courses can be found at [www.hennepintech.edu](http://www.hennepintech.edu).

CCDS1000	How to Succeed in College	1
CCDS1020	Interviewing Skills	1
CCDS1040	Job Seeking Skills	2
CCDS1100	Student Success	3
CPLT1000	Computer Keyboarding	2
CPLT1005	Advanced Keyboarding and Document Processing	3
CPLT1100	Computer Essentials	3
CPLT1200	Introduction to Macintosh	3
EMSV1020	CPR/First Aid	1
MATH1007	Math for the Trades	2
MATH1020	Geometry and Trigonometry	2
METS1000	Computers in Manufacturing	3

**Choose a Total of: 5 Credits****Graduation (64 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## General Maintenance Technician (EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

The Marine, Motorsport and Outdoor Power Equipment program at Hennepin Technical College is divided into coursework specific to each aspect of the industry. The emphasis of the General Maintenance Technician Certificate is to provide students with the foundational skills and knowledge needed for a career pathway into more advanced level courses or into an entry-level employment in the industry.

#### Award Outcomes

Perform quality checks on completed work  
 Employ safety standards  
 Employ skills and procedures to identify parts  
 Service fuel systems  
 Demonstrate troubleshooting and diagnostic skills  
 Integrate customer service and communication skills into repair work

#### Career Opportunities

General Maintenance Technicians are qualified for employment in entry-level, general maintenance positions in the Marine, Motorsport and Outdoor Power Equipment industry. Graduates of this certificate can find employment as set-up and maintenance technicians for dealerships, distributors, manufacturers and maintenance facilities.

### Program Requirements

#### Technical Studies Required 30 Credits

MMST1100	Introduction to Marine and Motorsport Technology	3
MMST1105	Introduction to Engine Theory	3
MMST1110	Introduction to Fuel Systems	3
MMST1115	Introduction to Electrical Systems	3
MMST1120	Introduction to Ignition Systems	3
MMST1125	Service Management	3
MMST1130	Introduction to Drive Systems	3
MMST1145	Trailer Maintenance	3
MMST2175	Power Equipment Drive Systems	3
MMST2315	Tune Up	3

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Occupational Certificate Credits 30

#### Semester Sequence

#### Offered at Eden Prairie Only

#### First Semester

MMST1100	Introduction to Marine and Motorsport Technology	3
MMST1105	Introduction to Engine Theory	3
MMST1110	Introduction to Fuel Systems	3
MMST1115	Introduction to Electrical Systems	3
MMST1130	Introduction to Drive Systems	3

#### Total Credits 15

#### Second Semester

MMST1120	Introduction to Ignition Systems	3
MMST1125	Service Management	3
MMST1145	Trailer Maintenance	3
MMST2175	Power Equipment Drive Systems	3
MMST2315	Tune Up	3

**Total Credits 15****Graduation (30 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/11/2022 : BP / EP 5409

## Motorcycle Technician (EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

Motorcycle Technicians service, diagnose and repair motorcycles.

#### Award Outcomes

Perform quality checks on completed work

Service fuel systems

Service ignition systems

Employ safety standards

Service drive systems

Integrate customer service and communication skills into repair work

#### Career Opportunities

Motorcycle Technicians find employment at motorcycle dealerships, distributors and manufacturers. Technicians are also in demand at service repair shops and businesses.

### Program Requirements

#### Technical Studies Required 30 Credits

MMST1100	Introduction to Marine and Motorsport Technology	3
MMST1105	Introduction to Engine Theory	3
MMST1110	Introduction to Fuel Systems	3
MMST1115	Introduction to Electrical Systems	3
MMST1120	Introduction to Ignition Systems	3
MMST1125	Service Management	3
MMST1130	Introduction to Drive Systems	3
MMST1145	Trailer Maintenance	3
MMST2105	Motorcycle Transmissions and Clutch Service	3
MMST2110	Motorcycle Wheels and Suspension	3

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Occupational Certificate Credits 30

### Semester Sequence

#### Offered at Eden Prairie Only

#### First Semester

MMST1100	Introduction to Marine and Motorsport Technology	3
MMST1105	Introduction to Engine Theory	3
MMST1110	Introduction to Fuel Systems	3
MMST1115	Introduction to Electrical Systems	3
MMST1130	Introduction to Drive Systems	3

#### Total Credits 15

#### Second Semester

MMST1120	Introduction to Ignition Systems	3
MMST1125	Service Management	3
MMST1145	Trailer Maintenance	3
MMST2105	Motorcycle Transmissions and Clutch Service	3

MMST2110                      Motorcycle Wheels and Suspension                      3

**Total Credits 15**

**Graduation (30 credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/11/2022 : BP / EP 5405

## Outboard Technician (EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

Outboard Marine Technicians service, diagnose and repair outboard motors.

#### Award Outcomes

Perform quality checks on completed work  
 Service fuel systems  
 Service ignition and electrical systems  
 Employ safety standards  
 Service drive systems  
 Integrate customer service and communication skills into repair work

#### Career Opportunities

Outboard Marine Technicians find employment at marine dealerships, distributors and manufacturers. Technicians are also in demand at service repair shops and businesses.

### Program Requirements

#### Technical Studies Required 30 Credits

MMST1100	Introduction to Marine and Motorsport Technology	3
MMST1105	Introduction to Engine Theory	3
MMST1110	Introduction to Fuel Systems	3
MMST1115	Introduction to Electrical Systems	3
MMST1120	Introduction to Ignition Systems	3
MMST1125	Service Management	3
MMST1130	Introduction to Drive Systems	3
MMST1145	Trailer Maintenance	3
MMST2126	Marine Lower Unit and Cooling System Service	3
MMST2140	Marine Tilt/Trim and Controls	3

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Occupational Certificate Credits 30

#### Semester Sequence

#### Offered at Eden Prairie Only

#### First Semester

MMST1100	Introduction to Marine and Motorsport Technology	3
MMST1105	Introduction to Engine Theory	3
MMST1110	Introduction to Fuel Systems	3
MMST1115	Introduction to Electrical Systems	3
MMST1130	Introduction to Drive Systems	3

#### Total Credits 15

#### Second Semester

MMST1120	Introduction to Ignition Systems	3
MMST1125	Service Management	3
MMST1145	Trailer Maintenance	3
MMST2126	Marine Lower Unit and Cooling System Service	3

MMST2140	Marine Tilt/Trim and Controls	3
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**Total Credits 15**

**Graduation (30 Credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/11/2022 : BP / EP 5406

## Power Equipment (EP) Occupational Certificate

### Overview and Award Outcomes

#### Overview

Power Equipment students will perform repairs on a variety of lawn and garden equipment. Lawn and garden equipment will include lawn mowers, snow blowers and most hand-held chore performing devices.

#### Award Outcomes

Perform quality checks on completed work  
 Service fuel systems  
 Service ignition and electrical systems  
 Employ safety standards  
 Service drive systems  
 Integrate customer service and communication skills into repair work

#### Career Opportunities

Employment for the power equipment graduate will have a wide range of opportunities including lawn and garden shops, rental shops, golf course maintenance facilities, farm equipment dealerships, and many other small engine repair shops.

### Program Requirements

#### Technical Studies Required 30 Credits

MMST1100	Introduction to Marine and Motorsport Technology	3
MMST1105	Introduction to Engine Theory	3
MMST1110	Introduction to Fuel Systems	3
MMST1115	Introduction to Electrical Systems	3
MMST1120	Introduction to Ignition Systems	3
MMST1125	Service Management	3
MMST1130	Introduction to Drive Systems	3
MMST1145	Trailer Maintenance	3
MMST2175	Power Equipment Drive Systems	3
MMST2180	Power Equipment Accessory Maintenance	3

#### General Education Required 0 Credits

#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Occupational Certificate Credits 30

#### Semester Sequence

#### Offered at Eden Prairie Only

#### First Semester

MMST1100	Introduction to Marine and Motorsport Technology	3
MMST1105	Introduction to Engine Theory	3
MMST1110	Introduction to Fuel Systems	3
MMST1115	Introduction to Electrical Systems	3
MMST1130	Introduction to Drive Systems	3

#### Total Credits 15

#### Second Semester

MMST1120	Introduction to Ignition Systems	3
MMST1125	Service Management	3
MMST1145	Trailer Maintenance	3

MMST2175	Power Equipment Drive Systems	3
MMST2180	Power Equipment Accessory Maintenance	3

**Total Credits 15**

**Graduation (30 credits)**

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

2/11/2022 : BP / EP 5407

**Medium/Heavy Truck Technology**

## Medium/Heavy Truck Technology (BP) Associate in Applied Science Degree

### Overview and Award Outcomes

#### Overview

Students in the Medium/Heavy Truck Technology A.A.S. degree program are sponsored by a trucking company. Students split their learning between taking courses at the college and developing skills through paid internships at truck repair companies. Students spend the first-half of each semester taking courses at the college and the second-half of each semester on a paid internship developing the skills just learned in class. This schedule is repeated throughout the two-year program. The college assists students in obtaining a trucking industry sponsor for the internship portion of the program.

This program is designed to provide individuals with the knowledge and skills needed to be an entry-level technician in the trucking industry. Students will practice their skills in a well equipped lab and develop production level skills at their industry sponsored company. Some of the areas of study are electrical and electronic systems, steering and suspension, air and hydraulic ABS brake systems and vehicle maintenance. Students will perform diesel engine troubleshooting, overhaul procedures, and tune-ups on both mechanical and electronic engines. Clutch, transmission, and drive axle diagnosis, repair and overhaul will be taught along with preventive maintenance procedures. Instruction will include classroom theory, shop demonstrations, and hands-on skill development. Much of the lab work is performed on actual vehicles or engines in operating condition.

Students entering the Medium/Heavy Truck Technology program must be eligible to obtain a commercial driver's license and be able to pass a DOT (Department of Transportation) physical, drug screening, and background check as a condition of employment for the internship portion of the program.

#### Award Outcomes

- Perform vehicle inspection procedures
- Perform preventative maintenance
- Repair vehicle electrical systems
- Repair truck brake systems
- Analyze ABS brake systems
- Repair truck steering systems
- Repair truck suspension systems
- Diagnose truck HVAC systems
- Repair driveline components
- Overhaul truck transmissions
- Overhaul diesel engines
- Interpret diagnostic tool readings

#### Career Opportunities

Career opportunities as a skilled truck technician are available in truck dealerships, leasing companies, trucking fleets, and independent truck repair shops. Students may choose other options such as railroads, heavy equipment, mass transit companies, or marine applications. Electronic diesel engines, transmissions, and ABS brake systems have revolutionized the trucking industry creating a great demand for the skilled truck technician.

#### Program Requirements

##### Technical Studies Required 79 Credits

MHTT1002	Truck Technology Fundamentals	2
MHTT1011	Electricity in Truck Technology I	4
MHTT1015	Electricity in Truck Technology II	3
MHTT1020	Vehicle Service	3
MHTT1031	Internship/Industry Partnership I	6
MHTT1100	Hydraulic Brake Systems	3
MHTT1115	Air Brake Systems and Controls	3
MHTT1131	Internship/Industry Partnership II	6
MHTT1200	Steering and Suspension Systems	3
MHTT1210	Clutch and Driveline	3
MHTT1300	Introduction to Diesel Engines	3
MHTT1322	Heating and Air Conditioning	2

MHTT1332	Internship/Industry Partnership III	4
MHTT1401	Diesel Engine II	3
MHTT1410	Transmission Technologies	3
MHTT1420	Drive Axles	3
MHTT1431	Internship/Industry Partnership IV	6
MHTT1501	Diesel Engine III	3
MHTT1512	Diesel Engine IV	4
MHTT1533	Internship/Industry Partnership V	6
MHTT1600	Advanced Diagnostics	2
MHTT1630	Internship/Industry Partnership VI	4

**General Education Required 15 Credits**

COMM1250	Interpersonal Communication	3
	or	
	Any 3 credit course from MnTC Goal Area 7	3
ENGL1070	Technical Writing	3
	or	
	Choose 3 credits from MnTC Goal Area 1	3
PHIL1100	Critical Thinking for College Success	3
	or	
	Choose 3 credits from MnTC Goal Area 2	3
PHYS1005	Introductory Physics I	3
	or	
	Any 3 credit course from MnTC Goal Area 3	3
SOCI1100	Introduction to Sociology	3
	or	
	Choose 3 credits from MnTC Goal Area 5	3

**General Education Elective 0 Credits****Technical Studies Elective 0 Credits****Total Associate in Applied Science Degree Credits 94****Semester Sequence****Offered at Brooklyn Park Only****First Semester**

MHTT1002	Truck Technology Fundamentals	2
MHTT1011	Electricity in Truck Technology I	4
MHTT1020	Vehicle Service	3
MHTT1031	Internship/Industry Partnership I	6
PHIL1100	Critical Thinking for College Success	3
	or	
	Choose 3 credits from MnTC Goal Area 2	3

**Total Credits 18****Second Semester**

MHTT1100	Hydraulic Brake Systems	3
MHTT1115	Air Brake Systems and Controls	3
MHTT1131	Internship/Industry Partnership II	6
MHTT1200	Steering and Suspension Systems	3
COMM1250	Interpersonal Communication	3
	or	
	Choose 3 credits from MnTC Goal Area 7	3

**Total Credits 18****Summer Semester**

MHTT1300	Introduction to Diesel Engines	3
MHTT1322	Heating and Air Conditioning	2
MHTT1332	Internship/Industry Partnership III	4
SOCI1100	Introduction to Sociology	3
	or	
	Choose 3 credits from MnTC Goal Area 5	3

**Total Credits 12****Third Semester**

MHTT1210	Clutch and Driveline	3
MHTT1410	Transmission Technologies	3
MHTT1420	Drive Axles	3
MHTT1431	Internship/Industry Partnership IV	6
PHYS1005	Introductory Physics I	3
	or	
	Choose 3 credits from MnTC Goal Area 3	3

**Total Credits 18****Fourth Semester**

MHTT1401	Diesel Engine II	3
MHTT1501	Diesel Engine III	3
MHTT1512	Diesel Engine IV	4
MHTT1533	Internship/Industry Partnership V	6
ENGL1070	Technical Writing	3
	or	
	Choose 3 credits from MnTC Goal Area 1	3

**Total Credits 19****Summer Semester**

MHTT1015	Electricity in Truck Technology II	3
MHTT1600	Advanced Diagnostics	2
MHTT1630	Internship/Industry Partnership VI	4

**Total Credits 9****MnTC Goal Area 1**

A complete list of MnTC courses and Goal Areas that can be used to meet General Education requirements can be found at [www.hennepintech.edu](http://www.hennepintech.edu). The same course cannot satisfy more than one MnTC Goal Area requirement.

COMM1200	Intercultural Communication	3
COMM1250	Interpersonal Communication	3
COMM1260	Small Group Communication	3
COMM1280	Public Speaking	3
ENGL1070	Technical Writing	3
ENGL1100	Writing and Research	4
ENGL1250	Short Form Composition and Reporting	4
ENGL1300	Introduction to Creative Writing	3

**MnTC Goal Area 2**

BIOL1000	Biology in Society	4
BIOL1100	Nutrition and Health	3
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4

BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
COMM1260	Small Group Communication	3
MATH1150	Applications of Quantitative Reasoning	3
PHIL1100	Critical Thinking for College Success	3
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
SOCI1100	Introduction to Sociology	3

**MnTC Goal Area 3**

BIOL1000	Biology in Society	4
BIOL1300	Introduction to Forensic Science	3
BIOL1400	Human Biology	4
BIOL2005	General Biology I	4
BIOL2125	Anatomy and Physiology I	4
BIOL2225	Anatomy and Physiology II	4
BIOL2235	Microbiology	4
CHEM1000	Introduction to Chemistry	4
CHEM1100	General, Organic, and Biological Chemistry Foundations	4
PHYS1005	Introductory Physics I	3
PHYS1010	Introductory Physics II	3
PHYS2005	College Physics I	4

**MnTC Goal Area 5**

ECON1200	Principles of Microeconomics	3
ECON1300	Principles of Macroeconomics	3
HIST1400	Contemporary World History	3
POLI1000	Introduction to American Government and Politics	3
PSYC1000	General Psychology	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1100	Introduction to Sociology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3
SOCI1500	Introduction to Criminal Justice	3
SOCI1600	Food and Society	3

**MnTC Goal Area 7**

COMM1200	Intercultural Communication	3
COMM1250	Interpersonal Communication	3
MUSC1010	Influence of Pop/Rock Music	3
PSYC1200	Psychology Throughout the Lifespan	3
PSYC1300	Abnormal Psychology	3
SOCI1200	Marriage and Family	3
SOCI1400	Race in America	3

**Graduation (94 Credits)**

Students entering the Medium/Heavy Truck Technology program must be eligible to obtain a commercial driver's license and be able to pass and be able to pass a DOT (Department of Transportation) physical, drug screening, and background check as a condition of employment for the internship portion of the program.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice.

## Medium/Heavy Truck Drivetrain Technician (BP) Diploma

### Overview and Award Outcomes

#### Overview

Students in this Medium/Heavy Truck Drivetrain Technician program will split their learning between the college and industry at a paid internship site. This is a one-year, three-semester course of instruction including: classroom theory, shop demonstrations, and hands-on skill development. Some of the areas of study are: clutch and driveline, manual transmissions, drive axles, mechanical and electronically controlled diesel engines. Diagnosis, repair, and overhaul procedures will be performed on actual vehicles and engines in operating condition.

Students entering the Medium/Heavy Truck Technology program must be eligible to obtain a commercial driver's license and be able to pass a DOT (Department of Transportation) physical, drug screening, and background check as a condition of employment for the internship portion of the program.

Prerequisite: Graduation from the Medium/Heavy Truck Maintenance Technician program or two years of truck mechanic experience.

#### Award Outcomes

Repair driveline components  
Overhaul truck transmissions  
Overhaul diesel engines  
Interpret diagnostic tool readings

#### Career Opportunities

Career opportunities as a skilled maintenance technician are available in truck dealerships, leasing companies, truck fleets, and independent truck repair shops. Electronic diesel engines, transmissions, and ABS brake systems have revolutionized the trucking industry creating a great demand for the skilled truck technician.

#### Program Requirements

##### Technical Studies Required 40 Credits

MHTT1015	Electricity in Truck Technology II	3
MHTT1210	Clutch and Driveline	3
MHTT1401	Diesel Engine II	3
MHTT1410	Transmission Technologies	3
MHTT1420	Drive Axles	3
MHTT1431	Internship/Industry Partnership IV	6
MHTT1501	Diesel Engine III	3
MHTT1512	Diesel Engine IV	4
MHTT1533	Internship/Industry Partnership V	6
MHTT1600	Advanced Diagnostics	2
MHTT1630	Internship/Industry Partnership VI	4

##### General Education Required 3 Credits

PHYS1005	Introductory Physics I	3
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##### General Education Elective 0 Credits

##### Technical Studies Elective 0 Credits

##### Total Diploma Credits 43

#### Semester Sequence

##### Offered at Brooklyn Park Only

##### First Semester

MHTT1210	Clutch and Driveline	3
MHTT1410	Transmission Technologies	3
MHTT1420	Drive Axles	3
MHTT1431	Internship/Industry Partnership IV	6

**Total Credits 15****Second Semester**

MHTT1401	Diesel Engine II	3
MHTT1501	Diesel Engine III	3
MHTT1512	Diesel Engine IV	4
MHTT1533	Internship/Industry Partnership V	6
PHYS1005	Introductory Physics I	3

**Total Credits 19****Summer Semester**

MHTT1015	Electricity in Truck Technology II	3
MHTT1600	Advanced Diagnostics	2
MHTT1630	Internship/Industry Partnership VI	4

**Total Credits 9****Graduation (43 Credits)**

**Prerequisite: Student must graduate from the medium/Heavy Truck Maintenance Technician major or have two years of truck mechanic experience.**

Students entering the Medium/Heavy Truck Technology program must be eligible to obtain a commercial driver's license and be able to pass a DOT (Department of Transportation) physical, drug screening, and background check as a condition of employment for the internship portion of the program.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice

3/1/2022 : BP 5206 / EP

## Medium/Heavy Truck Maintenance Technician (BP) Diploma

### Overview and Award Outcomes

#### Overview

Students in this Medium/Heavy Truck Maintenance Technician program will split their learning between the college and industry at a paid internship site. This is a one-year, three-semester course of instruction including: classroom theory, shop demonstrations, and hands-on skill development. Some of the areas of study are: truck preventive maintenance, electrical systems, air and hydraulic ABS brake systems, heating and air conditioning systems, diesel engine systems, and steering and suspension systems. Much of the shop work is performed on actual vehicles and engines in operating condition.

Students entering the Medium/Heavy Truck Technology program must be eligible to obtain a commercial driver's license and be able to pass a DOT (Department of Transportation) physical, drug screening, and background check as a condition of employment for the internship portion of the program.

#### Award Outcomes

Perform vehicle inspection procedures  
 Perform preventative maintenance  
 Repair vehicle electrical systems  
 Repair truck brake systems  
 Analyze ABS brake systems  
 Repair truck steering systems  
 Repair truck suspension systems  
 Diagnose truck HVAC systems  
 Interpret diagnostic tool readings

#### Career Opportunities

Career opportunities as a skilled maintenance technician are available in truck dealerships, leasing companies, trucking fleets, and independent truck repair shops.

### Program Requirements

#### Technical Studies Required 39 Credits

MHTT1002	Truck Technology Fundamentals	2
MHTT1011	Electricity in Truck Technology I	4
MHTT1020	Vehicle Service	3
MHTT1031	Internship/Industry Partnership I	6
MHTT1100	Hydraulic Brake Systems	3
MHTT1115	Air Brake Systems and Controls	3
MHTT1131	Internship/Industry Partnership II	6
MHTT1200	Steering and Suspension Systems	3
MHTT1300	Introduction to Diesel Engines	3
MHTT1322	Heating and Air Conditioning	2
MHTT1332	Internship/Industry Partnership III	4

#### General Education Required 3 Credits

PHYS1005	Introductory Physics I	3
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#### General Education Elective 0 Credits

#### Technical Studies Elective 0 Credits

#### Total Diploma Credits 42

#### Semester Sequence

#### Offered at Brooklyn Park Only

#### First Semester

MHTT1002	Truck Technology Fundamentals	2
MHTT1011	Electricity in Truck Technology I	4
MHTT1020	Vehicle Service	3

MHTT1031	Internship/Industry Partnership I	6
PHYS1005	Introductory Physics I	3

**Total Credits 18****Second Semester**

MHTT1100	Hydraulic Brake Systems	3
MHTT1115	Air Brake Systems and Controls	3
MHTT1131	Internship/Industry Partnership II	6
MHTT1200	Steering and Suspension Systems	3

**Total Credits 15****Third Semester**

MHTT1300	Introduction to Diesel Engines	3
MHTT1322	Heating and Air Conditioning	2
MHTT1332	Internship/Industry Partnership III	4

**Total Credits 9****Graduation (42 Credits)**

Students entering the Medium/Heavy Truck Technology program must be eligible to obtain a commercial driver's license and be able to pass and be able to pass a DOT (Department of Transportation) physical, drug screening, and background check as a condition of employment for the internship portion of the program.

Semester listings reflect the recommended sequence. Due to circumstances beyond our control, the information herein is subject to change without notice

3/1/2022 : BP 5205 / EP

# Course Outlines

*The following course descriptions are alphabetically ordered by rubric or subject area (ABCT through WLDG).*

## **Business & Information Technology**

Accounting	ACCT (p. 578)
Business	BUSN (p. 684)
Information Technology	ITEC (p. 974)
Medical Office Careers	OFCR (p. 1195)

## **Construction & Building Careers**

Architectural Technology	ARCH (p. 591)
Cabinetmaking and Wood Product Design	CBTG (p. 717)
Carpentry	CARP (p. 700)
Heating, Ventilation and Air Conditioning	HVAC (p. 941)
Landscape and Horticulture	LNDC (p. 1025)
Plumbing Pre-Apprenticeship	PLBG (p. 1206)

## **Education Careers**

Child Development	CDEV (p. 735)
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## **Emergency & Public Service**

Emergency Medical Services	EMSV (p. 811)
Fire Protection	FRPT (p. 904)
Law Enforcement	LAWE (p. 1011)
Public Works	PWRK (p. 1233)

## **Entertainment**

Music Business and Entrepreneurship	MUBE (p. 1180)
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## **General Education**

Arts	ARTS (p. 656)
Biology	BIOL (p. 677)

Career Development Services	CCDS (p. 732)
Chemistry	CHEM (p. 748)
Communication	COMM (p. 757)
Computer Literacy	CPLT (p. 761)
Economics	ECON (p. 793)
English	ENGL (p. 843)
English for Speakers of Other Languages	ESOL (p. 853)
Health	HLTH (p. 934)
History	HIST (p. 934)
Mathematics	MATH (p. 1088)
Music	MUSC (p. 1184)
Philosophy	PHIL (p. 1199)
Physics	PHYS (p. 1203)
Political Science	POLI (p. 1229)
Psychology	PSYC (p. 1230)
Sociology	SOCI (p. 1243)
<b>Health Careers</b>	
Dental Assistant	DNTL (p. 784)
Emergency Medical Services	EMSV (p. 811)
Health Science (Broad Field)	HLTH (p. 934)
Health Unit Coordinator	HLUC (p. 937)
Health Care Core Curriculum	HCCC (p. 929)
Medical Assistant	MAST (p. 1079)

Medical Office Careers	OFCR (p. 1195)
Nursing Assistant	NAHA (p. 1186)
Practical Nursing	NURS (p. 1192)
<b>Manufacturing &amp; Engineering Technology</b>	
Automation Robotics Engineering Technology	ARET (p. 608)
Electronics Technology	ELEC (p. 795)
Engineering CAD Technology	ENGC (p. 828)
Fluid Power Engineering and Motion Control Technology	FLPW (p. 871)
Industrial Building Engineering & Maintenance	IBEM (p. 970)
Machine Tool Technology	MACH (p. 1051)
Manufacturing Engineering Technology	METS (p. 1102)
Plastics Engineering Technology	PLST (p. 1216)
Welding and Metal Fabrication	WLDG (p. 1247)
360 Programs	CMAE (p. 749)
<b>Media Communications Careers</b>	
Audio Production	ARSP (p. 629)
Graphic Design	MGDP (p. 1107)
Interactive Design and Video Production	MMVP (p. 1156)
<b>Service Industry</b>	
Culinary Arts	CULA (p. 765)
<b>Transportation Careers</b>	
Auto Body Collision Technology	ABCT (p. 553)
Automotive Technology	ATEC (p. 658)
Ford ASSET Program	FDAS (p. 860) & FMLR (p. 899)
Marine, Motorsport and Outdoor Power Equipment Technology	MMST (p. 1140)
Medium/Heavy Truck Technology	MHTT (p. 1125)

# ABCT - Auto Body Collision Technology

## ABCT 1145 - Cutting, Heating and MIG Welding (3)

Students will learn how to use oxy-acetylene cutting, heating, and metal inert gas (MIG) welding on automotive sheet metal. Students will become familiar with how the MIG welding process are used, requirements for metal joining processes and their application to auto collision repair.

Prerequisite: Qualifying score on reading assessment test OR Qualifying score on ESL reading assessment test

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Analyze MIG welding

Analyze Gas welding

Identify procedures for safe handling of high pressure gas cylinders

Apply industry standard welds

Perform proper MIG welding technics

Adjust welders

Determine the correct welder type, (electrode, wire type, diameter, and gas) to be used in a specific welding situation

Set up welding equipment

Explain proper weld joints for industry standard

Determine proper protection techniques when welding on a vehicle

Explain proper safety procedures when welding on vehicles with electronic modules

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 2

## ABCT 1150 - Trim, Moveable Glass and Hardware (2)

Many repairs made to vehicle doors and other glass installations require the removal and installation of glass. Proper removal and installation is necessary to prevent damage to the glass or vehicle. Improper removal and installation can also cause wind noise and water leaks. Selection of proper tools, safe use of tools and proper removal procedures will be emphasized in this course. Installation procedures will be covered.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Inspect, (run channels, glass, power mechanisms,) and related controls  
Perform personal and environmental safety  
Replace, removable, manually or power operated roof panel  
Remove, replace exterior trim  
Identify types of auto glass

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477  
Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

#### **ABCT 1155 - Metal Straightening and Body Filler I (4)**

This course will cover metal straightening, the purpose of plastic fillers and how to use them for their intended purpose in autobody repair.

Prerequisite: Qualifying score on reading assessment test OR Qualifying score on ESL reading assessment test

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Apply metal straightening procedures
- Differentiate between types of tools
- Protect autobody parts
- Exercise metal shrinking procedures
- Exercise metal grinding procedures
- Identify the uses of plastic fillers
- Demonstrate mixing plastic filler
- Manipulate plastic filler
- Employ plastic filler sanding procedures
- Manipulate plastic filler to correct contour
- Assess checking straightness
- Demonstrate metal finishing techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477  
Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 2

### **ABCT 1160 - Bolt-on, Weld-on Panel Replacement and Alignment (4)**

Proper use and selection of tools is very important to properly remove, install and align bolt-on-panels. Properly removing, installing and aligning bolt-on-parts is essential to restoring the vehicle to pre-accident condition. Proper tools and equipment along with proper techniques are essential for the removal and replacement of weld-on-panels. The fit and finish of the final repair is determined by proper panel installation. Alignment to adjacent panels, gaps at door and decklid, panel warpage and damage to adjacent panels are major factors in the quality of the finished product.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify body tools

Evaluate fasteners

Identify removal procedures of broken fasteners

Demonstrate different panel alignment methods

Demonstrate bolt on panel removal procedures

Demonstrate bolt on panel removal

Model welding procedures

Demonstrate quarter panel removal

Facilitate outer door panel welding

Analyze door frame damage

Identify corrosion protection procedures

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 2

### **ABCT 1165 - Using Body Filler II (2)**

Proper finish of plastic body filler in a quick, efficient manner is necessary to minimize labor costs and maximize earnings. At the completion of this course the student will be able to repair a heavily damaged panel in the most cost effective manner.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Manipulate shrink stretched panel areas to proper contour using heat

Demonstrate hammer and dolly techniques

Identify different types of panels  
Repair panels  
Identify different types of tools

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1 lab: 1

### **ABCT 1235 - Finish Defects (2)**

Today's vehicles have finishes that are very refined and free from noticeable defects. To maintain and restore these features in a finish, the technician will learn to identify types of finish defects and the proper correction procedures using the least aggressive methods. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify paint film problems

Perform personal and environmental safety

Analyze finish defects

Perform repair techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 0

### **ABCT 1240 - Detailing (2)**

This course is designed to teach the technician specific skills needed to enter the field of reconditioning on new and used cars. It includes buffing and polishing the exteriors, cleaning and detailing the interior, cleaning and painting the engine compartment

and installing body accent stripes and moldings. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Evaluate tasks involved in detailing vehicles
- Apply compounds, polishes, and waxes
- Demonstrate the use of buffing equipment and techniques
- Analyze how to wet-sand defects in top coats
- Apply decorative decals or stripes
- Examine interior, exterior, and glass for cleanliness

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **ABCT 1250 - Auto Body Painting Internship (1 - 4)**

Following internship guidelines and guidelines in all previous successfully completed courses, the technician will work in a designated auto body repair facility with a journeyman and paint vehicles to manufacturers specifications.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Exhibit enthusiasm.
- Demonstrate initiative.
- Display judgment.
- Demonstrate courtesy.
- Display punctuality.
- Demonstrate dependability.
- Organize work area.
- Create successful working relationship.
- Demonstrate safe work habits.
- Follow prescribed procedures.
- Demonstrate customer relations.
- Demonstrate cooperation.
- Exhibit professionalism.
- Maintain work stations.
- Perform shop duties (1-8 hours).
- Perform personal and environmental safety (daily).

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 0 SOE: 1-4

### **ABCT 1255 - Environmental Health, Safety and Equipment Preparation for Finishes (4)**

The student will develop a plan for refinishing a vehicle using the correct operation of equipment and paint. Concerns for environmental health and safety will be followed and enforced. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain EPA hazardous waste disposal regulations

Illustrate OSHA standards for fire protection equipment

Analyze personal paint shop safety

Evaluate different types of paint

Identify vehicle color codes

Develop a plan for refinishing using a total product system

Prepare painting environment

Practice daily clean up

Demonstrate mixing paint using a formula

Identify how a paint system is applied by the manufacturer

Identify a vehicle color code

Use vehicle color codes

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 2

**ABCT 1260 - Surface Preparing and Finish Application (4)**

This course will enable the technician to identify type and color of a finish. The student will understand undercoat materials, sanding procedures and masking procedures in the preparation of the surface for refinishing. Manufacturers of today's vehicles use various refinish systems such as single stage, base coat, clearcoat and tri-stage. To properly refinish a vehicle and meet customer expectations, the technician will understand and apply these types of finishes. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Apply finish using appropriate spray techniques
- Apply selected product on test panel
- Administer selected product on test panel
- Use manufactures' recommendations
- Simulate safe workstation
- Model daily shop duties
- Demonstrate environmental safety standards
- Prepare broken areas for refinishing
- Protect unfinished surfaces
- Apply single stage colorcosts
- Apply base coat finishes
- Administer clearcoat finishing
- Use tri-coat finishes

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 3

**ABCT 1265 - Tinting and Blending (4)**

The students will learn how to achieve a blendable match with all colors. Students will become familiar with paint application problems and the use of preventive measures. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Plot solid colors
- Plot metallic colors
- Differentiate colors for match test
- Apply knowledge of color movement

Apply base-coat blend  
Apply clear coat  
Use multiple finish coat blends  
Analyze a tinting formula to achieve a blendable match  
Demonstrate blend repair  
Identify defects caused by spray techniques  
Identify problems caused by drying and curing  
Analyze paint problems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 2

### **ABCT 1300 - Auto Body Structural Repair Internship I (4)**

Following internship guidelines and guidelines in all previous successfully completed courses, the technician will work in a designated auto body repair facility with a journeyman and repair vehicles to manufacturers specifications in non-structural repairs.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Exhibit enthusiasm.  
Demonstrate initiative.  
Display judgment.  
Demonstrate courtesy.  
Display punctuality.  
Demonstrate dependability.  
Organize work area.  
Create successful working relationship.  
Demonstrate safe work habits.  
Follow instructions from assigned Journeyman.  
Demonstrate customer relations.  
Demonstrate cooperation.  
Exhibit professionalism.  
Maintain work stations.  
Perform shop duties.  
Perform personal and environmental safety (daily).  
Advance skills as Internship progresses.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit

Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 0 SOE: 4

### **ABCT 1305 - Auto Body Structural Repair Internship II (4)**

The technician will work in a designated auto body repair facility with a journeyman and repair vehicles to manufacturers specifications.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Exhibit enthusiasm.

Demonstrate initiative.

Display judgment.

Demonstrate courtesy.

Display punctuality.

Demonstrate dependability.

Organize work area.

Create successful working relationship.

Demonstrate safe work habits.

Follow prescribed procedures.

Demonstrate customer relations.

Demonstrate cooperation.

Exhibit professionalism.

Maintain work stations.

Work with journeyman on structural repair and replacement.

Perform personal and environmental safety (daily).

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 0 SOE: 4

### **ABCT 1400 - Collision Damage Analysis (3)**

Students will have the opportunity to learn about various vehicle designs, manufacturing processes, energy management processes, repair issues, and measuring for repair processes. Students will be able to recognize damage to various mechanical

components, interior components, and exterior components. Repair processes to manufactures guidelines of finish, fit-up and proper corrosion protection will also be covered.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify 5 types of collision damage
- Diagnose direct damage repair
- Select clamping procedures for tie downs
- Describe the proper repair of a uni-body vehicle
- Apply knowledge of different metals used in automotive construction
- Identify five type of frame damage
- Illustrate proper stress relieving procedures
- Analyze extent indirect damage
- Illustrate electronic measuring

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 3 lab: 0

### **ABCT 1405 - Estimating (2)**

The student will be introduced to estimating procedures which include identifying vehicle components, selecting appropriate replacement parts, labor costs, utilizing manual estimating systems and computerized estimating systems. The students will create damage reports from this information including calculating parts, labor, supplies and materials for accurate repair costs.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify the collision repair estimate.
- Identify a damage report.
- Select a damage report.
- Identify vehicle data.
- Identify vehicle components.
- Identify damage types.
- Determine repair strategy.
- Identify mechanical damage.
- Identify a computer form system.
- Identify a database information system.
- Describe a digital imaging system.
- Demonstrate system use.
- Maintain work stations.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 0 lab: 2

### **ABCT 1410 - Customer Management (2)**

Students learn appropriate industry terminology, measuring and improving levels of customer service, interpreting body language, conflict resolution, telephone and in-person communication skills, personal conduct and business ethics, and the completion of paperwork related to auto body customer management functions.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Discuss customer service strategies

Describe challenges in customer service systems

Apply decision making and problem solving skills

Apply conflict management skills

Develop listening skills

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2 lab: 0

### **ABCT 1415 - Estimating Internship (2)**

The apprentice estimator will work in a designated auto body repair facility along side an experience estimator following internship guidelines and guidelines in all previously completed courses. Students participate in writing estimates and facilitating repair processes. Students will also understand customer needs, repair costs, insurance company requirements, customer delivery and follow up of all repairs.

Prerequisite: ABCT1400, ABCT1405 and ABCT1410

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and

evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Determine the purpose of a collision repair estimate
- Evaluate parts information
- Analyze a damage report
- Determine repair strategy
- Demonstrate estimate procedures
- Identify a vehicle color code

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

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Credit Details: lecture: 0 SOE: 2

**ABCT 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A `Specialized Lab Training Agreement` must be signed by the student and the instructor and submitted to the registrar at the time of registration.

**Prerequisite:** None

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Course goals addressed will depend on the area and type of specialization the student wishes to study, and will be defined in the "Specialized Lab Training Agreement"

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 0 lab: 1-4

**ABCT 2000 - Advanced Welding Methods (1)**

Modern vehicle designs have very exacting requirements regarding metal joining processes used in their construction and repair. Technicians will be familiar with these processes and will use advanced methods in the duplication of collision repairs.

Prerequisite: ABCT1145

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify set up procedures for squeeze type resistance spot welders.

Perform set up procedures for squeeze type.

Perform spot weld procedures on sheet metal.

Identify TIG welder set up procedures.

Perform TIG welder set up procedures.

Perform aluminum welds with TIG welder.

Identify set up procedures for aluminum welding with MIG welds.

Set up MIG welder for aluminum welding.

Identify oxy-acetylene aluminum welding procedures.

Maintain work stations.

Perform shop duties (1 hour).

Perform personal and environmental safety (daily).

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 0 lab: 1

**ABCT 2006 - Stationary Glass Replacement (1)**

The student will be able to identify different types of glass, assess what types of adhesion methods are used and install stationary glass. The student will check for wind noise and water leaks. The student will also be introduced to laminated glass repair systems.

Prerequisite: ABCT1150

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain glued in glass installation procedures

Develop procedure to install glued in glass

Validate proper installation of glued in glass

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit

Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 0 lab: 1

### **ABCT 2015 - Steering and Suspension (2)**

Driving performance problems after collision repairs can result in customer complaints. Accurate diagnosis and repair of wheel and tire conditions can lead to customer satisfaction.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify tire constructions

Analyze steering systems

Diagnose alignment concerns

Identify accident steering column concerns

Interpret front and rear suspension systems.

Explain 4 wheel alignment procedures

Produce completed four wheel alignment

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 1

### **ABCT 2040 - Restraint Systems (1)**

This course will teach theory and practical applications of automotive restraint systems along with diagnosis and service.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Verify proper operation of Supplemental Restraint Systems (SRS)

Select procedures to disassemble the SRS system according to manufacturer's specifications

Diagnose SRS faults and properly repair  
Develop correct procedures for replacing SRS components

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1 lab: 0

### **ABCT 2051 - Damage Analysis and Straightening Structural Parts (4)**

The students will learn how to look for all types of damage in all vehicle designs including hidden damages that are often overlooked in the estimating process. Furthermore, the student will straighten structural parts through the use of pulling and anchoring systems that have different characteristics from different manufactures. Also, the student will become familiar with different anchoring and pulling systems in the normal collision repair operation.

Prerequisite: ABCT1155, ABCT1160, ABCT2150, and ABCT2190

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify five types of collision damage

Diagnose direct damage repair

Identify self centering gauges

Install self centering gauges

Identify tram gauges

Use tram gauge

Select clamping procedures for tie downs

Describe the proper repair of a uni-body vehicle

Identify different metals used in automotive construction

Identify five types of frame damage

Demonstrate proper stress relieving procedures

Analyze extent indirect damage

Demonstrate electronic measuring

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2 lab: 2

### **ABCT 2055 - Panel Replacement and Restoring Corrosion Protection (4)**

The student will learn how vehicles are manufactured which will allow them to understand crush factors in accidents. The student will learn how to restore the vehicles to pre-accident condition as proper procedures for panel replacement will control all safety features of the vehicles such as air bag deployment and seat belt operation. The student will learn the proper techniques that will be required in the welding processes as there are different metals within the structure which require different welding methods. The student will understand the different corrosion protection methods on interior and exterior panels.

Prerequisite: ABCT1160, ABCT2000, ABCT2006, and ABCT2051

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify procedures for rail replacement
- Identify the proper joint to be used in panel repair
- Select the proper procedure for inner panel replacement
- Select the proper procedure for rocker panel replacement
- Select the proper procedure for "b" pillar replacement
- Describe causes of corrosion protection
- Restore corrosion protection coatings
- Demonstrate the proper welds
- Prepare safe work stations
- Demonstrate proper inner structural parts replacement
- Demonstrate procedure for front sheet metal replacement
- Select proper procedure for rear body replacement
- Select proper procedure for floor pan replacement

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2 lab: 2

### **ABCT 2060 - Straightening Structural Parts II (1)**

When applying corrective forces, a technician must understand what property changes take place in the metal. When metal is bent its grain structure is changed and when grain structure is changed, the metal is stressed and may be weakened.

Prerequisite: ABCT2051

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify importance of correct anchoring.

Identify different types of anchoring systems.  
 Identify unibody anchoring systems.  
 Identify body-over frame anchoring systems.  
 Identify anchoring cautions.  
 Maintain work stations.  
 Perform shop duties.  
 Perform personal and environmental safety (daily).

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 0 lab: 1

### **ABCT 2110 - Creating a Computerized Damage Report (1)**

There are many computer systems available today on a wide range of different computers. Like manual estimates, computer estimates are still written by a person and must also follow the rules of the system being used. Understanding the computer is important to check its accuracy and completeness for the repairs.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify a computer form system.  
 Identify a database information system.  
 Identify an intelligent database system.  
 Describe a digital imaging system.  
 Demonstrate system use.  
 Maintain work stations.  
 Perform shop duties (1 hour).  
 Perform personal and environmental safety (daily).

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1 lab: 0

### **ABCT 2115 - Plastic Identification and Repair Decision (1)**

With the increased use of plastics by vehicle manufacturers, technicians and appraisers are making decisions on whether to repair or replace damaged parts. With an understanding of the unique issues involved in deciding to repair or replace a plastic part, the technician will now be able to make the best decision.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify automotive interior plastics.

Identify automotive exterior plastics.

Identify interior repair methods.

Identify exterior repair methods.

Identify nonrepairable parts.

Maintain work stations.

Perform shop duties (1 hour).

Perform personal and environmental safety (daily).

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1 lab: 0

### **ABCT 2130 - Padded Dash Repairs (1)**

Following a collision, foam filled dash pads or padded instrument panels may be dented or torn. The technician will understand the procedures to repair this damage to restore the vehicle to pre-accident condition.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Select and understand padded dash repair methods.

Select and understand padded dash repair materials.

Select and understand padded dash repair tools.

Identify padded dash repairs by welding.

Identify padded dash repairs by using adhesives.

Maintain work stations.

Perform shop duties (1 hour).

Perform personal and environmental safety (daily).

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab

credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1 lab: 0

### **ABCT 2140 - Refinishing of Plastics (1)**

Vehicle plastics must be refinished following repairs. Often a specific plastic may require special preparation of primers to get the paints to bond. The technician must be familiar with various refinishing procedures to refinish automotive plastics. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Select and understand retexturing materials.

Select and understand retexturing tools.

Identify retexturing preparation.

Identify various types of plastic.

Identify plastic specific surface preparation.

Maintain work stations.

Perform shop duties (1 hour).

Perform personal and environmental safety (daily).

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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### **ABCT 2146 - Electrical and Electronic Systems (2)**

At the completion of this course, the student will be able to correctly diagnose and repair electrical problems following a collision. Understanding electrical systems used to restore vehicles to pre-accident condition is stressed in this course.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify types of voltage
- Perform voltage checks
- Examine wiring
- Check broken wiring
- Examine electrical components
- Change electrical components

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1 lab: 1

### **ABCT 2150 - Brake Systems (1)**

The student will learn different designs of brake systems, will be able to identify all brake parts and understand how brake systems function.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Analyze brake system operation.
- Identify appropriate brake fluids
- Examine caliper assembly upon removal
- Demonstrate knowledge of anti-lock brake systems
- Examine drum assembly upon removal
- Illustrate bleeding procedures according to manufactures procedures

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 0

**ABCT 2165 - Drivetrains (1)**

Theory and practical application of drivetrain components and their assemblies will be covered in this course.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify and understand use of mechanical fasteners.
- Identify clutch-throttle and shift linkages.
- Identify and inspect drive shafts and joints.
- Identify and inspect engine and transmission mounts.
- Identify and inspect front and rear drive axle assemblies.
- Maintain work stations.
- Perform shop duties (1 hour).
- Perform personal and environmental safety (daily).

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1 lab: 0

**ABCT 2170 - Fuel Intake and Exhaust Systems (1)**

This course is designed to apply knowledge of auto fuel intake and exhaust systems theory and service level of protection.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify and inspect fuel tank and supply systems.
- Identify and inspect exhaust systems.
- Identify and inspect emission control systems.
- Identify and inspect engine hot air systems.
- Identify and inspect alternative fuel systems.
- Maintain work stations.
- Perform shop duties.
- Perform personal and environmental safety (daily).

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1 lab: 0

**ABCT 2175 - Analyzing Damage/Creating a Manual Damage Report (2)**

Accurate damage reports and cost estimating depends on proper use of collision estimating model guides. The collision guide is used to write a damage report for calculating parts, labor, supplies and materials for an accurate repair cost. The student then creates a manual damage report from this information. The damage report is the first guide to use during the beginning of the repair sequence and it provides a written plan for these repairs.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Determine the purpose of a collision repair estimate

Evaluate parts information

Analyze a damage report

Determine repair strategy

Demonstrate estimate procedures

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1 lab: 1

**ABCT 2185 - Plastic Adhesive and Welding Repairs (2)**

A plastic repair technician must be able to determine when and how to perform the two-part adhesive repair procedures to various interior and exterior automotive plastic panels. A graduate of this program must be able to understand the composition of plastic materials, how to repair plastic panels and how to select the correct welding technique and materials to make a successful repair.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Execute panel repairs

Construct plastic parts using adhesives

Demonstrate the use of hot air welding  
 Demonstrate airless welding  
 Explain Sheet Moulded Compound (SMC) plastic repair procedures

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1 lab: 1

### **ABCT 2190 - Air Conditioning and Cooling Systems (2)**

The student will learn the theory and operation of the automotive air conditioning and cooling systems. The student will be able to diagnose correct operations of these systems and replace components as necessary. The students will understand EPA regulations as they pertain to recharge reffridgerants.

Prerequisite: ABCT1160

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Verify correct equipment for refrigerant recover and recharging

Illustrate procedures to recycle refrigerant

Select procedure to evacuate A/C system

Select procedure to recharge A/C system

Identify procedures to leak test an A/C system

Illustrate procedures for radiator installation

Select procedure to test cooling systems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1 lab: 1

### **ABCT 2495 - Auto Body Internship I (4)**

The student intern will work in a designated auto body repair facility with a journeyman and repair vehicles to manufacturers specifications.

Prerequisite: Successful completion of all ABCT courses or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

The specific goals of this course will be defined in the 'Internship Agreement'

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 0 SOE: 4

### **ABCT 2501 - Auto Body Internship II (4)**

Following internship guidelines and guidelines in all previous successfully completed courses, the technician will work in a designated auto body repair facility with a journeyman and repair vehicles to manufacturers specifications.

Prerequisite: Successful completion of all ABCT courses or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

The specific goals of this course will be defined in the 'Internship Agreement'

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 0 SOE: 4

### **ABCT 2505 - Auto Body Internship III (3)**

Following internship guidelines and guidelines in all previous successfully completed courses, the technician will work in a designated auto body repair facility with a journeyman and repair vehicles to manufacturer's specifications.

Prerequisite: Successful completion of all ABCT courses or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

The specific goals of this course will be defined in the 'Internship Agreement'

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 0 SOE: 3

### **ABCT 2600 - Collision Lab (1 - 8)**

Following collision lab guidelines, the technician will apply knowledge learned in previous successfully completed courses and perform repairs as specified by manufacturers specifications.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Exhibit enthusiasm.

Demonstrate initiative.

Display judgment.

Demonstrate courtesy.

Display punctuality.

Demonstrate dependability.

Organize work area.

Create successful working relationships.

Demonstrate safety.

Follow prescribed procedures.

Demonstrate cooperation.

Demonstrate customer relations.

Exhibit professionalism.

Maintain work stations.

Perform shop duties (1-8 hours).

Perform personal and environmental safety (daily).

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 0 lab: 1-8

## ACCT - Accounting Careers

### ACCT 1000 - Introduction to Accounting (3)

This course is designed to provide an introduction to basic accounting procedures including analyzing business transactions, recording transactions in a variety of journals, preparing financial statements and completing the accounting cycle.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Prepare journal entries to record business transactions in the general journal

Post amounts from the general journal to the general ledger

Prepare journal entries to close temporary accounts at the end of a fiscal year

Record routine business transactions in a special journal and in subsidiary ledgers

Prepare work sheets and closing entries

Prepare a bank reconciliation and journalize any necessary journal entries

Prepare a payroll register and all necessary journal entries to record the payroll

Prepare the following financial statements: balance sheet, income statement and statement of owner's equity

Prepare adjusting entries and post to the general ledger at the end of an accounting period

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### ACCT 1102 - Principles of Accounting I (4)

This course is an introduction to the fundamental concepts and principles which are used in a business environment to analyze and record transactions using the accrual method of accounting. This course also covers analyzing and recording transactions for cash, marketable securities, accounts receivable, payroll, current and contingent liabilities, inventories and plant assets.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Prepare financial statements
- Recognize revenue
- Determine the cost of an asset
- Prepare closing entries
- Prepare a bank reconciliation
- Describe the financial statement of a merchandising business
- Describe uncollectible receivables
- Calculate adjusting entries
- Compute the cost of inventory
- Calculate depreciation
- Prepare a payroll register
- Determine employer liabilities for payroll

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 4

#### **ACCT 1107 - Principles of Accounting II (4)**

This course is a presentation of accounting for intangible assets, long-term liabilities, stockholders' equity and retained earnings. It includes financial statement analysis, the cash flow statement and provides an introduction to cost and managerial accounting.

Prerequisite: ACCT1102 with a grade of "C" or better

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Prepare the journal entries for partnership equity
- Describe the basic characteristics of corporations
- Journalize entries related to a corporation's stock transactions, including dividends
- Record journal entries related to bonds
- Prepare a statement of cash flows
- Analyze financial statements
- Journalize transactions for equity investments methods using the cost and equity methods
- Identify costs and terminology specific to manufacturing operations
- Prepare basic journal entries for a job order cost accounting system
- Compute unit costs using a process costing system
- Perform cost-volume-profit calculations
- Develop schedules needed for a master budget

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 4

**ACCT 1111 - Payroll Accounting (3)**

This course provides a background in federal wage laws, wage and salary calculations, federal and state payroll tax calculations, federal and state federal reporting requirements and accounting for the payroll process. It includes a payroll preparation and quarterly and annual reporting practice set.

Prerequisite: ACCT1000 or ACCT1102 or concurrent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify payroll laws that affect employers

List recordkeeping requirements

Identify the major provisions of FLSA

Compute hourly and overtime pay rates

Identify requirements for social security coverage

Compute federal tax withholding

Calculate FUTA and SUTA tax payments

Journalize payroll entries

Perform payroll procedures for a computerized payroll system

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

**ACCT 1116 - Ten-Key Calculator for Accounting (2)**

This course is designed for the student to learn the ten-key touch method for calculators. The student learns to use the calculator in math and accounting applications.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Review basic mathematics.

Solve basic mathematics problems.  
 Identify ten-key operating controls.  
 Perform addition on the ten-key using the touch method.  
 Demonstrate accuracy on performance tests.  
 Demonstrate speed development.  
 Maintain accuracy on performance tests.  
 Perform calculations in addition and subtraction using the touch method.  
 Attain confidence in ability to use the touch method.  
 Complete business application problems.  
 Perform multiplication calculations on the ten-key.  
 Use constant multiplicand.  
 Utilize the memory capabilities of the calculator.  
 Perform division calculations on the ten-key.  
 Use constant divisor.  
 Solve business application problems.  
 Identify and follow the correct sequence in solving multiple operations.  
 Utilize critical thinking skills in applying problem-solving situations.  
 Complete business practice set.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2

### **ACCT 1125 - Excel (3)**

This course is designed to give the student knowledge of the creation and use of spreadsheets in business. The student will learn basic data manipulation and printing including formulas, what-if analyses, charts, sorts, and extraction.

Prerequisite: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 or ITEC1035 or ITEC1080

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Create an Excel spreadsheet

Create a variety of charts

Create formulas in an Excel spreadsheet

Save and print worksheets and charts

Display and print the formulas in a worksheet

Perform "what if" analyses

Manipulate cells, rows, and columns in an Excel spreadsheet

Demonstrate use of web tools and processes in an Excel spreadsheet

Modify and sort data in an Excel database

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit

Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **ACCT 1130 - Computerized Accounting (3)**

This course is an introduction to the use of computers in the accounting functions of a business. Students will practice fundamental accounting activities using various accounting software packages. The training includes general ledger, accounts receivable, accounts payable, inventory, payroll, fixed assets and financial statement analysis.

Prerequisite: ACCT1102

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Enter information needed to start a new company

Create backup and portable files

Record transactions in the revenue/receivables/cash receipts cycle

Record transactions in the expense/payables/cash payment cycle

Record payroll transactions

Complete a bank reconciliation

Close-out the records at the end of an accounting cycle

Create financial statements

Maintain business inventory

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **ACCT 1135 - QuickBooks (3)**

This course is an introduction to the use of computers in the accounting functions of a business. Students will practice fundamental accounting activities using Quickbooks software. The training includes general ledger, accounts receivable, accounts payable, inventory, payroll, fixed assets and financial statement analysis.

Prerequisite: ACCT1102

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Enter information needed to start a new company
- Create backup and portable files
- Record transactions in the revenue/receivables/cash receipts cycle
- Record transactions in the expense/payables/cash payment cycle
- Record payroll transactions
- Complete a bank reconciliation
- Close-out the records at the end of an accounting cycle
- Create financial statements
- Maintain business inventory

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **ACCT 1150 - Sage 50 (3)**

This course is an introduction to the use of computers in the accounting functions of a midsize business. Students will practice fundamental accounting activities using Sage 50 software. The training includes general ledger, financial reports, bank reconciliation, accounts receivable, accounts payable, inventory, and various accounting transactions.

Prerequisite: Recommended: ACCT1102

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following goals will be addressed in the course:

- Enter information needed to start a new company
- Create backup files
- Record transactions in the revenue/receivables/cash receipts cycle
- Record transactions in the expense/payables/cash payment cycle
- Record payroll transactions
- Complete a bank reconciliation
- Close-out the records at the end of an accounting cycle
- Create financial statements
- Maintain business inventory

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 3 lab: 0

### **ACCT 1410 - Business Finance (3)**

This course is designed to present basic business finance principles to business and marketing students. Students are taught to use planning tools, and to assess investment viability, financial position and performance, liquidity, and financing options.

Prerequisite: Qualifying score on math assessment test OR MATH0910 or MATH0920. And recommended, Qualifying score on reading assessment test OR ENGL0921 and qualifying score on writing assessment test OR ENGL0930

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Examine mainstream investment options

Determine profitability under alternative inventory costing methods (i.e. FIFO, LIFO, and Average Cost)

Perform elementary cost-volume-profit analysis

Demonstrate understanding of sound financial management principles

Identify components of basic financial statements

Perform high-level analysis of basic financial statements

Formulate decisions using financial calculations

Evaluate alternative sources of short-term and long-term financing

Construct operating and capital budgets

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **ACCT 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A `Specialized Lab Training Agreement` must be signed by the student and the instructor and submitted to the registrar at the time of registration.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate accounting skills and knowledge

Apply computer skills in a business setting

Analyze business information

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lab: 1-4

### **ACCT 2155 - Financial Accounting (4)**

This course is an introduction to the fundamental concepts and principles, from a user perspective, which are used in a business environment to analyze and record transactions using the accrual method of accounting. This course also covers analyzing transactions for cash, marketable securities, accounts receivable, payroll, current and contingent liabilities, inventories and plant assets.

Prerequisite: ACCT1000 or ACCT1102

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the nature and purpose of generally accepted accounting principles (GAAP)

Describe the components of the accounting conceptual framework including accounting and business terminology

Apply the accounting equation to analyze business transactions

Describe how internal controls are used to manage resources, minimize risk and ensure accurate reporting

Explain how the four basic financial statements can be used to meet the information needs of management, investors, creditor and regulators

Apply accounting procedures to measure, classify and report current assets

Apply accounting procedures to measure, classify and report noncurrent assets

Apply accounting procedures to measure, classify and report liabilities

Apply accounting practices relating to stockholders' equity, including the issuance of stock, repurchase of stock and dividends

Analyze how the use of different valuation methods and estimates can affect the Income statement and balance sheet

Describe how a cash flow statement can provide insight to a company's performance and solvency

Use financial analysis techniques to compare financial results against expectations, industry standards and competitors

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 4

### **ACCT 2200 - Intermediate Accounting I (4)**

This course is an overview of financial accounting and its theoretical foundation including a conceptual framework of accounting for financial statements. It includes an in-depth study of specific assets and present and future value concepts.

Prerequisite: ACCT1107

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify philosophical and authoritative foundations of the accounting profession
- Record entries needed to complete the accounting cycle
- Prepare required notes to financial statements for the Balance Sheet using accepted accounting procedures
- Prepare the Income Statement using accepted accounting procedures
- Prepare the Statement of Cash Flow using accepted accounting procedures
- Describe the motivations and techniques for earnings management
- Record the transactions within the revenue/receivable/cash cycle
- Record revenue using various methods of revenue recognition
- Calculate inventory and cost of goods sold using accepted accounting methods
- Prepare entries to record the acquisition of noncurrent assets
- Prepare entries to record utilization of noncurrent assets
- Record the retirement of noncurrent assets

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 4

### **ACCT 2206 - Intermediate Accounting II (3)**

This course is an overview of financial accounting and its theoretical foundation including a conceptual framework of accounting for financial statements.

Prerequisite: ACCT1107

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Prepare a bond amortization schedule
- Apply present value concepts
- Define equity financing
- Classify corporate investments
- Identify types of leases
- Record corporate tax liability
- Calculate earnings per share
- Identify the types of risk faced by business
- Calculate the effect of accounting changes upon financial statements
- Prepare a pension worksheet

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **ACCT 2211 - Cost Accounting (3)**

This course is an introduction to the principles and concepts used to account for direct materials, labor, and factory overhead in both manufacturing and service entities. It includes using cost accounting data as a management tool for planning and controlling costs.

Prerequisite: ACCT1107

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Contrast financial accounting and cost management

Prepare income statements for manufacturing organizations

Prepare process costing system journal entries

Allocate support department costs

Compute variances

Calculate performance ratios

Describe job costing

Contrast lean accounting techniques with traditional accounting techniques

Analyze partial productivity measures

Construct a master budget

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

### **ACCT 2221 - Managerial Accounting (4)**

This course is a presentation of how accounting data and concepts may be interpreted and applied by management in planning and controlling business operations.

Prerequisite: ACCT2155 AND qualifying score on math assessment test OR MATH0940

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Define competitive advantage
- Explain the importance of relevant costs
- Define strategic alignment targets
- Calculate transfer prices
- Calculate inventory costs using job-costing techniques
- Explain activity-based-costing
- Explain cost-volume-profit analysis
- Differentiate the different kinds of cost behavior
- Create a balanced scorecard
- Define quality costs
- Evaluate pricing policies
- Describe the differences between managerial and financial accounting
- Apply the concepts underlying strategic capital investment decisions
- Calculate standard costs for the use of creating variance analysis reports

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 4

### **ACCT 2231 - Income Tax (4)**

This course is an explanation and interpretation of the Internal Revenue Code to assist taxpayers in the preparation and filing of individual, business, and corporate tax returns.

Prerequisite: ACCT1102 or ACCT1107

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Explain how individual income tax liability is determined
- Determine dependency exemptions and filing status
- Determine gross income inclusions and exclusions
- Classify deductions for determination of adjusted gross income
- Compute depreciation and amortization of assets
- Calculate travel, entertainment and transportation expenses
- Determine itemized deductions and limitations
- Compute gain or loss on property dispositions
- Apply tax rules for reporting capital gains and losses
- Explain tax holding period rules

Calculate refundable and nonrefundable tax credits  
 Explain tax carryover provisions

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 4

### **ACCT 2700 - Auditing (3)**

This is a capstone class that will draw upon different topics covered in the AAS degree. It will familiarize students with the year-end audit process conducted by a CPA audit firm, and with the activities leading up to the publication of the annual report.

Prerequisite: ACCT1107

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the purpose of an audit

List the activities in audit preparation

List the typical activities of a CPA during the audit process

Describe the difference between an internal and external auditor

Describe the effect of Sarbanes-Oxley upon publicly traded corporations

Explain the procedures conducted to test internal controls

Describe how the annual report embodies the qualitative characteristics of financial accounting

Analyze the majors sections of the annual report

Identify the required parts of the Auditor's Report

List the required information in the Notes section of the annual report

Contrast the ethical dilemmas between stewardship and ethical responsibilities of corporate management

Identify the different goals of the Security & Exchange Commission, Assoc. of Independent CPA's, corporate management, financial market analyst, and private investors

Explain the effect of international accounting standards upon future U. S. Corporate reporting

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **ACCT 2800 - Accounting Internship (1 - 10)**

This is a cooperative internship program between Hennepin Technical College and an employer to allow the student work experience in the accounting area.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate accounting knowledge
- Display computer proficiency
- Exhibit professional behavior and ethics in work environment
- Calculate mathematical solutions
- Exhibit problem solving skills
- Communicate information effectively to others

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 0 SOE: 1-10

### **ACCT 2900 - Small Business Accounting Simulation (3)**

This course is designed to provide a successful transition from the students' academic training to the workplace environment. The students are required to use a variety of their accounting skills in a simulated accounting position. It is intended for accounting students who are near the end of their degree program.

Prerequisite: ACCT2200 and ACCT2231

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Set up the accounting system for a small business
- Perform typical accounting-cycle activities
- Prepare a financial depreciation schedule
- Prepare a MACRS (Modified Accelerated Cost Recovery System) depreciation schedules
- Records month-end adjustments
- Record payroll
- Prepare basic financial accounting documents
- Construct lease schedule using excel software
- Perform a bank reconciliation
- Prepare federal payroll documents
- Prepare federal income tax documents

Communicate rationale for decision making

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **ACCT 2950 - Accounting Skills Assessment (0)**

This Assessment Test requires students to pass a one-time third-party accounting examination. This required class will examine the accounting skills and knowledge of students who are finishing their diploma or 2-year degree. The class will provide data to assess the degree to which the accounting department and students are meeting the goals of the department.

Prerequisite: 75% of required courses are recommended to have been completed

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following goals will be addressed in the course.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 0 lab: 0

## **ARCH - Architectural Technology**

### **ARCH 1008 - Architectural Residential Technology I (5)**

This course introduces the process of designing and drafting residential construction drawings while applying drafting standards, codes, and design principles. The student will produce construction drawings for a single family home.

Prerequisite: Qualifying score on reading assessment test or ENGL0901 and prerequisite or concurrent enrollment in ARCH1101 and prerequisite or concurrent enrollment in ARCH1203 recommended

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Define Architectural Technology Career paths
- Translate field dimensions to architectural scale plans
- Describe benefits of site locations
- Draft site plan to scale
- Analyze site/building orientation and environmental design strategies
- Demonstrate residential code compliance
- Develop conceptual bubble diagrams
- Develop functional floor plan room relationships
- Define stair terminology
- Identify stair types
- Calculate stair risers and run
- Apply kitchen design standards
- Apply bath design standards
- Implement architectural graphic standards to produce construction drawings
- Create exterior elevation views
- Draft accurate views using ortho-graphic projection
- Draft building sections to scale
- Produce foundation plan layout
- Produce floor plan layout
- Draft standard plan/section details
- Interpret project specifications
- Sketch plan, section and elevation views to scale
- Identify design styles
- Draft roof plan

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 3

### **ARCH 1011 - Architectural Residential Technology II (5)**

This course will reinforce sound drafting and design processes and increase BIM proficiency. The students will produce a set of construction drawings for a three level multi-family townhouse project.

Prerequisite: Recommended concurrent enrollment in ARCH2370

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Perform residential energy code compliance
- Construct 3D common area separation walls to meet code compliance
- Design common area separation walls
- Produce a set of construction documents for a multi-family construction project

Produce details at different scales  
 Describe materials for building assemblies  
 Assemble general construction notes  
 Build 3D interior elevations  
 Apply durable finish materials  
 Apply platform construction methods  
 Plot drawings to scale  
 Generate window/door details  
 Design a structural framing plan  
 Articulate eave details to meet code compliance  
 Draft a structural framing plan  
 Create Revit project window, door, and finish schedules  
 Develop a sustainable site plan  
 Generate wall sections  
 Generate building section  
 Design exterior elevations  
 Render a 3D interior view  
 Render a 3D exterior view  
 Apply Revit technology effectively to produce a BIM model of the townhouse

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 3

### **ARCH 1101 - Architectural Residential AutoCAD (5)**

This course will introduce the student to the basics needed to use the computer and AutoCAD software as a tool in the preparation of architectural working drawings. The student will study coordinate systems, drawing set-up, drawing and modifying commands, annotation, dimensioning, hatching and plotting. The student will produce architectural construction drawings for a cabin.

Prerequisite: Qualifying score on reading assessment test or ENGL0901 and prerequisite or concurrent enrollment in ARCH1008 and prerequisite or concurrent enrollment in ARCH1203 recommended

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following goals will be addressed in the course.

Utilize coordinate systems for data entry

Set-up drawing parameters

Manage drawings files

Construct geometry

Modify geometry

Manage object properties

Use object snaps

Manage text within AutoCAD

Manage dimensions on floor plans

Manage hatch patterns on plans and elevations

- Plot drawings to scale
- Complete a project template
- Manage block references
- Access Design Center
- Draft floor plan walls with openings
- Manage layer setup
- Draft foundation plan
- Utilize AutoCAD modify tools
- Draft accurate floor plan layout
- Draft accurate Sections
- Draft accurate Elevations
- Produce an accurate set of residential construction documents

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 3

### **ARCH 1203 - Residential Materials and Methods of Construction (3)**

The student studies building science and technology used in wood and light-gauge steel frame residential construction. Topics to be covered include foundations, floor systems, wall framing, ceiling/roof framing and interior and exterior finish materials and methods of construction. Students will prepare residential construction specifications and estimate material costs.

Prerequisite: Qualifying score on reading assessment test or ENGL0901 and prerequisite or concurrent ARCH1101

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:\

- Describe foundation construction
- Explain erosion control measures
- Analyze site conditions
- Describe floor construction systems
- Illustrate roof construction detail
- Identify stair terms and components
- Identify window types and styles
- Identify door types and styles
- Describe thermal and moisture protection
- Compare qualities of finish materials
- Select finish materials
- Describe construction details
- Organize items by Construction Specifications Institute (CSI) division in project specifications
- Estimate material costs

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit

Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 0

### **ARCH 1206 - Strength of Materials (3)**

This course is designed to acquaint the student with principles of structural engineering as they apply to the architectural drafting profession. Topics to be covered include the basic principles of structural mechanics, including designing loads and forces, bending, shear and deflection, and their application to the design of wood, steel and concrete structural elements.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply principals of statics to structures

Identify the laws of equilibrium

Calculate beam sizes for flexural stress

Calculate beam sizes for horizontal stress

Diagram moment and shear forces

Define modulus of elasticity

Identify structural lumber classifications

Identify allowable lumber stresses

Calculate beam size for deflection limits

Calculate applied loads on structural members

Calculate applied forces on structural members

Apply column slenderness ratio

Analyze strength qualities of materials

Calculate beam section modulus

Determine beam reaction forces

Determine reinforcement for concrete elements

Calculate moments of inertia

Determine centroid location

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **ARCH 1340 - Building Codes: Commercial (2)**

This course will introduce the student to the organization, use and impact of the International Building Code in the design of buildings.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify life-safety issues
- Determine occupancy group
- Design for accessibility
- Calculate allowable floor areas and heights
- Identify fire-resistance rating for construction assemblies
- Determine plumbing fixture requirements
- Classify types of construction
- Assess plans for code compliance
- Complete code review for commercial building
- Complete energy code compliance applications

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2

### **ARCH 1345 - Building Systems (3)**

This course will introduce the student to basic design and drafting requirements of HVAC, plumbing, electrical and low-voltage/data/communication systems in both residential and commercial applications. This will include new trends in alternative energy and 'smart building' technology.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Differentiate basic thermal systems
- Identify qualities of energy efficient home models
- Define sustainable building performance goals
- Demonstrate energy conservation technology
- Design residential plumbing system
- Select alternative energy design strategies for climate comfort needs
- Describe the Home Energy Rating System (HERS) index test
- Design sound attenuation solutions
- Describe water conservation methods
- Identify water conserving appliances and techniques
- Identify electricity conserving appliances and lighting fixtures

Specify components for energy efficient HVAC systems  
Perform energy analysis

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **ARCH 1500 - Introduction to Construction Management (2)**

This course will explore the principals and processes required to manage construction projects, allowing students to become familiar with the construction management field. The course includes an overview of project planning, scheduling, budgeting, contracts, construction material knowledge, communication, site safety issues, sustainable operations, and leadership skills required to direct operations smoothly through successful completion.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Integrate sustainable construction operations

Coordinate construction trade schedules

Schedule on-site material delivery

Develop a plan to meet owner's budget within time restraints

Monitor on-site safety, communication, and code issues

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2

### **ARCH 1505 - LEED GA Preparation (2)**

The LEED GA (Leaders in Environmental and Energy Efficient Design, General Associate) course is designed to assist in preparation for the LEED GA certification exam. The learner will review LEED certification strategies, the green associate study

guide, and LEED core concepts.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Specify EPA (Environmental Protection Agency) approved materials

Interpret LEED rating system credit application

Facilitate sustainable design team process and procedure

Evaluate sustainable practices for economic, environmental, and human health

Identify LEED qualified strategies from the certification checklist

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2

### **ARCH 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A `Specialized Lab Training Agreement` must be signed by the student and the instructor and submitted to the registrar at the time of registration.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Course goals addressed will depend on the area and type of specialization the student wishes to study, and will be defined in the "Specialized Lab Training Agreement"

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lab: 1-4

### **ARCH 2121 - Architectural Commercial Technology I (5)**

In this course, students will create construction documents with advanced drafting techniques using BIM software. Students will also be introduced to the use of load bearing masonry and structural steel framing systems in the context of a large-scale building project.

Prerequisite: ARCH2370

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Generate required plan views

Generate required elevation views

Generate required section views

Generate required detail views

Comply with CAD standards

Research materials and products to be utilized in project

Demonstrate knowledge of material applications

Utilize structural grid system for layout and dimensioning

Produce a complete 3D BIM model for a commercial project

Produce structural framing model

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 3

### **ARCH 2141 - Architectural Commercial Technology II (5)**

The goal of this course is the production of a set of construction drawings for a commercial building project where poured and pre-cast concrete, steel and CMU cavity wall are the primary structural building materials. The course utilizes a team approach to the project to foster the critical thinking, problem-solving and teamwork skills required in industry. Emphasis will also be given to increasing drafting proficiency of work sharing and BIM techniques.

Prerequisite: ARCH2121

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate effective team skills

Utilize Internet-based applications for team collaboration

Demonstrate understanding of the building materials used

Demonstrate understanding of design program

Demonstrate correct dimensioning of drawings

Demonstrate proper annotation of drawings  
Manage linked files  
Demonstrate ability to meet project deadlines  
Demonstrate understanding of office standards

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 3

### **ARCH 2301 - Design with SketchUp (2)**

This course is designed to introduce students to SketchUp imaging technology for design. Students will use SketchUp tools to construct objects, modify objects, apply materials, apply special effects, and create 3D camera views. Students will create a portfolio of design scenes and present a final design composition.

Prerequisite: Qualifying score on reading assessment test or ENGL0901 and knowledge of computers is recommended

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify SketchUp Interface tools

Construct components using SketchUp tools

Modify components using modification tools

Operate camera tools to view 3D objects

Import drawings

Export drawings

Create complex interconnected shapes

Create rendered images of model views

Apply materials and color to object surfaces

Apply modeling and rendering techniques to components

Incorporate photos into model views

Export 3D views to 2D layout sheets

Compose portfolio of interior SketchUp scenes

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 0

### **ARCH 2310 - Architectural CAD: Introduction to Revit Architecture (2)**

This course will introduce students to the basics of producing drawings using the latest release of Autodesk's parametric modeling software, Revit.

Prerequisite: Knowledge of computers recommended

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Manage project files
- Create floor plans
- Apply wall types
- Insert hosted elements
- Modify element properties
- Apply roofs
- Generate elevations
- Compose building sections
- Dimension drawings
- Annotate drawings

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2

### **ARCH 2370 - Architectural Residential Revit (4)**

In this course, students will learn to use Revit software to create and coordinate building information models (BIM) for construction document production.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901. Prerequisite or concurrent ARCH1011

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Manage project files
- Create floor plans
- Create wall types
- Insert hosted elements
- Modify element properties
- Create roofs

- Create ceilings
- Generate elevations
- Compose building sections
- Develop wall sections
- Dimension drawings
- Annotate drawings
- Generate interior elevations
- Generate schedules
- Complete energy code compliance certificate
- Create rendered views
- Arrange drawings on layout sheets
- Plot drawings to scale
- Produce construction document set

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 4

### **ARCH 2466 - Commercial Materials and Methods of Construction (2)**

This course will introduce the student to the materials and methods commonly encountered in large-scale construction projects. Consideration will be given to the materials, their properties, application techniques and construction practices as well as how these should be represented graphically. Materials to be examined include steel, concrete, masonry, interior and exterior finishes and waterproofing. Students will prepare commercial construction specifications and estimate material costs.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901 and ARCH1101 OR ARCH2370

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Examine site materials
- Compare products with recycled content
- Compare resource conservation strategies
- Compare maintenance requirements of building materials
- Dissect structural systems
- Identify floor systems
- Describe components of commercial roof systems
- Describe various foundation systems
- Inspect curtain wall components
- Produce a cavity wall section detail construction
- Identify commercial door and window options
- Describe properties of effective moisture and thermal protection
- Examine finish materials
- Compare wall framing systems
- Research materials and their properties
- Classify fire-rated construction materials
- Demonstrate materials applications

Produce details of roof components  
 Identify materials by CSI classification  
 Estimate material costs

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2

### **ARCH 2562 - Capstone: Project Design and Management (5)**

This course is designed for the entrepreneur. Students will develop a residential project design and manage the drawings and documents for it. They will also produce permit and bid construction documents while consulting with industry professionals. A formal capstone project presentation will be provided by students using visual graphics to feature the details of their work and the challenges they encountered.

Prerequisite: ARCH1008 AND ARCH1203 AND ARCH1101 OR ARCH2370 OR Previous CAD Experience

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Design residential project plans
- Analyze space programming needs for the project
- Develop schematic sketches
- Determine building location on site
- Create interior design layout options
- Select materials for the project
- Apply color theory
- Utilize design principals
- Distinguish design styles
- Construct Design Development drawings
- Produce code compliant construction documents
- Identify legal contracts
- Develop a project management plan budget and schedule
- Prepare a sustainable design program report
- Develop a set of bid documents
- Organize a final construction document package
- Perform a formal oral presentation of the project
- Evaluate programming challenges
- Create graphic visuals for presentation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 5 lab: 0

### **ARCH 2640 - Architectural History (3)**

Architectural analysis introduces the student to architectural history through development of architectural form and material use. The course is based on western cultures and will include major examples in architecture from Egyptian through European Renaissance to American Colonial architecture to present post modern architecture. This course will provide a basis for understanding of architecture from the perspective of a creative process. The main objective of this course will be to develop student appreciation of past architectural work and to recognize traditional values in architecture.

Prerequisite: Basic computer skills are required

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- List western historical architectural stylistic periods
- Describe the factors that influence architectural styles
- Define the significant characteristics of each architectural style
- Differentiate between architectural styles
- Analyze historic characteristics in modern buildings
- Recognize literal historic characteristics in modern building design
- Recognize metaphorical historic characteristics in a modern building design

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **ARCH 2800 - Civil Site Plan Development (2)**

This course introduces civil site planning. Through the use of Computer-Aided Design (CAD), the student will produce a set of plans including a subdivision plat with contours, street plan and profile sheets, utilities, site plan, and site details. The topography map will be plotted with accurate cut and fill boundaries.

Prerequisite: ARCH1101 or ARCH2370

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

- The following outcomes will be addressed in the course:
- Interpret civil site plans

Develop a topographical surface using imported survey data  
 Design topographical surface grading contours  
 Apply survey coordinate system  
 Draft accurate subdivision plats  
 Plot a contour topographical map using field notes  
 Draft street plans  
 Draft cross section profiles including utilities  
 Draft street, curb, drainage, and site details  
 Identify Geographical Information System (GIS) mapping tools  
 Develop sustainable design site development strategies  
 Identify soil characteristics  
 Calculate earthwork  
 Draft Planned Unit Development (PUD) plan

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 0

## **ARCH 2850 - Architectural Technology Advancements (2)**

In this course students are introduced to innovative technologies that have become essential in the industry. It may include Blue Beam, Navisworks, Energy Analysis, 3D printing, photo-shop, and Google- earth. The technology may be interactive or supplemental to CAD software.

Prerequisite: ARCH2370 or previous CAD experience. Recommended ARCH1011, ARCH2121, ARCH2141, and ARCH2466

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Experiment with new technologies
- Evaluate application of new technologies
- Utilize new technologies effectively
- Demonstrate knowledge of new technology methods
- Research new technology industry tools

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 0

### **ARCH 2900 - Internship (2 - 4)**

This course allows the student to gain on-the-job experience in the AEC industry. The student is responsible for finding and setting up the internship position. Two (2) to four (4) credits can be taken, with each credit requiring 40 hours of time spent on the job. Student performance will be monitored by the instructor and evaluated by the employer.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

The specific goals of this course will be defined in the 'Internship Agreement' signed by the student, employer and instructor and will be tailored to the experiences available at the internship site

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: SOE: 2-4

### **ARCH 2920 - Photoshop for Architecture (4)**

This is an advanced course in which students will learn the basics of Adobe Photoshop and how to apply the software in the creation of architectural digital images. Students will be involved in hands on supervised projects.

Prerequisite: Architectural Drafting and Design program student or architectural industry experience with current working knowledge of computers

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply software commands

Merge images from multiple sources

Construct channels from selections

Construct photo collage/montage effects

Incorporate text into images

Analyze lighting requirements

Construct photorealistic building views

Produce finished images in multiple formats

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or

impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 4

### **ARCH 2930 - Architectural CAD: 3D Studio Max (4)**

This course will use 3D Studio Max software for modeling and rendering architectural design images. Students will also learn to import images created in other programs to develop and enhance those images into true-to-life scenes.

Prerequisite: Architectural Drafting and Design program student or architectural industry experience with current working knowledge of computers

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply software commands

Construct objects from primitive shapes

Set up cameras

Construct animations

Apply material textures

Set up scene lighting

Produce script

Create rendering

Apply illumination effects

Modify IK/FK control

Assemble completed scenes

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 4

### **ARCH 2936 - Advanced Revit BIM Technology (4)**

This course will cover advanced topics and features that are available with the Autodesk Revit software. Students will gain an understanding of Building Information Modeling (BIM) and will learn the tools for family creation, collaboration, massing, advanced rendering, walkthroughs, structural framing and details, mechanical, electrical, and plumbing systems will be implemented.

Prerequisite: ARCH2370 OR Previous Revit experience

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Create Revit families
- Integrate work sharing files with central file
- Coordinate linked files with base file
- Create massing models
- Model structural framing
- Create structural details
- Utilize massing tools
- Analyze structural, mechanical interference
- Create mechanical, electrical, plumbing systems
- Apply advanced rendering techniques
- Produce video walkthroughs
- Manage customized settings in Revit

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 2

# ARET - Automation Robotics Engineering Technology

## ARET 1075 - Careers in Manufacturing (2)

This course introduces students to the skills, technology, work environment, potential salary, and job placement for occupations in the fields of Machine Tool Technology, Mechatronics (Automation Robotics, Electronics, Fluid Power), Welding and Metal Fabrication, Plastics Engineering Technology, and Engineering CAD (Computer-Aided Design) Technology. This dynamic course includes industry-specific tours, as well as hands-on projects that familiarize students with field practices and shop safety. A technical aptitude assessment will be administered to assist students in determining if a career in manufacturing fits with their interests and abilities. The steps for enrolling in a program at HTC will be reviewed.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following goals will be addressed in the course

- Describe the characteristics of a career in Machine Tool Technology
- Describe the characteristics of a career in Mechatronics
- Describe the characteristics of a career in Welding and Metal Fabrication
- Describe the characteristics of a career in Plastics Manufacturing Technology

Describe the characteristics of a career in Engineering CAD Technology

Apply shop safety principles

Determine the manufacturing career fields best suited to individual attributes and interests

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 1

### **ARET 1126 - Mechanical Power Transmission (3)**

This course is an introduction to Mechatronic Systems. The focus of this course is the application of mechanical power transmission to modern manufacturing equipment, used by machine assemblers, maintenance mechanics, field service personnel, engineers, manufacturing technicians and technical salespeople. Mechanical systems covered include chains, belts, couplings, gear reducers, shaft alignment, gear trains, linkages, bearings, and machine timing. Instruction uses hands-on projects in addition to demonstration and lecture on actual packaging machines. This course is part of a 2-course sequence that leads to students being eligible to take PMMI's Mechanical Components 1 test. This test is one of eight Mechatronics certifications offered by PMMI.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe methods of rotary mechanical power transmission

Assemble mechanical power transmission systems

Describe mechanical fasteners and their applications

Differentiate bearing types and applications

Differentiate belt drive systems and applications

Calculate gear/belt/pulley/sprocket ratios

Categorize chain drive systems

Differentiate gear types and applications

Troubleshoot mechanical power transmission systems

Utilize appropriate hand and power tools

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **ARET 1130 - Maintenance Operations (2)**

This course will expose the student to maintenance practices and industrial safety common to many of the potential fields within Mechatronics. Mechatronics is a broad field in Industrial Maintenance with many unique specialties requiring technicians to have exposure to multiple mechanical maintenance procedures. This course is one of two courses aligned to PMMI's Mechanical Components I Mechatronics Certification test. Throughout this course, students will apply concepts to hands-on labs to reinforce the discussed topics.

Prerequisite: Recommended: Prerequisite or Concurrent Enrollment in ARET1126

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain Industrial Safety

Describe maintenance principles

Explain maintenance record keeping procedures

Perform mechanical maintenance procedures

Explain basic troubleshooting procedures

Differentiate types of lubrication and their application

Apply appropriate tools to maintenance procedures

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **ARET 1140 - Computer Integrated Manufacturing (3)**

The purpose of this course is to introduce students in all manufacturing fields to the manufacturing process. Students will examine the principles of manufacturing, manufacturing processes, the elements of automation, and the integration of manufacturing elements. These principles will be applied to manufacturing situations through the use of simulations, assembly of manufacturing systems, and through the use of robotics and Computer Integrated Manufacturing (CIM) equipment.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Acquire an understanding of the history of manufacturing

Utilize control systems

Manage the costs of manufacturing

Design a product for manufacturability

Analyze how we make products

Acquire the understanding of the manufacturing process

Formulate an understanding of Automation  
 Define the elements of power  
 Adapt robotic programming and usage to a manufacturing environment  
 Integrate manufacturing elements into a working manufacturing cell  
 Design a manufacturing system consisting of a minimum of two automated components

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **ARET 1155 - Automation Controls (3)**

This course will expose the students in the field of Mechatronics to common motor control equipment utilized in industrial maintenance occupations. Students will construct and troubleshoot motor control circuits utilizing ladder logic. Students will utilize manual starters, 2-wire control circuits, and 3-wire control circuits. This basic knowledge of automation control equipment is expected of an entry-level technician working in facilities maintenance or assisting in the assembly, test, startup, troubleshooting, maintenance, repair or upgrade of basic manufacturing machinery modules. This course is one of three courses aligned to PMMI's Electricity 1 certification exam.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Compare the operation of manual, 2 wire, and 3 wire motor controls

Differentiate the protective functions of motor starters, fuses and overload

Describe the structure and organization of a basic control system

Apply inputs, outputs and logic to perform control functions

Apply methods of testing various industrial electrical control components

Analyze methods of troubleshooting systems of industrial automation components

Construct and program circuits using AC Frequency Drives

Describe the use of overcurrent protection and disconnect devices in 3-phase circuits

Explain the function of a control relay

Construct circuits based on symbology in ladder diagrams

Use of testing equipment in the troubleshooting process

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **ARET 1161 - Mechatronic Systems (3)**

This course explores how mechatronic systems are utilized in industry. This course will focus on the packaging industry, but can be applied to manufacturing and product conveyance as a whole. A wide variety of machinery will be examined as well as the tooling necessary for basic component fabrication and part modification. Basic metalworking and welding concepts will be examined. Students will receive a hands-on experience leading to a greater understanding of how machinery operates and the skills needed to successfully work with complex machinery in industry.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply safety procedures to machine operation

Demonstrate proper selection and safe use of hand and power tools for a task

Verify that machine performance meets production requirements

Describe machine guarding and its application

Differentiate between types of mechatronic systems

Apply safe operating procedures to mechatronic systems

Interpret machine operation and maintenance documentation

Explain welding theory, equipment and selection process

Appraise components of automated manufacturing lines

Interpret electrical control and power schematics

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **ARET 1165 - Vision Systems for QA/SPC (3)**

In this course, students will utilize various forms of Machine Vision Systems as applied in Quality Assurance (QA). Systems used will include Vision Cameras and Barcode Readers as well as the software and computer systems required for installation, calibration, and operation. The concept of Statistical Process Control (SPC) as applied to QA will be discussed. These skills are vital for technicians entering the fields of Mechatronics and Packaging.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Perform image calibration  
 Analyze the steps involved in a typical pattern matching operation  
 Assess data from vision operations  
 Differentiate the structure of digital image formats  
 Define the elements of a typical Vision System  
 Explain the use of Statistical Process Control (SPC)  
 Explain the uses of barcode in industry  
 Utilize various AutoID systems to capture images

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

### **ARET 1170 - Troubleshooting Mechatronic Systems (3)**

This course is designed for manufacturing personnel preparing to enter the fields of Mechatronics and Packaging. This course will expose the student to a variety of mechatronic systems as applied in the Manufacturing and Packaging fields. Students will utilize schematics, test instruments, and proper safety procedures in the troubleshooting process. A variety of mechatronic systems, including electrical, mechanical, fluid power, and Programmable Logic Controllers (PLC's), will be examined.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Analyze Troubleshooting Techniques  
 Use schematics to troubleshoot mechatronic systems  
 Use schematics to troubleshoot electrical systems  
 Use a variety of Mechatronics and Packaging equipment  
 Troubleshoot motion control systems  
 Troubleshoot electrical control panels using schematics  
 Utilize testing equipment in the troubleshooting process  
 Compare and contrast various types of motors  
 Troubleshoot motors and motor circuits  
 Apply proper safety procedures in the troubleshooting process

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **ARET 1175 - Industrial Electricity and Electronics I (3)**

This course is designed for all students in the Manufacturing & Engineering Technology courses of study. Through the use of modern training systems students will gain an understanding of how electrical principles apply to automated production machines, packaging machinery, and robots. Students will demonstrate their ability to apply knowledge of electrical principles to increase sustainability and energy efficiency in a manufacturing environment. Through extensive hands-on use of digital meters and electrical tools students will be given the opportunity to perform wiring and setup operations and to troubleshoot electrical circuits. This course is part of a sequence of courses leading to Packaging Machinery Manufacture's Institute (PMMI) Industrial Electricity Certification.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Differentiate between DC and AC circuits

Verify proper operation of circuit protection devices

Determine the efficiency of electrical system components

Illustrate the distribution of power safely and effectively

Characterize the conversion process between different energy forms

Employ common electrical measurement units, equations, tools, and calculations

Demonstrate proper electrical safety standards

Practice proper grounding of critical circuits and devices in energy systems

Explain the importance of power management

Describe Ohm's law

Describe Kirchhoff's law

Differentiate between series, parallel, and series/parallel circuits

Analyze electrical schematics

Illustrate proper electrical trouble-shooting techniques

Apply electricity and electrical circuits to automation equipment

Describe the operation of five types of electrical output devices

Employ power and circuit protection in series and parallel circuits

Apply electromagnetism, inductance, and capacitance in automation circuits

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **ARET 1180 - Industrial Electricity and Electronics II (3)**

In the field of Mechatronics, a basic knowledge of industrial electricity is needed to understand the operation of all types of commercial and industrial equipment and to gain further knowledge of more complex packaging machines and systems. This

course will expand on the principles taught in previous courses and provide the student hands-on activities utilizing proper safety procedures while working with electrical tools, measurement equipment, electrical circuits, motors, and electrical components. This course is one of three courses aligned to PMMI's Mechatronics Certification Test for Industrial Electricity 1.

Prerequisite: ARET1175

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Compare Electrical Measurements
- Utilize Electrical Tools
- Utilize Electrical Testing Equipment
- Analyze Power and Circuit Protection in Electrical Systems
- Describe 3-Phase Electrical Systems
- Construct Electrical Wiring Circuits
- Apply Electrical System Troubleshooting
- Categorize Electrical Motors
- Analyze Electrical Safety Procedures
- Categorize Electrical Components

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

## **ARET 1185 - Sensor Applications (2)**

This course will introduce the students to the operation of a variety of sensors used in automated manufacturing and robotics. Students will work with a variety of sensors including thru-beam, Retro-Reflective, and Diffuse Reflective sensors. Students will have the opportunity to connect sensors and differentiate between current sinking (NPN) and current sourcing (PNP) sensors. Students will work with simulations, modern trainers, and various real-life sensors to complete the learning objectives.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Evaluate current sinking (NPN) and current sourcing (PNP) sensors
- Differentiate between Thru-beam, Retro-Reflective, and Diffuse Reflective sensors
- Recommend sensor types to operate in a variety of manufacturing environments
- Construct sensor assemblies
- Prescribe the proper sensor type according to materials being detected
- Validate sensor operation according to environment and materials detected
- Practice Foreground and Background Suppression techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Eden Prairie Campus – 952-995-1544

**Campus:**

Eden Prairie Campus: 952-995-1300

**Credit Details:** lecture: 1 Lab: 1

### **ARET 1190 - Programmable Logic Controllers (3)**

This course will introduce the student to Programmable Logic Controllers (PLC's). This course will utilize Allen Bradley's software suite and introduce the student to logic and machine control common in Mechatronics Systems. Topics include hardware and software composition of control systems, input/output interfacing, basic logic commands and common programming instructions. Knowledge of relay logic, ladder programming and input/output devices is needed to understand and maintain all types of common packaging equipment. This course is aimed at entry level technicians who may be involved in the assembly, test, start-up, troubleshooting, maintenance, repair or upgrade of basic packaging machinery modules. This course is the first in a series of two courses, which will prepare the student for PMMI's Mechatronics Certification Test for PLC Level 1.

**Prerequisite:** None

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Explain the function of a programmable logic controller

Utilize communication drivers to communicate with the controller

Compare the operation of Examine If Open (XIO) and Examine If Closed (XIC) input instructions

Describe the operation of a timer instruction

Describe the functions of counter instructions

Construct event-driven sequencing

Design a PLC program

Define components of a PLC system

Develop and execute a PLC Program

Differentiate between numbering systems (decimal, binary, hexadecimal)

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

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**Credit Details:** lecture: 2 Lab: 1

### **ARET 1200 - Introduction to Robotics (2)**

The focus of this course is to provide hands-on learning opportunities using both real and virtual industrial robots. The main emphasis in the course will be focused on safely programming and operating industrial robots. Students will be exposed to various End of Arm Tooling, robot types, the historical trends of robotics, programming methods components of robotic systems, and multiple coordinate systems. These skills and concepts are utilized throughout all of manufacturing and in many other areas.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Explain Industrial Robot Safety
- Differentiate End of Arm Tooling
- Explain Cartesian coordinate Systems
- Describe the history of Industrial Robotics
- Construct Robotic Programs
- Categorize components of Robot Systems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 1 lab: 1

### **ARET 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A `Specialized Lab Training Agreement` must be signed by the student and the instructor and submitted to the registrar at the time of registration.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Course goals addressed will depend on the area and type of specialization the student wishes to study, and will be defined in the "Specialized Lab Training Agreement"

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lab: 1-4

### **ARET 2101 - Advanced Automation Controls (3)**

This course is designed for those students in the fields of Mechatronics and Packaging. Students will work with modern automation control devices to explore how various motors are used to control position and timing on industrial machinery. Students will work on multiple labs designed to develop their knowledge of these devices and components. Industrial networking, Programmable Logic Controllers, Process Control and PID (Proportional-Integral-Derivative) Controls will also be examined. An examination of various motor drives will occur during this course. AC and DC electric motors are commonly applied in multiple industrial operations including packaging equipment, machine tools, and processing equipment. The control of speed, torque and other parameters is growing in use, resulting in more complex motor drive systems. Technicians need to be proficient in the use of these technologies when they enter the workforce.

Prerequisite: ARET1155

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Construct variable frequency drive (VFD) circuits
- Construct servo motor circuits
- Construct stepper motor circuits
- Analyze electric linear actuators
- Integrate motor controls with a programmable logic controller (PLC)
- Explain proportional-integral-derivative (PID) control
- Differentiate AC and DC motor drives
- Compare how various motors are used for position control
- Appraise motion control components

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **ARET 2105 - Fluid Power Motion Control (2)**

This course is intended for students entering the fields of Mechatronics and Packaging. This course covers the function, operation, and application of common components used in fluid power circuits and systems. It also assesses the understanding of how fluid power components and accessories are placed together to create circuits and systems for use in robotics, mechatronics systems, and packaging. The major emphasis is on pneumatics with a lesser emphasis on vacuum systems. Electro-fluid power troubleshooting is emphasized. This course partially covers the outcomes of PMMI's Fluid Power 1 Mechatronics Certification exam.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe the operation of solenoid-operated directional control valves
- Construct circuits with electro-pneumatic controls
- Apply fluid power calculations to troubleshooting mechatronic systems
- Analyze pneumatic component failures
- Describe the function of a pneumatic schematic
- Apply the use of pneumatics in motion control with mechatronic systems
- Troubleshoot pneumatic circuits as used in mechatronic systems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 1

### **ARET 2111 - Advanced Programmable Logic Controllers (3)**

This course will focus on Allen-Bradley Programmable Logic Controllers (PLC's) and Human Machine Interfaces (HMI's). Problem solving and troubleshooting factory controls will be stressed throughout this course. This is accomplished using up-to-date Rockwell Software. Students will acquire an advanced knowledge of PLC's, HMI's, logic concepts, programmable controller program development, Input/output (I/O) configuration and translation from hardware to programmed logic. Students will develop, edit and troubleshoot programs employing a large array of instructions found in typical Mechatronic Systems as applied in Manufacturing systems, including logic flow, timers, counters, sequencers, math, and specialty functions.

Prerequisite: ARET1190

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Apply memory organization and addressing
- Employ discrete input/output addressing
- Identify the function of a tag
- Create a PLC program utilizing tag-based addressing
- Create an HMI program
- Illustrate the function and use of monitoring devices
- Troubleshoot PLC based system
- Differentiate between program languages
- Create basic PLC Machine applications

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

**ARET 2150 - Engineering Design and Fabrication (2)**

This course provides students entering the fields of Mechatronics and Packaging with an overview of Computer-Aided-Design (CAD) software and Computer-Numeric-Control (CNC) machines. Students will design basic parts and build the parts on CNC machinery. Emphasis will be on the interactions between software and machines and the troubleshooting process.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Create assembly models with CAD software

Analyze prints as applied to industrial components

Use Computer Numeric Control (CNC) machines to create parts

Apply G-code and M-code to CNC machinery

Troubleshoot G and M Codes

Apply feed and speed rates on CNC machinery

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

**ARET 2181 - Internship (1 - 4)**

This course allows the student to gain on-the-job experience in the Packaging and Automation industries. The student is responsible for finding and setting up the internship position. One (1) to four (4) credits can be taken, with each credit requiring 40 hours of time spent on the job. Student performance will be monitored by the instructor and evaluated by the employer. This will be a cooperative training program between Hennepin Technical College and a company. The student will apply competencies learned in the program to an employment-like work experience. Tasks and course goals will be determined by the instructor and the job site supervisor on an individual student basis. All industry internships require you be registered at the college for the internship and have instructor approval.

Prerequisite: Completion of at least 50% of your degree or diploma and instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

The specific goals of this course will be defined in the 'Internship Agreement' signed by the student, employer and instructor and will be tailored to the experiences available at the internship site

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: SOE: 1-4

## **ARET 2200 - FANUC Robotics Operations (2)**

This course is intended for an operator, technician, engineer or programmer who may need to setup, modify, record and run a program on a FANUC robot system. This course covers FANUC Handling Tool Operations. Students will program, setup and operate the robots and end-of-arm-tooling. The FANUC Teach Pendant will be taught and utilized for programming and jogging the robot. Students will set up applications, write basic programs, and test them. These are the entry level skills a student should have to enter the fields of Mechatronics and Packaging. Upon the successful completion of this course, students will be able to take the FANUC Handling Tool certification test.

Prerequisite: Recommended: ARET1200

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Model safely jogging a robot

Construct tool frames

Construct user frames

Create and edit programs

Explain how to actuate I/O's (input/output)

Use branching logic with IO/Registers

Use Position Registers

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **ARET 2250 - FANUC Vision Systems (1)**

This course will cover FANUC IRVision systems. Students will learn basic tasks and procedures required for an operator, technician, engineer or programmer to set up, teach, test, and modify FANUC iRVision using the System controller applications. Students will discover how FANUC Vision is a key tool for automatically detecting good parts and bad parts as compared to the engineering drawings. These are the basic skills a technician needs for entry in the fields of Mechatronics and Packaging.

Prerequisite: ARET1165 and ARET2200

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Establish controller communications with a computer using TCP/IP addressing

Construct vision setups using IRVision Camera

Apply grid-calibration

Develop error-proofing processes

Construct 2D offset processes

Construct frames for use in a vision system

Text and References: A list of textbooks required for this course is available at the <https://www.hennepintech.edu/finance-operations/campus-store.html> target="\_blank">bookstore</a>.

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1

### **ARET 2300 - Mechanical Components I Certificate Review (3)**

This course is a review course for PMMI's (The Association for Packaging Processing Technologies) Mechanical Components I Certificate. This certificate is part of PMMI's Mechatronics Program Certification. The PMMI certificate is an industry recognized stackable credential endorsed by the National Association of Manufacturers. This Mechanical Components I review course covers the principles and applications of the most commonly found mechanical drive components as used in packaging machinery and systems. Topics reviewed and expanded on include simple mechanical power transmission devices such as shafts, belts, chains, cams and gears with an emphasis on application and troubleshooting. An understanding of simple mechanical components provides the background necessary to explore more complex systems of components used on all types of packaging equipment. Upon completion of this course and through a unique industry partnership with PMMI, students will be able to take the Mechanical Components I test and have the opportunity to earn a nationally recognized certificate while at Hennepin Technical College. This course is aimed at entry level technicians who may be involved in the assembly, test, startup, troubleshooting, maintenance, repair or upgrade of basic packaging machinery modules. This is a review course and it is assumed the student has taken previous automation courses or has basic knowledge of the topics to be covered.

Prerequisite: ARET1126 and ARET1130 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe mechanical drives

Examine mechanical equipment safety procedures

Differentiate between six types of key fasteners

Examine power transmission devices and shafts  
 Describe V-belt drives  
 Describe chain drives  
 Characterize gear drives  
 Describe synchronous belt drives  
 Categorize lubrication materials and procedures  
 Describe couplings

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.  
 Brooklyn Park Campus - 763-488-2477  
 Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

### **ARET 2320 - Industrial Electricity I Certificate Review (3)**

This course is a review course for PMMI's (The Association for Packaging Processing Technologies) Industrial Electricity I Certificate. This certificate covers basic safety practices for voltages up to 600 volts and knowledge of voltage, current and power in AC and DC circuits, circuit analysis of series and parallel loads, and basic understanding of resistors, capacitors, and inductors. It applies these fundamentals to simple applications that would be found in residential, light commercial and simple industrial use. Candidates should be able to interpret and troubleshoot circuits used for lighting, across the line 3 phase motor starting, and simple relay logic with devices such as control transformers, fuses & circuit breakers, pushbuttons & selector switches, pilot lights & alarm devices, solenoids, 3 phase motor starters, motor overloads, limit switches, and combinations of control relays to perform basic logic functions. Candidates should be familiar with simple wiring practices for using these devices and with component level troubleshooting of these devices. Upon the completion of this course and through a unique industry partnership with PMMI, students will be able to take the Industrial Electricity I test and have the opportunity to earn a nationally recognized certificate while at Hennepin Technical College. A basic knowledge of industrial electricity is needed to understand the basic operation of all type of commercial and industrial equipment and to gain further knowledge of more complex packaging machines and systems. This basic knowledge of industrial electricity would be expected of an entry level electrician working in facilities maintenance or assisting in the assembly, test, startup, troubleshooting, maintenance, repair or upgrade of basic packaging machinery modules. This course is aimed at entry level technicians who may be involved in the assembly, test, startup, troubleshooting, maintenance, repair or upgrade of basic packaging machinery modules. This is a review course and it is assumed the student has taken previous automation courses or has basic knowledge of the topics to be covered.

Prerequisite: ARET1175 or Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain Electricity and Electrical Circuits  
 Explain Voltage, Current and Resistance  
 Integrate power and circuit protection in series and parallel circuits  
 Apply electromagnetism, inductance and capacitance to packaging machinery  
 Characterize combination circuits (series/parallel)  
 Assess troubleshooting methods for use in basic circuits  
 Characterize transformers  
 Implement manual motor control and protection with 3-phase motors  
 Employ electrical control ladder logic in basic electrical wiring and construction  
 Assess safety in control component troubleshooting

Differentiate control relays and pilot devices

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

### **ARET 2330 - Industrial Electricity II Certificate Review (3)**

This course is a review course for PMMI's (The Association for Packaging Processing Technologies) Industrial Electricity II Certificate. The Industrial Electricity II certificate builds upon the Industrial Electricity I certificate. After completion of this course students will understand more complex motor starting circuits such as jogging, hand-off-automatic, reversing, and reduced voltage starting. They will become familiar with time-based, count-based and sequential control of multiple output loads utilizing control relay logic and automatic input devices such as limit, flow and pressure switches to provide feedback. They will understand basic electro-fluid power circuits where relay logic is used to operate devices such as pneumatic or hydraulic cylinders through electrically piloted directional control valves. Basic understanding of the various types of electronic sensors, timers and counters used in industrial control is required. Students become familiar with the sizing and installation of various types of electrical conductors and raceways used in or around industrial machinery and will understand how to properly wire an industrial control panel. Finally, students will develop an understanding of basic troubleshooting techniques and practices, not only for the individual components but also for systems of components. This advanced knowledge of industrial electricity and control systems is needed to understand the complex operations of machines and systems that might be used for an electro-mechanical packaging line. Upon the completion of this course and through a unique industry partnership with PMMI, students will be able to take the Industrial Electricity II test and have the opportunity to earn a nationally recognized certificate while at Hennepin Technical College. This is a review course and it is assumed the student has taken previous automation courses or has basic knowledge of the topics to be covered.

Prerequisite: ARET1180 and ARET2320 or Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Troubleshoot Electrical Circuits utilizing multiple troubleshooting methods

Apply reversing and jogging motor controls to industrial circuits

Explain automatic input devices applied to timer control functions, counters, and solenoid activated valves

Utilize control relays for sequential control

Assess electronic sensors as applied to packaging machinery

Analyze electrical control system wiring and diagrams

Determine proper raceway and conduit construction

Incorporate control and power transformers into packaging machinery

Employ conductors, disconnects and overcurrent protection in packaging machinery

Prescribe proper electrical safety procedures and tools for industrial systems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Eden Prairie Campus – 952-995-1544

**Campus:**

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

**ARET 2340 - Programmable Logic Controllers I Certificate Review (3)**

This course is a review course for PMMI's (The Association for Packaging Processing Technologies) Programmable Logic Controllers (PLC) I Certificate. This certificate covers the principles and applications of different types of logic and programming used to control packaging machinery and systems. Topics include hardware and software composition of control systems, input/output interfacing, basic logic commands and common programming instructions. There is additional emphasis on common program tasks, and troubleshooting PLC based systems. This course will cover both address-based and tag-based PLC systems. The knowledge of relay logic, ladder programming and input/output devices is needed to understand and maintain all types of common packaging equipment. This certificate is aimed at entry level technicians who may be involved in the assembly, test, start up, troubleshooting, maintenance, repair or upgrade of basic packaging machinery modules. Upon the completion of this course and through a unique industry partnership with PMMI, students will be able to take the Programmable Logic Controllers I test and have the opportunity to earn a nationally recognized certificate while at Hennepin Technical College. This is a review course and it is assumed the student has taken previous automation courses or has basic knowledge of the topics to be covered.

Prerequisite: ARET1185 and ARET2111 or Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Summarize the operation of a PLC

Break down the memory organization and addressing scheme of a PLC

Examine discrete input/output interfacing

Examine the function and use of monitoring devices

Construct basic PLC Logic instructions

Examine PLC timer and counter instructions

Apply basic PLC motor control applications

Apply basic PLC sequencing applications

Apply basic PLC machine applications

Troubleshoot PLC based systems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Eden Prairie Campus – 952-995-1544

**Campus:**

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

**ARET 2360 - Automated Fluid Power I Certificate Review (3)**

This certificate provides the student with an understanding of the function, operation, and application of common components used in fluid power circuits and systems. It also provides the student with an understanding of how fluid power components and accessories are placed together to create circuits and systems for powering industrial machines. The major emphasis is on pneumatics with a lesser emphasis on hydraulics and vacuum systems. Electro-fluid power troubleshooting is emphasized. This certificate is targeted to mechanics, technicians and technologists who will be involved in the application, installation, modification or troubleshooting of fluid power systems in packaging and manufacturing environments. Upon completion of this course and through a unique industry partnership with PMMI, students will be able to take the Fluid Power I Certificate test and have the opportunity to earn a nationally recognized certificate while at Hennepin Technical College. This course is aimed at entry level technicians who may be involved in the assembly, test, startup, troubleshooting, maintenance, repair or upgrade of basic packaging machinery modules. This is a review course and it is assumed the student has taken previous automation courses or has basic knowledge of the topics to be covered.

Prerequisite: ARET2105 or Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe single and double-acting pneumatic and hydraulic cylinders

Examine best practices in the creation of fluid power circuits and logic

Describe compressors, conditioners, lubricators and filters as utilized in manufacturing equipment

Employ fluid power motors in manufacturing equipment

Employ tubing, hoses, connectors, and fittings in the creation of fluid power systems

Assess Electro-fluid power systems

Apply directional control, flow control, relief, and pressure sequence valves in manufacturing equipment

Apply safety practices in fluid power systems through the use of gauges, regulators, and other instruments

Analyze the use of vacuum systems in manufacturing equipment

Utilize fluid power theory in the trouble-shooting and testing of manufacturing machinery

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

## **ARET 2500 - Industrial Networks (2)**

This course will expose the students to many of the different Industrial Networks that will be encountered in a manufacturing setting. Students will gain an understanding of the network infrastructure utilized by industrial machinery and the communication profiles used. The communication profiles will include but not be limited to: Serial Communication, RS-232, Ethernet, Modbus, Profibus, DevicNet, Foundational Fieldbus and AS-I Bus. Additionally, Fieldbuses and cabling procedures will be discussed and how they are applied in a Distributed Control System (DCS).

Prerequisite: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 or METS1000

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Analyze how data networks are used in industrial facilities

Select the methods used to control information flow within a network

Identify the types of cables used to connect computers and industrial machinery within a network  
 Distinguish the physical layer of two or more device buses  
 Examine Distributed Control Systems (DCS) and their application in an industrial facility  
 Explain how to use a DCS interface to obtain process data and troubleshoot industrial equipment  
 Classify network configurations for a DCS  
 Integrate Fieldbuses into a DCS

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

## **ARET 2540 - Project Management for Manufacturing (2)**

This course is intended and as an introduction to Project Management as executed at the production floor level within the manufacturing industry. The course will explore typical types of projects that manufacturing staff oversee including planned maintenance shut-downs, manufacturing process improvements projects, and capital acquisition/installation projects. The Project Management Institute's (PMI) A Guide to the Project Management Body of Knowledge (PMBOK® Guide) will be explored and used as a context to plan and execute projects in the manufacturing field. Students will utilize project management software to plan, execute, and close-out projects that occur in manufacturing. Risk management will also be explored in the context of a manufacturing environment. PMBOK® Guide is a registered mark of the Project Management Institute, Inc.

Prerequisite: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 or METS1000

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explore leading industrial project teams

Outline the development and control of project scopes

Organize the planning and scheduling of a project

Evaluate risk management techniques for project management

Analyze the execution and control of a project

Illustrate planning and status reporting communications

Use project management software

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **ARET 2560 - Instrumentation and Process Control I (3)**

The purpose of this course is to introduce students to instrumentation and process controls. This course will focus on the basic instrument and process control channels utilized in manufacturing environments. Students will be exposed to a variety of control systems, learn calibration methods, explore proportional integral control, utilize computer systems to design and test systems, and work with simulators to replicate industrial situations. This course will focus on systems utilized in the packaging industry, system automation, and robotics.

Prerequisite: ARET1190

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Categorize normal versus emergency sources of power for manufacturing applications
- Illustrate the function and installation of electronic transmitters and temperature detectors
- Explain calibration
- Analyze methods of calibration
- Analyze how various positioners function and are calibrated
- Explain Process Control
- Categorize basic control systems
- Devise a basic instrument channel diagram
- Explain derivative control

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **ARET 2580 - Instrumentation and Process Control II (3)**

This course will introduce the student to basic process control theory including the fundamentals of process control loops and tuning. Troubleshooting techniques will be discussed and applied on manufacturing equipment. Students will utilize various software packages to construct and analyze systems. Integration of Programmable Logic Controllers (PLC's), Human Machine Interfaces (HMI) and motor controllers will be discussed. This course will focus on the instrumentation and process control system as utilized on packaging machinery, automation systems, and robotics.

Prerequisite: ARET2560

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Report how to verify mechanical installation of control systems
- Illustrate continuity checks on both electrical and pneumatic loops
- Demonstrate troubleshooting techniques in a loop

Interpret basic process control theory  
 Examine the function and application of various Proportional Integral Derivative (PID) controls  
 Illustrate how electronic single loop controllers work  
 Manipulate software to construct control systems  
 Integrate Human Machine Interface (HMI) into Programmable Logic Controller (PLC) systems  
 Appraise motor control systems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Credit Details: lecture: 2 lab: 1

## ARSP - Audio Production

### ARSP 1100 - Introduction to Recording (3)

This course is an introduction to the theory of sound and the recording process. The course introduces audio terminology, principles of sound and hearing, parts of basic equipment, recorder operation and signal storage methods.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and concurrent enrollment in ARSP1110 and ARSP1130

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:  
 Demonstrate an understanding of analog signal flow theory  
 Explain fundamental waveform characteristics  
 Diagram recording head adjustments  
 Explain tape construction  
 Explain digital recording and reproduction processes  
 Demonstrate an understanding of analog recording theory  
 Demonstrate an understanding of sound and hearing  
 Demonstrate an understanding of digital recording theory  
 Apply correct audio terminology

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 0

### **ARSP 1110 - Studio Operations (4)**

The lecture portion of this course covers the basic operational systems of the recording studio, setup and signal flow of consoles, patchbays and studio documentation. The lab covers practical application of the theories and concepts learned in the lecture.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and concurrent enrollment in ARSP1100 and ARSP1130

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Apply analog signal flow theory
- Apply analog recording theory
- Produce a multitrack commercial
- Produce a radio play
- Produce an industrial narration
- Operate analog recording equipment
- Apply correct microphone techniques
- Demonstrate correct patchbay application
- Develop session documentation
- Troubleshoot studio problems
- Develop client management techniques
- Complete projects by designated due dates
- Apply digital recording theory

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2 lab: 2

### **ARSP 1130 - Audio Transducers (3)**

This course covers theory, characteristics and operation of microphones, loudspeakers, crossovers and speaker/room considerations in the monitoring environment.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and concurrent enrollment in ARSP1100 and ARSP1110 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate an understanding of the different operational types of microphones
- Demonstrate an understanding of the polar pattern characteristics
- Demonstrate an understanding of monitor theory
- Evaluate various microphones and techniques
- Identify industry standard transducers
- Demonstrate an understanding of phantom power uses
- Apply correct microphone handling procedures
- Evaluate microphone instrument pairings
- Diagnose phase-problems
- Evaluate various near-field monitors

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **ARSP 1140 - Critical Listening (1)**

This course introduces the student to listening critically and analytically in order to evaluate sound quality and to analyze common sound problems.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Estimate sound frequency
- Estimate sound level
- Estimate frequency bands
- Analyze elements of recordings

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1 lab: 0

### **ARSP 1300 - Multitrack Recording Theory I (3)**

This course examines the practical techniques of multitrack recording. Topics include session operating procedures, linear and disk-based digital recording techniques, the integration of virtual and live tracks, analog recording procedures, digital console signal flow, session management, audio production, and basic A for V techniques.

Prerequisite: ARSP1100, ARSP1110, ARSP1130 or instructor approval. This course should be taken concurrently with ARSP1310, ARSP1320, ARSP1331, and ARSP2120

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate an understanding of digital console theory
- Demonstrate an understanding of linear and direct to disk digital recording theory
- Analyze production techniques and session management
- Demonstrate basic electrical principals
- Explain proper direct box use
- Explain preproduction process
- Demonstrate mixing process
- Explain microphone choices
- Solve ohm's law problems
- Explain tracking procedures

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 0

### **ARSP 1310 - Multitrack Recording Lab I (3)**

This course covers practical applications of techniques and theory covered in Multitrack Recording Theory I and is to be taken concurrently. The student will produce various music projects.

Prerequisite: ARSP1100 and ARSP1110. Prereq. or concurrent ARSP1300 or instructor approval. This course should be taken concurrently with ARSP1300, ARSP1320, ARSP1331, and ARSP2120

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Utilize digital recording consoles
- Utilize linear and digital recording mediums
- Apply preproduction techniques
- Produce music and jingle projects
- Determine session priorities

Organize the production team  
 Optimize session efficiency  
 Demonstrate professionalism  
 Arrange talent for projects  
 Produce projects by the deadline

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 0 lab: 3

### **ARSP 1320 - Audio Signal Processing (3)**

This course covers the theory and operation of audio signal processors. In lectures, discussions and labs, students are introduced to functions and parameters of EQ's, VGA's, Delays and Reverbs.

Prerequisite: ARSP1100, ARSP1110 or instructor approval. This course should be taken concurrently with ARSP1300, ARSP1310, ARSP1331, and ARSP2120

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Analyze VGA techniques

Demonstrate VGA techniques

Analyze EQ techniques

Demonstrate EQ techniques

Analyze Delay techniques

Demonstrate Delay techniques

Analyze Reverb techniques

Demonstrate Reverb techniques

Compare various industry standard signal processors

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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### **ARSP 1331 - Introduction to MIDI (3)**

This course covers basic MIDI (Musical Instrument Digital Interface) principles and techniques, the virtual studio concept, software, hardware, sequencers, sound design, and MIDI applications in Audio for Video.

Prerequisite: ARSP1100, ARSP1110, ARSP1130 or instructor approval. This course should be taken concurrently with ARSP1300, ARSP1310, ARSP1320, and ARSP2120

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate an understanding of MIDI operational theory

Compare different hardware and software based MIDI systems

Analyze various CPU based MIDI applications

Produce an audio for video project using MIDI

Explain the history of MIDI

Explain MIDI messages

Demonstrate MIDI equipment hookup

Diagram proper MIDI patchbay setup

Incorporate MIDI operational theory into software based environment

Troubleshoot common MIDI problems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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### **ARSP 1340 - Location Recording (2)**

This course covers the fundamentals and basic techniques used in non-studio recording for news gathering, conference, public speaking, music and sound effects recording. The main emphasis will be hands-on and students will record, edit and mix a variety of location projects.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate an understanding of non-studio recording techniques

Produce various on-location sound effects

Produce various location recordings

Operate portable mixer

Evaluate various stereo mic techniques

Produce a detailed preproduction plan for location recordings

Evaluate microphone choices

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 1

### **ARSP 1351 - Music Fundamentals (1)**

This course covers fundamental concepts of rhythm, song structure, note values and the circle of fifths.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain song structure

Identify rhythm concepts

Identify note values

Explain the circle of fifths

Identify drum parts

Divide songs into bars and beats

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 0

### **ARSP 1380 - Production Lab I (3)**

In this course the student will improve production skills learned by working on client based projects.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Develop a further understanding of concepts applying to audio production
- Produce an industry standard project
- Demonstrate professionalism with clients
- Adapt to developing situations in the studio
- Delegate tasks to the correct team members
- Develop a detailed pre-production plan
- Expand production skills
- Handle client relations productively and professionally
- Investigate new approaches to the project
- Develop detailed logs of the sessions
- Complete the project
- Conduct the sessions in a time-conscious manner

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 0 lab: 3

**ARSP 1390 - Production Lab II (3)**

In this course the student will improve production skills learned by working on client based projects.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Develop a further understanding of concepts applying to audio production
- Produce an industry standard project relating to the agreed upon criteria
- Demonstrate professionalism with clients
- Adapt to situations as they develop in the sessions
- Delegate tasks to the correct team members during the projects
- Develop a detailed pre-production plan
- Expand production skills as it applies to the project
- Handle client relations in a professional and productive manner
- Investigate new approaches to the desired production
- Develop detailed logs of the sessions
- Complete the project within the agreed upon deadline
- Conduct the sessions in a time-conscious manner

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or

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**Special Accommodations:**

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### **ARSP 1500 - Multitrack Recording Theory II (3)**

This course is a continuation of the practical techniques of multitrack recording covered in Multitrack Recording Theory I. Topics include advanced production techniques, advanced linear and disk-based digital recording techniques, advanced consoles and automation, mixing techniques, basic troubleshooting, A for V concepts, and career strategies.

Prerequisite: ARSP1300 and ARSP1310. Prereq. or concurrent ARSP1320, ARSP1331, ARSP1510 and ARSP2120 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Demonstrate an understanding of advanced production techniques
- Demonstrate an understanding of advanced audio system configurations
- Demonstrate an understanding of advanced Audio for Video concepts
- Develop a career strategy
- Explain studio psychology considerations
- Demonstrate correct microphone selections
- Demonstrate correct session preproduction procedures
- Develop a patchbay design
- Develop a business card
- Compile a beauty reel
- Create a detailed audio resume
- Generate a 5 year plan

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Credit Details: lecture: 3 lab: 0

### **ARSP 1510 - Multitrack Recording Lab II (3)**

This course covers practical applications of techniques and theory covered in Multitrack Recording Theory II and is to be taken concurrently. The student will record and mix various music and A for V projects.

Prerequisite: ARSP1500 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate advanced production techniques
- Demonstrate client management skills
- Produce various music projects
- Develop detailed preproduction plans
- Demonstrate professionalism
- Determine session priorities
- Select and place microphones
- Develop a final mix
- Resolve session problems
- Complete projects by assigned deadlines
- Troubleshoot problems in the sessions
- Develop talent's cue mix

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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### **ARSP 1531 - Using MIDI Equipment (3)**

This course is a continuation of the basic MIDI principles and techniques covered in Introduction to MIDI, with emphasis on advanced sound design, MIDI and disk-based digital recording integration, waveform/sample editing, and A for V techniques.

Prerequisite: ARSP1331 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate an understanding of advanced MIDI specifications
- Analyze approached to scoring for video
- Produce an advanced Audio for Video sound design and score
- Explain event list editing
- Explain notation editing
- Explain graphical editing
- Design ambient sounds
- Design sound effects
- Compose a musical score
- Develop a further understanding of the concepts of MIDI

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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### **ARSP 1541 - Acoustics and Recording Studio Design (2)**

This course covers principles of sound, room measurement techniques and a discussion of the acoustical properties of room materials and their effect on room acoustics. Special emphasis will be given to cost effective studio design, or more specifically, how to build a recording studio with a limited budget.

Prerequisite: ARSP1100

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate an understanding of sound and room measurement techniques

Demonstrate an understanding of the acoustical properties room materials and their effect on room acoustics

Demonstrate an understanding of studio design considerations

Produce an achievable studio design

Evaluate absorber types

Evaluate soundproofing tactics

Calculate room axial modes

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 0

### **ARSP 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A `Specialized Lab Training Agreement` must be signed by the student and the instructor and submitted to the registrar at the time of registration.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Develop a further understanding of concepts applying to audio production
- Produce an industry standard project relating to the agreed upon criteria
- Demonstrate professionalism with clients
- Adapt to situations as they develop in the sessions
- Delegate tasks to the correct team members during the projects
- Develop a detailed pre-production plan
- Expand production skills as it applies to the project
- Handle client relations in a professional and productive manner
- Investigate new approaches to the desired production
- Develop detailed logs of the sessions
- Complete the project within the agreed upon deadline
- Conduct the sessions in a time-conscious manner

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Campus:

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Credit Details: lecture: 0 lab: 1-4

### **ARSP 2100 - Multitrack Recording Theory III (1)**

This course is a continuation of the practical techniques of multitrack recording covered in Multitrack Recording Theory II. Topics include: mastering, beauty reel assembly, advanced session management skills, and specialized equipment applications.

Prerequisite: ARSP1500 and ARSP1510. This course should be taken concurrently with ARSP2111

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate an understanding of various mastering techniques
- Demonstrate an understanding of advanced music and A for V techniques
- Demonstrate an understanding of advanced DAW software techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 0

### **ARSP 2111 - Multitrack Recording Lab III (3)**

This course covers practical applications of techniques and theory covered in Multitrack Recording Theory III. The student will record and mix various projects.

Prerequisite: ARSP1500 and ARSP1510

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate advanced session management skills

Produce an advanced music project

Produce an advanced audio for video project

Apply advanced mixing concepts

Demonstrate professionalism

Troubleshoot studio problems

Generate a professional level product

Perform duties specific to roles on a production team

Manage time effectively in sessions

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 0 lab: 3

### **ARSP 2115 - Audio Mixing Techniques (2)**

This course covers advanced mixing techniques on both digital and analogue mixing consoles, and basic digital mastering.

Prerequisite: ARSP1500 and ARSP1510 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate an understanding of advanced mixing techniques

Produce final mixed projects

Demonstrate basic mastering concepts

Develop dynamics processor techniques

Develop 4-D mixmaps for the mixes

Enhance the tracks through the mixing

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **ARSP 2120 - Digital Audio Theory (Pro Tools 101/110) (3)**

This course covers principles and practical applications of digital audio recording and editing, emphasizing disk-based random access systems. Successful completion of this course will result in the completion of the Pro Tools 101/110 curriculum and enablement to take the AVID Pro Tools 101/110 certification exams.

Prerequisite: ARSP1100, ARSP1110, ARSP1130 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate use of disk-based recording systems
- Demonstrate use of basic digital audio recording and editing techniques
- Demonstrate use of current DAW software applications
- Demonstrate use of computer history and components
- Personalize application preferences
- Identify industry standard Pro Tools systems
- Develop customization of Pro Tools preferences
- Complete application exercises
- Demonstrate destructive and non-destructive editing

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **ARSP 2140 - Electronics for Audio Video (2)**

Every cord that carries your video or audio signal is carrying an electric current. This class covers the basics of electronics,

producing a foundation to pull from when wiring and terminating cables and systems. AC and DC will be addressed.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe electron flow and basic theory of electricity

Identify series and parallel circuits

Utilize Ohm's Law

Analyze DC circuits and their properties

Analyze AC circuits and their properties

Perform analog circuit construction on breadboards

Perform circuit construction in simulation software

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 1 Lab: 1

## **ARSP 2150 - Music Business (2)**

This course covers legal and business topics that pertain to the music industry such as equipment purchasing/leasing, studio rate negotiation, financing, contracts and publishing.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate an understanding of contracts/negotiations

Demonstrate an understanding of publishing

Demonstrate an understanding of copyright laws

Produce a mock copyright court case

Examine rate negotiations

Evaluate different contracts

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 0

### **ARSP 2171 - Sound Reinforcement I (4)**

This course discusses the theory and techniques focused on sound reinforcement. Students will analyze and implement setting up the system, utilize sound reinforcement equipment, work as a member of a team, and troubleshoot problems.

Prerequisite: ARSP1100, ARSP1110, ARSP1130, ARSP1300, ARSP1310, and ARSP1320, or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Compare console design differences
- Setup public address system components
- Apply microphone techniques for various musical and non-musical sources
- Plan the use of signal processing
- Utilize dynamics processors to mix for front of house
- Utilize equalization to mix for front of house
- Utilize time-based effects to mix for front of house
- Troubleshoot public address system equipment
- Perform gain-staging
- Operate as lead and assistant production team roles
- Apply submixing techniques
- Apply mute groups
- Setup digitally controlled amplifier (DCA) groups

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 2 Lab: 2

### **ARSP 2175 - Pro Tools 130-Gaming Audio (2)**

This course provides students with exposure to the core skills, workflow, and concepts involved in creating and implementing game audio using Pro Tools systems. It covers basic sound design techniques along with example workflows. Session time is divided between demonstration and hands-on practice, with time to experiment with sample material.

Prerequisite: ARSP2120

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify game audio workflow  
 Implement dialog into game audio workflow  
 Incorporate Foley into game audio workflow  
 Incorporate sound effects into game audio workflow  
 Implement background (ambient) sounds into game audio workflow  
 Create an interactive music score  
 Incorporate realistic vehicle sounds into game audio workflow  
 Create dynamic cinematics for game audio workflow

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 1

### **ARSP 2180 - Wireless Systems (1)**

This course discusses the theory and techniques utilized in audio wireless systems. Wireless transmission standards and configurations will be emphasized.

Prerequisite: ARSP1100, ARSP1110, and ARSP1130

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Compare various wireless transmission standards

Plan the use of wireless systems in common industry setups

Apply wireless systems for microphones, instruments, and in-ear monitors

Troubleshoot wireless system problems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 1

### **ARSP 2185 - Audio Visual and Intercom Systems (2)**

This course discusses the theory and techniques utilized in audio wireless systems. Wireless transmission standards and configurations will be emphasized.

Prerequisite: ARSP1100, ARSP1110, ARSP1130, ARSP1300, ARSP1310, and ARSP1320

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Setup basic audio-visual equipment
- Document intercom and video interconnects
- Analyze audio visual protocols
- Plan audio visual setups for common industry events
- Document industry standard intercom equipment
- Setup intercom systems
- Operate intercoms in a production

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 1 Lab: 1

## **ARSP 2245 - Video Systems (2)**

Video is everywhere in our lives. Technicians need to have a basic understanding of the signal characteristics, cabling, and distribution requirements of video networks. In this class we will look at different types of video files, resolutions, and distribution methods. Types of projectors and their adjustment and alignment will be discussed. Types of connectors and distribution over IP (Internet Protocol) networks will also be addressed.

Prerequisite: ARSP1100, ARSP1110, and ARSP1130

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe various video formats and resolutions
- Explain various video codecs and file types
- Compare and contrast the advantages and disadvantages of various video systems
- Analyze projector types and their benefits
- Align 2 projectors to combine lumens
- Identify various processing equipment, and their various uses
- Examine video over IP (internet protocol) setups
- Set up a video IP (internet protocol) system
- Operate a video IP (internet protocol) system

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course

Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: Lecture: 1 Lab: 1

### **ARSP 2250 - Introduction to System Installation (3)**

An understanding of installation basics and best practices is essential for an Audio Visual tech. In this class we will look at finding our way around Section 70 of the National Electric Code (NEC). We will also work with various tools used in the trade to provide familiarity with them. Basic experience with drywall repair, and an overview of the industry and various paths of employment will also be explored.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Examine the Audio Visual design and install industry and various career paths

Explore industry standards for safety in electrical systems

Utilize power tools for installation tasks

Utilize installation tools

Demonstrate proper drywall cut and repair

Install work boxes in drywall

Perform installations that meet electrical code requirements

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: Lecture: 2 Lab: 1

### **ARSP 2270 - Sound Reinforcement II (4)**

This course discusses the theory and techniques focused on monitoring mixing for sound reinforcement. Students will analyze and implement setting up the monitor systems, utilize sound reinforcement equipment, work as a member of a team, and troubleshoot problems.

Prerequisite: ARSP2171 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Analyze common monitor system designs
- Setup stage-monitor systems and In-ear-monitor systems
- Utilize dynamics processors to mix for monitors
- Utilize equalization to mix for monitors
- Utilize time-based effects to mix monitors
- Troubleshoot monitor system equipment
- Perform gain-staging
- Operate as a monitor mixer in a production
- Perform monitor mixing while front-of-house mixing
- Create monitor mixes for small and large scale productions
- Minimize feedback in monitoring system
- Plan signal flow for small and large scale productions

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: Lecture: 2 Lab: 2

### **ARSP 2310 - Public Address Systems Design (2)**

This course covers the elements that go into designing a public address system. Students in the course will gain hands-on experience in the use of the software for room and loudspeaker system modeling, as well as the tools to optimize existing systems.

Prerequisite: ARSP1100, ARSP1110, ARSP1130, ARSP1300, ARSP1310, and ARSP1320, or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Operate the Enhanced Acoustic Simulator for Engineers (EASE) software
- Create a basic 3D room
- Perform basic acoustical calculations in Enhanced Acoustic Simulator for Engineers (EASE)
- Model a speaker cluster
- Perform public address system optimization
- Design public address systems for various spaces

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 1 Lab: 1

### **ARSP 2325 - Digital Audio Theory II (Pro Tools 201/210M) (3)**

This course covers advanced applications of digital audio recording and editing, emphasizing mixing techniques of Pro Tools systems. Successful completion of this course will result in the completion of the AVID Pro Tools 201/210m curriculum and enablement to take the AVID Pro Tools 201/210m certification exams.

Prerequisite: ARSP2120

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate advanced Pro Tools recording techniques
- Demonstrate advanced Pro Tools editing/mixing techniques
- Demonstrate advanced Pro Tools layback techniques
- Explain DSP processing and management
- Demonstrate real time automation basics in Pro Tools
- Demonstrate knowledge of processing approaching in Pro Tools
- Apply virtual console concepts to a music mix
- Create final mixes using Pro Tools
- Demonstrate final bounce options

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **ARSP 2340 - Audio Configuration and Troubleshooting (2)**

This course reviews basic electronics and sound principles and discusses set-up and operation of audio equipment. Topics include system configuration and signal routing, equipment interface, grounding and maintenance.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Explain basic electronic principles
- Differentiate between analog and digital equipment configurations
- Use system interfacing
- Demonstrate system grounding and troubleshooting
- Use calibration equipment
- Explain periodic system maintenance

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 1 lab: 1

### **ARSP 2380 - Production Lab III (3)**

In this course the student will improve production skills learned by working on client based projects.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Develop a further understanding of concepts

Produce an industry standard project

Demonstrate professionalism with clients

Adapt to situations as they develop in the sessions

Delegate tasks to the correct team members

Develop a detailed pre-production plan

Expand production skills

Handle client relations in a professional and productive manner

Investigate new approaches to the desired production

Develop detailed logs of the sessions

Complete the project

Conduct the sessions in a time-conscious manner

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 0 lab: 3

### **ARSP 2390 - Production Lab IV (3)**

In this course the student will improve production skills learned by working on client based projects.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Develop a further understanding of audio production concepts
- Produce an industry standard project
- Demonstrate professionalism
- Adapt to situations as they develop in the sessions
- Delegate tasks to the team members
- Develop a detailed pre-production plan
- Develop new production skills
- Handle client relations in a professional and productive manner
- Investigate new approaches to the desired production
- Develop detailed logs of the sessions
- Produce a finished product
- Conduct the sessions in a time-conscious manner

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 0 lab: 3

### **ARSP 2555 - Electro-Acoustic Simulation (2)**

The proper design of audio systems requires the accurate prediction of the system performance in the acoustical environment in which it is to operate. Audio video systems integrators need to be able to use computerized simulation tools to predict the electro-acoustical response of the sound system in the client's venue. This information can be used to identify acoustical problems that may arise and can aid in the selling of an install job. This course provides basic instruction in the operation, use, and interpretation of Electro-Acoustical Simulation software. Students in the course will gain hands-on experience in the use of the software for room and loudspeaker system modeling and the prediction of numerous acoustical room-system measures.

Prerequisite: ARSP1541

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Operate the EASE software
- Create and close a basic 3D room
- Perform basic acoustical calculations in EASE
- Input multifaceted room system
- Perform advanced acoustical calculations
- Create and model a speaker cluster
- Perform audience area mappings
- Analyze further acoustical options in a completed room
- Create an auralization of a mapped room

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Lab: 2

### **ARSP 2580 - Audio Recording Internship I (2)**

This is a cooperative program between the Hennepin Technical Colleges` Audio Recording Program and professional production facilities to allow the student an employment-like work experience.

Prerequisite: Completion of 48 credits or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate technical competence

Demonstrate professionalism

Organize schedules with supervisor

Demonstrate organizational skills

Demonstrate cooperation

Apply ARSP concepts to the internship

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 0 SOE: 2

### **ARSP 2585 - Audio Recording Internship II (2)**

This is a cooperative program between the Hennepin Technical Colleges` Audio Recording Program and professional production facilities to allow the student an employment-like work experience.

Prerequisite: Completion of 48 credits or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Demonstrate technical competence
- Demonstrate professionalism
- Organize schedules with supervisor
- Demonstrate organizational skills
- Demonstrate cooperation
- Apply ARSP concepts to the internship

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 0 SOE: 2

**ARSP 2590 - Audio Recording Internship III (2)**

This is a cooperative effort between Hennepin Technical College and professional audio recording facilities to allow the students employment-like work experience.

Prerequisite: ARSP2585 and instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Demonstrate technical competence
- Demonstrate professionalism
- Organize schedules with supervisor
- Demonstrate organizational skills
- Demonstrate cooperation
- Apply ARSP concepts to the internship

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 0 SOE: 2

### **ARSP 2595 - Audio Recording Internship IV (2)**

This is a cooperative effort between Hennepin Technical College and professional audio recording facilities to allow the students employment-like work experience.

Prerequisite: ARSP2585 and instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate technical competence
- Demonstrate professionalism
- Organize schedules with supervisor
- Demonstrate organizational skills
- Demonstrate cooperation
- Apply ARSP concepts to the internship

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 0 SOE: 2

### **ARSP 2600 - Audio Networking (3)**

Audio video systems integrators need to be able to use audio distribution networking hardware and programs to distribute and adjust the sound system in the client's venue. This course provides instruction in the operation and use of audio distribution networking equipment and software such as Cobranet, Audio Video Bridging (AVB), Dante, and other network-based sound systems. Students in the course will gain hands-on experience in the use of the equipment and software for audio systems utilizing network distribution and control.

Prerequisite: ARSP1100, ARSP1110, and ARSP1130

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe network system basics
- Identify the equipment used in networks and the functions they serve
- Change/set the internet protocol (IP) address of a computer
- Perform network system assembly
- Define audio distribution network protocols
- Configure audio distribution networking systems
- Troubleshoot audio distribution networking systems
- Practice for certification with Symetrix Radius or Biamp Tesira audio distribution units

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

[bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Eden Prairie Campus: 952-995-1300

**Credit Details:** Lecture: 2 Lab: 1

### **ARSP 2605 - System Control (3)**

Audio video systems integrators need to have a basic understanding of the operating principles and equipment used in the control of integrated Audio Visual (AV) systems. This includes wired and wireless types of radio frequency (RF) and infrared (IR) control systems as well as internet protocol (IP) control on networks. Students in the course will gain hands-on experience in the equipment used for installing, programming, testing, and troubleshooting systems control devices.

**Prerequisite:** ARSP2150, ARSP2250, and ARSP2600

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Identify the function of basic components used in system control

Explain the basic operating principles of infrared systems

Identify the various types of devices used in infrared systems

Explain the operating principles and applications of Bluetooth system control

Set up a Symetrix control box and get signal through it using onboard Digital Signal Processing to an analog output

Configure a Symetrix Digital Signal Processing box to take analog signal in and deliver it to a Dante Network

Utilize the Symetrix control box and touch panel to set up a system that can select multiple audio inputs and control the volume of them

Create a conference room mic ducking situation using the Symetrix control box and various mic inputs

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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Eden Prairie Campus – 952-995-1544

**Campus:**

Eden Prairie Campus: 952-995-1300

**Credit Details:** Lecture: 2 Lab: 1

### **ARSP 2610 - Acoustical Testing (2)**

Audio-Visual systems integrators need to be able to use acoustical testing equipment and programs to test and adjust the electro-acoustical response of the sound system in the client's venue. This course provides instruction in the operation, use, and interpretation of acoustical testing equipment and software. Students in the course will gain hands-on experience in the use of

the equipment and software for acoustical testing of rooms and audio systems and the interpretation of numerous acoustical measurements.

Prerequisite: ARSP1541

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe acoustical measurement equipment characteristics
- State acoustical measurement purposes and applications
- Relate measurement equipment and methods to acoustical space
- Perform acoustic measurement system set up and calibration
- Conduct sound pressure level acoustic measurements
- Conduct noise criteria acoustic measurements
- Conduct spectrum analysis acoustic measurements
- Conduct signal time arrival acoustic measurements
- Conduct room reverberation time measurements
- Conduct intelligibility measurements
- Conduct sound absorption measurements
- Interpret acoustic measurement data
- Author acoustic measurement reports

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 1 Lab: 1

## ARTS - Arts

### ARTS 1000 - Elements of Design (3)

Students will explore the elements and principles of design. This course illuminates the patterns and trends that designers draw upon in creating new work and illustrates the impact of design on modern life, commerce, and culture.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and Recommended: Qualifying score on writing assessment test OR ENGL0960

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Distinguish design from other areas of the arts
- Identify the elements and principles of design
- Identify how design is used to convey ideas
- Evaluate the impact of design on society
- Create designs using elements and principles of specific historical periods

Integrate design elements and principles in a created work  
Evaluate design

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 6.

### **ARTS 1005 - Art and Social Justice (3)**

Students will examine social justice issues through the lens of visual art, and create works of art that respond to timely and compelling issues. This course will cover works of art from art history, modern times, and the current moment; from global, national, and local artists. Recognizing and respecting a multiplicity of views and modes of expression, this course honors diversity and fosters inclusiveness, promoting dialogue and reflection. Through meaningful exposure to cultural identity, diversity, social justice, and social responsibility, this course supports a productive future in a responsible and equitable workforce.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain how art can be used to explore injustice and to promote social justice issues

Analyze the ways in which specific works from art history responded to social and political issues of the time

Compare and contrast artworks from modern American history that reflect a diversity of responses to specific social justice issues: civil rights, women's rights, Native rights, environmental rights

Identify visual language tools, including: elements of art, principles of design, and typography

Support a personal position on a social justice issue in the context of core concepts and of the rights and responsibilities of citizenship

Explain opposing positions to a social justice issue that stem from a diversity of political motivations, interests, and beliefs

Create a series of original artworks that support a personal position on a social justice issue

Defend the visual choices made in the creation of original works of art, including materials, process, imagery, and presentation

Interpret the conceptual choices made in the creation of original works of art, including historical context, political discourse, scientific research, cultural references, and literary and visual sources

Criticize the work of fellow students based on formal art description and analysis, and in the context of the issue they have chose

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 6 & 9.

### **ARTS 1050 - Introduction to Art (3)**

This course provides a basis for understanding the visual arts from the perspective of the artist's creative process and the viewer's creative participation. Students will explore how form and meaning in art are shaped by many influences. A museum visit is part of the regular class schedule.

Prerequisite: Recommended: ENGL0960 and ENGL0921 or ESOL0842

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify key artists' process, materials and methods

Use the formal language of visual art: line, shape/volume, color, space, etc.

Discuss art and artists within their cultural and historical contexts

Compare and contrast the development of visual ideas/conventions within and across cultures

Utilize visual analysis to assess form, materials and techniques used for the creation of artwork

Identify the purpose of key artwork and artifacts

Compare and contrast artwork from different cultures, religions and social organizations

Compare past traditional artistic endeavors to contemporary culture

Explain bodies of work within specific museum collections

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 6 & 8.

## **ATEC - Automotive Technology**

### **ATEC 1010 - Car Care for Everyone (1)**

This course is for anyone who wants to keep their car running better, longer. The course will cover basic vehicle operation, including engines, brakes, steering and suspension. It will offer hands on instruction in basic vehicle inspection, and include some easy maintenance tasks.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Inspect underhood fluid levels

Adjust tire pressure  
 Explain how to select a mechanic  
 Replace air filters  
 Jump start a dead battery  
 Identify vehicle maintenance requirements

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1

### **ATEC 1020 - Basic Skills for Automotive Mechanics (2)**

This course is for students entering the Automotive Technology program who have not worked in the trade, and have little or no experience in basic mechanics. The course will cover basic skills including tool selection and usage, basic electricity, jacking and hoisting cars. We will also cover threaded fastener ID and service, and shop safety. Students can gain confidence and improve their performance in the Automotive Technology Program.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify threaded fasteners  
 Adjust tire pressure  
 Select the correct tool for the job  
 Check for system voltage with a test light  
 Jump start a dead battery  
 Torque threaded fasteners  
 Perform component removal with correct tools  
 Use a hoist to lift a car for service  
 Perform shop procedures according to industry safety standards

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 0

### **ATEC 1050 - Introduction to Automotive Technology (2)**

This is an introductory course for students entering the Automotive Technology program. Students will receive information about employment options within the trade, safety and shop operations, and online vehicle information systems. The course will give the students an overview of common hand tools and shop equipment.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify common hand tools
- Perform precision measurements
- Describe shop safety requirements
- Find vehicle information using Alldata
- Demonstrate vehicle lifting and jacking procedures
- Demonstrate safe usage of shop equipment

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2

### **ATEC 1075 - Welding for Transportation (2)**

Students will learn how to use oxy-acetylene cutting, heating, and metal inert gas (MIG) welding in automotive applications. Students will become familiar with how the MIG welding process is used for metal joining and the application to transportation careers.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify procedures for safe handling of high pressure gas cylinders
- Perform cutting and heating related to automotive applications
- Perform proper MIG welding techniques
- Determine the correct welder type, (electrode, wire type, diameter, and gas) to be used in a specific welding situation
- Set up welding equipment
- Determine proper protection techniques when welding on a vehicle

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

**ATEC 1105 - Engine Repair I (3)**

In this course the student will learn the operation of the internal combustion engine including valve trains, cooling systems, and short block components. This will include service operations on the lubrication and cooling systems. This course meets all applicable National Automotive Technicians Education Foundation (NATEF) standards.

Prerequisite: ATEC1615

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Complete work order

Identify engine concern

Research applicable vehicle and service information

Interpret vehicle and major component identification numbers

Inspect engine assembly for fuel, oil, coolant, and other leaks

Diagnose engine noises

Diagnose the cause of excessive oil consumption

Perform engine vacuum tests

Perform cylinder power balance tests

Perform cylinder cranking compression tests

Perform cylinder leakage tests

Perform oil pressure tests

Perform cooling system service

Inspect drive belts, tensioners, and pulleys

Perform cooling system service

Test oil temperature and pressure switches and sensors

Perform oil and filter change

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

**ATEC 1110 - Engine Repair II (3)**

In this course the student will learn how to remove, inspect, measure, service, and reassemble the valve train and lower end components of the engine. This course meets all applicable National Automotive Technicians Education Foundation (NATEF) standards.

Prerequisite: ATEC1105

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Remove engine
- Install engine
- Install engine covers using gaskets, seals and sealers as required
- Visually inspect cylinder head(s)
- Replace valve stem seals on an assembled engine
- Inspect valves and valve seats
- Check valve face-to-seat contact
- Check valve heights
- Inspect hydraulic or mechanical lifters
- Inspect timing belts and chains
- Inspect camshaft
- Disassemble block
- Inspect engine block for visible cracks
- Inspect cylinder walls/sleeves for damage
- Inspect crankshaft
- Inspect main and connecting rod bearings for damage and wear
- Assemble engine block assembly

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 2

### **ATEC 1205 - Automatic Transmissions I (3)**

In this course the student will learn the operation, service and repair of automatic transmission and transaxles. It includes fundamentals, disassembly and assembly, adjustment and operation and testing. This course meets all applicable National Automotive Technicians Education Foundation (NATEF) standards.

Prerequisite: ATEC1615

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Complete work order
- Identify transmission/transaxle concern
- Locate applicable vehicle and service information
- Locate vehicle and major component identification numbers

Interpret vehicle and major component identification numbers  
 Remove transmission/transaxle  
 Disassemble transmission/transaxle  
 Inspect valve body  
 Inspect internal transmission components  
 Inspect converter flex plate, attaching parts, pilot, pump drive, and seal areas  
 Measure torque converter endplay  
 Inspect thrust washers and bearings  
 Inspect oil delivery seal rings, ring grooves, and sealing surface areas  
 Inspect case bores, passages, bushings, vents, and mating surfaces  
 Inspect transaxle drive, link chains, sprockets, gears, bearings, and bushings  
 Inspect transaxle final drive components  
 Inspect clutch drum, piston, check-balls, springs, retainers, seals, and friction/pressure plates  
 Test the operation of clutch and servo assemblies

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 2

### **ATEC 1210 - Automatic Transmissions II (3)**

In this course the student will learn in vehicle operation, service and diagnosis of automatic transmission and transaxles. It includes adjustment, operation, and testing. This course meets all applicable National Automotive Technicians Education Foundation (NATEF) standards.

Prerequisite: ATEC1205

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Diagnose fluid loss and condition concerns  
 Perform pressure tests  
 Inspect transmission cables  
 Service transmission  
 Inspect speedometer drive gear, driven gear, vehicle speed sensor (VSS), and retainers  
 Diagnose electronic transmission control systems using a scan tool  
 Inspect powertrain mounts  
 Inspect vacuum modulator and hoses  
 Inspect governor assembly  
 Inspect external seals and gaskets  
 Inspect extension housing, bushings and seals  
 Diagnose noise and vibration concerns  
 Diagnose gear reduction/multiplication concerns  
 Perform stall test  
 Perform lock-up converter system tests  
 Diagnose mechanical and vacuum control system concerns  
 Assemble transmission/transaxle

Inspect cooler, lines, and fittings

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 2

### **ATEC 1305 - Manual Drive Train & Axles (4)**

In this course the student will learn the operation, service and repair of manual transmissions, transaxles, and drivetrain components. It includes fundamentals, diagnosis, disassembly, inspection, adjustments and reassembly of transmissions, transaxles, differentials, clutches, axles, driveshafts, and four-wheel drive/all-wheel drive components. This course meets all applicable National Automotive Technicians Education Foundation (NATEF) standards.

Prerequisite: ATEC1615

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Complete work order

Identify drive train concern

Research applicable vehicle and service information

Locate and interpret vehicle and major component identification numbers

Diagnose clutch noises and problems

Inspect clutch assembly

Bleed clutch hydraulic system

Remove transmission/transaxle

Disassemble transmission/transaxle components

Remove transaxle final drive components

Test transmission/transaxle sensors and switches

Remove front wheel drive front wheel bearing

Inspect shafts, yokes, boots, and CV joints

Diagnose noise and vibration concerns

Diagnose fluid leakage concerns

Measure drive pinion bearing preload

Reassemble differential case assembly

Inspect differential housing

Disassemble transfer case and components

Diagnose electrical/electronic components of four-wheel drive systems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 3

### **ATEC 1405 - Steering and Suspension (4)**

In this course the student will learn the design, operation, and repair of vehicle steering and suspension systems. This will include two and four wheel alignment on conventional and McPherson strut suspension systems, tire balance and service. This course meets all applicable National Automotive Technicians Education Foundation (NATEF) standards.

Prerequisite: ATEC1615

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe steering and suspension system theory and operation

Inspect steering and suspension system components

Perform component removal and reassembly

Diagnose steering and suspension components

Explain alignment theory and operation

Operate alignment equipment

Perform vehicle alignment

Apply proper tire terminology

Perform tire removal and repair procedures

Perform tire balancing procedures

Diagnose tire wear problems

Inspect and calibrate tire pressure monitoring systems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 2

### **ATEC 1505 - Brakes (4)**

In this course students will learn skills needed to perform repairs on automotive brake systems. The course includes operation, troubleshooting, maintenance and repair of standard and Anti-Lock Brake Systems. This course meets all applicable National Automotive Technicians Education Foundation (NATEF) standards.

Prerequisite: ATEC1615

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Diagnose hydraulic brake systems
- Perform master cylinder bench bleeding procedures
- Disassemble disc brake assemblies
- Disassemble drum brake assemblies
- Inspect brake drum and rotor assemblies
- Diagnose braking concerns
- Describe anti-lock brake system operation
- Diagnose anti-lock brake components
- Describe hydraulic brake system operation
- Perform drum and rotor machining operations
- Adjust brake system components to meet specifications
- Assemble brake system components
- Diagnose power assist brake unit concerns
- Perform wheel bearing service

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 2

### **ATEC 1615 - Basic Electrical (3)**

This course is designed to give students a basic working knowledge of the automotive field and basic electrical theory. Covered in this course are topics such as electronic service information, tools, Ohms law, usage of Digital Multimeter. This course meets all applicable National Automotive Technicians Education Foundation (NATEF) standards. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Inspect and test fusible links, circuit breakers and fuses
- Demonstrate safe service and repair practices
- Demonstrate proper tool terminology, usage, safety and identification
- Demonstrate proper wiring repair techniques
- Measure voltage, current and resistance in electrical/electronic circuits
- Perform battery system tests
- Inspect battery components
- Apply ohms law to electrical circuit operation
- Use wiring diagrams to understand circuit operation
- Demonstrate proper use of a digital volt ohm meter
- Assemble basic electrical circuits
- Check electrical circuits with a test light

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab

credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 1 lab: 2

### **ATEC 1620 - Starting and Charging Systems (3)**

In this course the student will learn the operation of automotive starting and charging systems. This will include diagnosis and repair of cranking motors, alternators, starter control, and charging system circuits. This course meets all applicable National Automotive Technicians Education Foundation (NATEF) standards.

Prerequisite: ATEC1615

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Inspect starting system components

Perform starter system tests

Perform start motor disassembly and reassembly

Diagnose starting system problems

Describe starter system theory and operation

Describe charging system theory and operation

Inspect charging system components

Perform charging system testing

Perform alternator disassembly and reassembly

Diagnose charging system problems

Perform wiring repairs

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 2

### **ATEC 1625 - Chassis Electrical (3)**

In this course the student will learn the operation of electrical circuits that are common on the automobile. These will include circuit testing and repair of lighting, turn signal, warning lamp, gauges, blower motor, wiper and accessory circuits. The student will have hands-on training on supplemental inflatable restraints and body computer circuits. This course meets all applicable National Automotive Technicians Education Foundation (NATEF) standards.

Prerequisite: ATEC1615

Course Requirements and Evaluation: <p>Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.</p>

Learning Outcomes:

The following outcomes will be addressed in the course:

- Inspect gauges, sending units for cause of intermittent, high, low, or no gauge readings
- Inspect connectors, wires, and printed circuit boards of gauge circuits
- Diagnose the cause of incorrect operation of warning devices
- Test sensors, connectors, and wires of electronic (digital) instrument circuits
- Diagnose incorrect horn operation
- Diagnose incorrect wiper operation
- Diagnose incorrect washer operation
- Diagnose incorrect operation of motor-driven accessory circuits
- Diagnose incorrect heated glass, mirror, or seat operation
- Diagnose incorrect electric lock operation
- Diagnose supplemental restraint system (SRS) concerns
- Disarm the airbag system for vehicle service
- Arm the airbag system
- Diagnose radio static and weak, intermittent, or no radio reception
- Diagnose body electronic system circuits with a scan tool
- Check for module communication
- Diagnose abnormal light operation
- Inspect incorrect turn signal or hazard light operation
- Identify electronic modules and/or security systems

Text and References: A list of textbooks required for this course is available at the <a rel="noopener noreferrer" href="https://www.hennepintech.edu/finance-operations/campus-store.html" target="\_blank">bookstore</a>.

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 2

### **ATEC 1705 - Heating and Air Conditioning (4)**

In this course the student will learn the skills needed for automotive air conditioning service. It includes system theory of operation, temperature-pressure relationships of R-12 and R134a refrigerants, performance testing, reclaiming, recycling and recharging air conditioning systems. Heating, ventilation, and controls will also be covered. This course meets all applicable National Automotive Technicians Education Foundation (NATEF) standards.

Prerequisite: ATEC1615

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Complete work order
- Identify heating and air conditioning concern
- Research applicable vehicle and service information
- Locate vehicle and major component identification numbers
- Performance test A/C system

Identify refrigerant type  
 Test A/C system  
 Inspect A/C compressor drive belts  
 Perform cooling system tests  
 Determine coolant condition and type  
 Perform cooling system service  
 Test electric cooling fan circuit  
 Diagnose malfunctions in the electrical controls of HVAC systems  
 Test A/C compressor clutch control systems  
 Capture A/C system refrigerant  
 Test recycled refrigerant for non-condensable gases  
 Perform evacuation and recharge

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 2

### **ATEC 1820 - Hybrid Electric Vehicle Systems (1)**

In this course the student will be introduced to the basic operation and safe handling of Hybrid Electric Vehicles and their subsystems. Components such as the braking, transmission, electronic control, heating and air conditioning, and powertrain that are specific to HEV's will be covered.

Prerequisite: ATEC1615

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain Hybrid Electric Vehicle components and operation

Demonstrate proper and safe high voltage handling procedures

Diagnose Hybrid Electric Vehicle subsystems using a scan tool

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1

### **ATEC 1850 - Ignition Systems (4)**

This course familiarizes students with the theory, operation, and diagnosis of vehicle ignition and emission control systems. This includes PCV, EGR, catalytic converters, EVAP systems, and computer controlled ignition systems. This course meets all applicable National Automotive Technicians Education Foundation (NATEF) standards.

Prerequisite: ATEC1110

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe emission system theory and operation
- Inspect emission system components
- Perform emission system tests
- Remove and install emission system components
- Diagnose emission systems
- Describe ignition system theory and operation
- Inspect ignition system components
- Perform ignition system tests
- Remove and install ignition system components
- Diagnose ignition systems
- Identify ignition scope patterns
- Diagnosis catalytic converters

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3 Lab: 1

### **ATEC 1855 - Fuel Systems (4)**

This course familiarizes students with the theory, operation, diagnosis, and repair of automotive fuel delivery systems including gasoline direct injection. This class will also include induction and exhaust systems, turbochargers, superchargers, and general engine diagnostics. This course will meet all applicable National Automotive Technicians Education Foundation (NATEF) standards.

Prerequisite: ATEC1110

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe fuel system theory and operation
- Inspect fuel system components
- Perform fuel system tests
- Remove fuel system components

Install fuel system components  
 Diagnose vehicle fuel systems  
 Describe induction system theory and operation  
 Inspect vehicle exhaust systems  
 Perform exhaust system testing  
 Perform general engine mechanical diagnostic procedures  
 Analyze high pressure fuel systems  
 Explain operation of forced air induction

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3 Lab: 1

#### **ATEC 1860 - Engine Performance (4)**

This course familiarizes students with the theory, operation, and diagnosis of computerized powertrain control systems. This will include scan tool operation, lab scope usage, and gas analysis. This course meets all applicable National Automotive Technicians Education Foundation (NATEF) standards.

Prerequisite: ATEC1110

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe theory and operation of computerized engine controls  
 Inspect computerized engine control components  
 Perform component tests  
 Operate diagnostic scan tools  
 Interpret data from four-gas analysis  
 Interpret Scan-Tool data  
 Diagnose computerized engine control systems  
 Perform vehicle repairs  
 Check for module communication errors  
 Identify transmission related driveability concerns  
 Explain reflashing procedures

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: Lecture: 3 Lab: 1

### **ATEC 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A `Specialized Lab Training Agreement` must be signed by the student and the instructor and submitted to the registrar at the time of registration.

Prerequisite: ATEC1615 and Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Work independently.

Organize work schedule.

Follow prescribed procedures.

Demonstrate safety.

Demonstrate initiative.

Integrate previously acquired skills.

Integrate previously acquired knowledge.

Display good judgment.

Demonstrate dependability.

Exhibit professionalism.

Organize work area.

Demonstrate cooperation.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lab: 1-4

### **ATEC 2100 - Automotive Professional Service (2)**

This course familiarizes students with the concepts of automotive professional service. The course will cover topics such as greeting customers, interpreting repair orders and proper repair techniques. This course meets all applicable National Automotive Technicians Education Foundation (NATEF) standards.

Prerequisite: ATEC1850 or Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Analyze concerns on customer vehicles

Demonstrate proper vehicle repair techniques  
 Estimate vehicle repairs  
 Illustrate professional interactions with customers  
 Complete vehicle repair orders  
 Repair vehicles in accordance with industry standards

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 1 Lab: 1

### **ATEC 2685 - Automotive Industry Internship I (5)**

This course will provide the student with 200 hours of on-the-job training in the automotive industry. The student will use the knowledge gained in previous courses, and further develop their skills by working on customer vehicles at a vehicle repair facility.

Prerequisite: ATEC1505 and ATEC1615 or Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate professional attitude  
 Demonstrate dependable workplace behavior  
 Perform quality vehicle repairs  
 Demonstrate proper care and use of tools  
 Evaluate repair work  
 Demonstrate good communication skills  
 Diagnose vehicle malfunctions  
 Determine correct repair procedures  
 Use safe shop practices  
 Verify vehicle repairs  
 Produce a vehicle repair log  
 Integrate previously acquired knowledge and skills  
 Adapt to changing industry needs  
 Demonstrate use of resource information  
 Demonstrate good time management skills

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: SOE: 5

### **ATEC 2690 - Automotive Industry Internship II (5)**

This course will provide the student with 200 hours of on-the-job training in the automotive industry. The student will use the knowledge gained in previous courses, and further develop their skills by working on customer vehicles at a vehicle repair facility.

Prerequisite: ATEC1110, ATEC1210, ATEC1305, ATEC1405, ATEC1505, ATEC1625, and ATEC1705

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate professional attitude
- Demonstrate dependable workplace behavior
- Perform quality vehicle repairs
- Demonstrate proper care and use of tools
- Evaluate repair work
- Demonstrate good communication skills
- Diagnose vehicle malfunctions
- Determine correct repair procedures
- Use safe shop practices
- Verify vehicle repairs
- Produce a vehicle repair log
- Integrate previously acquired knowledge and skills
- Adapt to changing industry needs
- Demonstrate use of resource information
- Demonstrate good time management skills

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: SOE: 5

### **ATEC 2700 - Automotive Externship (3)**

This course is for the student taking the AAS degree option and provides an opportunity to further develop skills and experiences in a formal work setting. Students must interview for and acquire their externship site. A minimum of 120 hours of work experience is required.

Prerequisite: ATEC2685

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify informal organizational interrelationships
- Organize work space
- Define formal organizational rules
- Develop industry standard organizational skills
- Evaluate theoretical concepts used during servicing vehicles
- Work independently
- Analyze repair decisions using strategy-based problem-solving techniques
- Perform maintenance work on customer vehicles

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: SOE: 3

### **ATEC 2800 - Introduction to Hybrid Electric Vehicle Technology (3)**

This course provides basic hybrid electric vehicle safety procedures; common hybrid electric vehicle component fundamentals; current hybrid vehicle design; an introduction to hybrid electric vehicle maintenance and troubleshooting and an introduction to hybrid electrical vehicle test equipment and procedures.

Prerequisite: ATEC1615, ATEC1620, and ATEC1625 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Define series power flow
- Define parallel power flow
- Identify common hybrid vehicle powertrain sub-systems
- Identify different manufactures' hybrid technology
- Describe hybrid vehicle components
- Identify advantages of hybrid vehicle technology
- Identify safe high voltage service disconnect procedures
- Perform safe high voltage service disconnect procedures
- Identify personal protection equipment
- Evaluate hybrid vehicle repair tools
- Analyze high voltage cables
- Perform insulation checks
- Evaluate high voltage batteries
- Perform power law calculations
- Analyze scan data

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **ATEC 2805 - Hybrid Electric Vehicle Batteries (3)**

This course provides hybrid electric vehicle high voltage battery design and basic testing techniques. Battery safety and control systems will be covered. Both nickel-metal hydride and lithium batteries will be covered, but the primary focus will be on nickel-metal hydride battery technology. Furthermore, the 12 volt system will be covered as it pertains to the high voltage system.

Prerequisite: ATEC2800 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Safely disable hybrid electric vehicle high voltage systems

Define battery state-of-charge

Test high voltage interlock systems

Identify types of high voltage interlock systems

Evaluate pre-charge systems

Evaluate high voltage safety systems

Analyze high voltage battery construction

Perform battery tests

Analyze battery management systems

Contrast high voltage battery technology

Evaluate battery pack contactors

Analyze battery scan tool data to determine state-of-charge

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **ATEC 2810 - Hybrid Electric Vehicle Machines and Controls (3)**

This course covers the theory and operation of electric machines and power inverters used in hybrid electric vehicles. Provides an overview of the induction machine and the permanent magnet machines. Testing of electric machine and power inverters will be covered.

Prerequisite: ATEC2800 and ATEC2805 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Evaluate induction machine components
- Analyze induction machine operation
- Evaluate permanent magnet machine components
- Analyze permanent magnet machine operation
- Evaluate stator winding designs
- Describe power inverter function
- Analyze insulated gate bipolar transistors
- Examine electric machine waveforms
- Interpret voltage, horsepower, and torque relationships
- Test electric machine stator windings
- Perform vehicle diagnostic scan checks
- Analyze dc-dc converter operation
- Test DC converter output
- Identify electric machine sensors

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

## BIOL - Biology

**BIOL 1000 - Biology in Society (4)**

This course familiarizes students with fundamental biological principles and processes occurring in our natural world with an emphasis on real-world applications and the social impact of advances in the biological sciences. It is designed for non-science majors. Topics include scope of life, process of science, basic chemistry, cells, microorganisms, public health, biodiversity, evolution, and ecology. The laboratory component of the course is designed to give students hands-on applications of the principles taught in lecture. This course covers the characteristics of hazardous waste and the necessary safe handling, storage, and disposal.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and Qualifying score on math assessment test OR MATH0800

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Distinguish scientific thinking from other ways of thinking
- Evaluate current topics using scientific methodologies
- Demonstrate a basic knowledge of biological chemistry
- Describe the characteristics and requirements for life
- Compare eukaryotic and prokaryotic cellular and subcellular structures
- Explain the relationship between the processes of cell metabolism and nutritional requirements

Explain the process and role of photosynthesis  
Explain cell division and the consequences of errors  
Describe various DNA technologies and their impact in society  
Determine the probability of offspring genotypes  
Classify living organisms  
Explain the principles of evolution and the evidence to support the theory of common descent  
Describe the various relationships between living organisms and populations  
Summarize the flow of energy and chemicals within ecosystems  
Assess the human impact on the biosphere  
Summarize conservation and restoration efforts  
Analyze the effects of human biology and behavior on public health  
Compare various methods of disease prevention and therapies  
Document scientific observations and experimental data to determine trends  
Identify microorganisms using a microscope

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477  
Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3 Lab: 1

MnTC Goal Areas: 2, 3, & 10.

### **BIOL 1100 - Nutrition and Health (3)**

This course examines the various aspects of nutrition and provides a broad overview of the factors that impact health and wellness. Topics include the nutritional requirements specific to human life cycles, nutrition to promote health, nutrition and disease processes, food safety, environmental and nutritional implications of food processing, genetic modifications, and current agricultural practices. This course also addresses the socio-cultural factors that impact health.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Analyze the basic nutrients needed for a healthy diet  
Apply principles of basic nutrition to individuals  
Illustrate the nutritional challenges faced when adapting to a new culture  
Analyze nutritional needs throughout the life span  
Formulate dietary plans throughout the life span  
Analyze therapeutic diets related to physiological changes resulting from disease processes  
Investigate eating disorders  
Develop a plan to prevent foodborne illnesses through the use of food safety and biotechnology  
Explain how hunger affects people in the United States and globally  
Analyze the effects of human hunger and behavior on public health within different cultures  
Assess the human impact on the biosphere  
Summarize conservation and restoration efforts with regards to food production

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or

impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 2, 8, & 10.

**BIOL 1300 - Introduction to Forensic Science (3)**

This course will familiarize students with the history and theory of forensic science and the function of crime laboratories. Students will explore ethical considerations and legal responsibilities of forensic scientists. They will apply the scientific method in observing, documenting, collecting, preserving, analyzing, and reporting evidence through case studies and hands-on biomedical lab activities. This course covers the characteristics of hazardous waste and the necessary safe handling, storage, and disposal.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and Qualifying score on math assessment test OR MATH0800. Basic computer and Internet skills are strongly recommended

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Define forensic science and identify some of its sub-disciplines

Discuss the historic development of forensic science and its current role in crime scene investigations

Describe the process of the scientific method and its limitations

Describe the role and activities of crime laboratories

Explain the ethical and legal responsibilities of crime lab personnel

Identify the types of evidence that are typically analyzed in crime laboratories

Describe proper collection and preservation procedures of physical and biological evidence

Perform basic lab procedures used to characterize various type of biomedical, pattern, and impression evidence

Appropriately handle, store, and dispose of hazardous material

Discuss forensic case studies

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 2 Lab: 1

MnTC Goal Areas: 2, 3, & 9.

**BIOL 1400 - Human Biology (4)**

This course is a survey of the general structures and functions of the human body using an organ systems approach. Areas of study include human organization, support and movement, integration and coordination, maintenance of the body, body defenses, reproduction, and development. Each human organ system will be investigated to develop an understanding of its

contribution to the normal functioning of the human body. Discussion of basic disease processes associated with each system, and current health and social issues will also be integrated.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and Qualifying score on math assessment test OR MATH0910 or MATH0920

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the levels of biological organization

Identify key anatomical structures of the human body

Explain basic physiologic mechanisms associated with the human body

Investigate the relationship between structure and function

Relate physiologic processes to the maintenance of homeostasis

Apply concepts of anatomy and physiology to human health and disease

Recognize the effects of disease conditions on homeostasis

Evaluate data relating to human body structure and function

Describe steps to be taken for proper care of the human body and for prevention of disease

Interpret case studies

Demonstrate proper safety procedures in a laboratory setting

Explain the roles of carbohydrates, fats, proteins, vitamins and minerals in proper nutrition

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3 Lab: 1

MnTC Goal Areas: 2 & 3.

### **BIOL 2005 - General Biology I (4)**

This course studies the organization of life with emphasis on cellular biology. Topics include chemistry, cytology, energy and metabolism, gene expression and regulation, inheritance, natural selection, and biotechnology. Comparison of eukaryotic, prokaryotic, and acellular structures and mechanisms are studied. The laboratory sessions reinforce concepts discussed in lecture as well as provide a strong foundation in scientific methods and statistical analyses. Fundamental laboratory skills such as safety, measurement, and instrumentation are emphasized. This course covers the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and Qualifying score on math assessment test OR MATH0940 or MATH0960

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Define the characteristics of life

Apply basic principles of inorganic, bio- and physical chemistry to biological processes

Explain the relationship among cellular structures and their functions

Describe the regulation of cell cycles and cellular division

Explain the flow of energy in prokaryotic and eukaryotic cellular processes

Describe the processes of genetic regulation, expression, and inheritance

Discuss the roles of biotechnology in society  
 Apply the scientific method in a laboratory setting  
 Demonstrate the appropriate use of laboratory equipment  
 Determine the appropriate method for collecting data

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 1

MnTC Goal Areas: 2 & 3.

### **BIOL 2125 - Anatomy and Physiology I (4)**

This course is the first semester of a lecture and laboratory sequence in human anatomy and physiology. Human anatomy and physiology are studied using a body systems approach, with emphasis on the interrelationships between form and function at the gross and microscopic levels of organization. Homeostasis is an integrating theme throughout this course. Topics include anatomic and directional terminology, cellular processes, tissue classification, and the integumentary, skeletal, muscular, and nervous systems. Clinical applications of anatomy and physiology are also introduced. The laboratory component of the course parallels and reinforces lecture concepts through the use of models, histological slides, dissection of animal specimens and exercises in physiology. This course is intended for anyone interested in gaining a better understanding of the structure and functioning of the human body.

Prerequisite: BIOL2005 with a grade equivalent of "C" or better OR BIOL1400 with a grade equivalent of "C" or better

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply descriptive anatomic and directional terminology

Describe the levels of biologic organization

Describe cellular organization, structure and function

Explain the dynamics of the structure and function of the cell membrane

Relate chemical activities of cells to the metabolic activities of the body

Identify microscopic and gross anatomy of selected tissues and organ systems

Describe the major gross and microscopic anatomic components of selected organ systems of the human body

Explain basic physiologic mechanisms of the body

Integrate the relationships between structure and function

Explain the basic concept of homeostasis and how homeostatic mechanisms apply to body systems

Describe the dynamics of the skeletal system

Explain the mechanisms of muscle contraction

Describe the functional relationships that exist among the components of the nervous system and select body systems

Apply concepts of human anatomy and physiology to human health and disease

Analyze experimental results

Demonstrate proper scientific methods, evaluative techniques and safety procedures in a laboratory setting

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit

Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

MnTC Goal Areas: 2 & 3.

### **BIOL 2225 - Anatomy and Physiology II (4)**

This course is the second semester of a lecture and laboratory sequence in human anatomy and physiology. Human anatomy and physiology are studied using a body systems approach, with emphasis on the interrelationships between form and function at the gross and microscopic levels of organization. Homeostasis is an integrating theme throughout this course. Topics include the endocrine, cardiovascular, lymphatic, respiratory, digestive, urinary and reproductive systems, the immune response, fluid and electrolyte balance, metabolism, nutrition, and human development. Clinical applications of anatomy and physiology are also discussed. The laboratory component of the course parallels and reinforces lecture concepts through the use of models, histological slides, dissection of animal specimens and exercises in physiology. Some lab exercises will introduce students to the laboratory techniques and equipment used in the acquisition of physiological data. This course is intended for anyone interested in gaining a better understanding of the structure and functioning of the human body.

Prerequisite: BIOL2005 with a grade equivalent of "C" or better and BIOL2125 with a grade equivalent of "C" or better OR BIOL1400 with a grade equivalent of "C" or better and BIOL2125 with a grade equivalent of "C" or better

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify microscopic and gross anatomy of selected tissues and organ systems

Describe the major gross and microscopic anatomic components of select organ systems of the human body

Describe the functional roles of various body systems especially in light of maintaining homeostasis

Integrate the relationships between structure and function

Describe the functional relationships that exist among the components of the endocrine system and select body systems

Explain the physiologic mechanisms of the components of the cardiovascular system

Demonstrate knowledge of the processes of the immune system

Describe the functional roles of the components of the respiratory system especially as they relate to pulmonary ventilation, and external and internal respiration

Describe digestive system processes, phases, and control

Describe the functional roles of the components of the urinary system

Explain the physiology of the homeostatic mechanisms that control fluid electrolyte and acid base balance

Distinguish variations between male and female anatomy

Contrast male and female reproductive physiology and development

Describe the stages of embryological development

Apply concepts of human anatomy and physiology to health and disease

Analyze experimental results

Demonstrate proper physiological methods, evaluative techniques and safety procedures in a laboratory setting

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

MnTC Goal Areas: 2 & 3.

### **BIOL 2235 - Microbiology (4)**

This course investigates microorganisms with an emphasis on human health and disease. The course provides a study of prokaryotic, eukaryotic and acellular microbes. Topics covered include microbial taxonomy, morphology, growth, metabolism, genetics, etiology, resistance, host interactions, human immune response to infection, epidemiology, control, treatment, as well as their use in biotechnology. The laboratory component of the course is designed to reinforce the topics discussed in lecture, as well as to introduce students to some of the laboratory techniques and methods used in microbiology, including aseptic techniques and safe handling of microorganisms, culturing, staining, biochemical analyses, enumeration, identification of unknowns and microbial control. This course covers the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: BIOL2005 with a grade of "C" or better and BIOL2125 with a grade of "C" or better

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the scope of microbial diversity

Integrate principles of chemistry and cell biology to the processes of microbiology

Describe the major groups of microorganisms according to current taxonomic schemes

Contrast morphology, growth, metabolism and genetics of prokaryotic and eukaryotic microbes

Compare the cellular processes of prokaryotic and eukaryotic microbes

Distinguish among eukaryotic microbes, including fungi, algae, protozoa and multicellular parasites

Describe the characteristics of viruses and prions

Describe the pathogenesis of infectious diseases of humans with respect to etiologies, mechanisms of transmission, diagnoses and treatments

Explain the significance of biofilms in clinical medicine

Describe the complex interactions that exist between microbes and host organisms

Describe human immune response to microbial infections

Analyze the effectiveness of various methods of microbial control, including factors that must be considered in their selection and use

Explain microbial adaptation, resistance and evolution

Describe epidemiological tools used for the study, intervention and prevention of disease in society

Review the contribution of microbial genetics to science and biotechnology

Apply microbiological concepts to current issues

Solve case studies related to microbiology

Demonstrate proper microbiological methods, evaluative techniques and safety procedures in a laboratory setting

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 1

MnTC Goal Areas: 2 & 3.

# BUSN - Business

## **BUSN 1000 - Introduction to Business (3)**

This is a college level introductory course in business practices. The course is an overview of the role of business in the American economy and the international community. The course will cover the free enterprise system used in America. The student will look at issues of business and society; as well as, legal, regulatory, and political responsibilities on the part of American business. A short overview of Marketing will also be covered as a part of the course.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and qualifying score on writing assessment test OR ENGL0930

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe the role of economics in the American business environment
- Describe the steps to implementing a program of social responsibility
- Explain the economic basis for global business
- List the advantages and disadvantages of small business ownership
- Identify the key skills of effective managers
- Describe how purchasing, inventory control and quality control affect production
- Describe the major components of human resources management
- Explain the elements of the Marketing Mix
- Describe the relationship between financial systems and business organizations

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3 lab: 0

## **BUSN 1020 - Introduction to Selling (3)**

This course covers the role of sales in the economy, the importance of a positive sales attitude, the basic steps of a sale, and how the salesperson is viewed as a representative of a company. The student will be required to conduct a sales presentation to a buyer of a product.

Prerequisite: Qualifying score on writing assessment test OR ENGL0930

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify customers
- Prepare sales objective
- Prepare sales presentation strategy
- Demonstrate interpersonal skills
- Identify customers` needs/wants/motives
- Assess customers` needs/wants/motives

Apply questioning and listening skills  
 Answer question objections  
 Present product/service features/advantages/benefits(fab)  
 Apply closing techniques  
 Prepare sales forms

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **BUSN 1025 - Introduction to Esports Business (3)**

Professional gaming, known as esports, is one of the fastest growing global industries. In this course, we will explore all elements of the esports ecosystem including publishers and games, platforms, players and teams, tournament and league organizers, and brands and advertisers to understand how the industry operates. We will also investigate job and career opportunities in this dynamic industry.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and qualifying score on writing assessment test OR ENGL0930

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the elements of the esports ecosystem

Analyze the business models of the key companies in the esports industry

Describe the most important publishers and games in esports

Identify the most important teams and leagues in esports

Describe how esports leagues are managed

Identify the key technical challenges faced by esports companies

Describe the process for managing an esports tournament

Identify key trends in esports

Analyze career opportunities in esports

Describe branding and marketing opportunities in esports

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

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Credit Details: lecture: 3

### **BUSN 1030 - Professional Development (3)**

Professional image and `self-management` are the focus of this course. Professional appearance, wellness, time management, goal setting and techniques for the professional's response to various social settings will be addressed in this course.

Prerequisite: Qualifying score on writing assessment test OR ENGL0930

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe professional self-image
- Apply social business behavior
- Explain personal wellness
- Prepare a personal wellness plan
- Examine professional dress standards
- Prepare a professional dress plan
- Prepare a self-improvement plan
- Apply goal setting techniques
- Apply time management techniques
- Examine business etiquette techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3 lab: 0

### **BUSN 1041 - Customer Relationship Management (CRM) (3)**

In this course, students will experience practical strategies for integrating information and technologies in order to get results. Customer Relationship Management (CRM) involves data-driven solutions that improve how salespeople do business with customers. CRM systems and applications are designed to manage and maintain customer relationships, track engagements and sales, and deliver actionable data.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and qualifying score on writing assessment test OR ENGL0930

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Assess sales data in case study scenarios
- Analyze territory sales goals
- Forecast sales

Use sales business ratios to make sales account decisions  
 Create a sales prospecting plan  
 Apply sales account management skills  
 Analyze sales reports  
 Identify strategies for communicating sales activities  
 Identify CRM software applications

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 0

### **BUSN 1060 - Territory/Account Management (3)**

This course covers identifying prospects, management of time in relation to territory assignments, management of territory for profit, how to schedule activities, develop sales strategies and maintain account records. The concepts will be learned through case studies or a live territory project.

Prerequisite: Qualifying score on writing assessment test OR ENGL0930

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Calculate territory market needs
- Identify territory accounts
- Rank territory accounts
- Develop territory lead list
- Develop a territory routing plan
- Develop territorial quotas
- Plan territory sales expenses
- Map territory accounts
- Prepare territory call/sales/work reports
- Analyze territory trends
- Describe territory competition
- Apply time management techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 0

### **BUSN 1091 - Consultative Selling (3)**

In Consultative Selling students will learn to build relationships with business partners. Consultants ask questions to assess client needs, then utilize critical thinking to identify business problems and provide solutions. In this class, students will apply business knowledge as they determine ways that client businesses could run more effectively or profitably for improved results. These solutions typically involve the sales consultant's products and services.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and qualifying score on writing assessment test OR ENGL0930

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Establish the relationship between the salesperson and client
- Identify the salesperson as a problem-solver
- Identify behaviors indicating no trust
- Apply empathy skills
- Describe the signs of no need
- Apply questioning strategies
- Describe the solution-advantage-benefit (sab) of the product/service
- Apply closure strategies
- Apply customer support strategies after the sale

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 0

### **BUSN 1100 - Supervision (3)**

The focus of this course is on the first-line manager who coordinates and supervises the activities of the operating employees in any company. The course will emphasize effective ways to lead, motivate, delegate, communicate and measure the performance of employees who perform the day-to-day activities of the organization.

Prerequisite: Qualifying score on writing assessment test OR ENGL0930

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Understand the supervisor's role in the organization
- Assess the supervisor's role in change and innovation
- Discuss trends in supervision
- Identify processes used in organizing a department

Apply goal setting principles  
 Apply decision making and problem solving principles in supervision  
 Describe the fundamental concepts of leadership  
 Describe the fundamental concepts of motivation  
 Identify methods used in supervising groups and teams  
 Assess effective methods in communication to subordinates  
 Understand organizational politics  
 Explain how to acquire the right people  
 Explain disciplinary processes used in supervision  
 Apply measurement standards for department and individual performance  
 Understand labor relations  
 Apply conflict management techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 0

### **BUSN 1140 - Business Law (3)**

This course is an introduction to the principles of law as they apply to businesses. Topics covered include the court system, contracts, purchases and sales under the UCC, commercial paper, employment law and business organizations and regulation.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the functions of law

Outline the structure of the court system in the United States

Defend the need to set up a system of uniform state laws

Compare and contrast the varieties of negligence and assumption of risk

Explain elements of a variety of contracts

Describe various types of consideration

Describe illegal agreement types

Describe third party contract involvement

Define product liability and warranties

Describe rights and duties of parties to negotiable instruments

Describe rights and duties of principals/agents

Describe rights, duties, powers and liabilities of corporations and their owners

Distinguish between real and personal property

Explain rights and duties of the parties to a bailment

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit

Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 0

### **BUSN 1150 - Introduction to Service and Work Team Strategies (3)**

Our society is increasingly becoming less customer service oriented. Therefore it follows that there is a growing need for the development of customer service skills. This course describes what customer service is and how it impacts profitability and productivity of most businesses. The course addresses the challenges in the delivery of customer service, strategies used in customer service and the personal skills necessary to achieve value added experiences for the customer. Teamwork is an essential part of the workplace today and will increase in the future. This course will improve student's understanding of both theory and practical application of skills used in teams. Students will participate in teams, completing team projects and analyzing team interaction. Emphasis will be on team formation and development, effective leadership, decision-making in teams, active participation, conflict resolution, planning and conducting meetings.

Prerequisite: Qualifying score on writing assessment test OR ENGL0930 and Qualifying score on reading assessment test OR ENGL0921

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Define customer service in the twenty-first century

Discuss customer service strategies

Design a customer service system

Discuss strategies to retain customers

Develop a business philosophy of customer service

Implement solutions to customer service problems

Apply forming techniques to team structure

Identify the roles of the team members and team leader

Develop and implement a team meeting agenda

Develop listening and questioning skills

Develop feedback skills

Apply decision-making and problem solving skills

Apply conflict management skills

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 0

**BUSN 1200 - Managerial Communication (3)**

It is essential that a manager in any organization understand how that organization communicates. This course is designed to improve the student's understanding of a manager's place within the organization and to provide an awareness of effective communication skills needed within an organization. The course will include a discussion of new organizational communication processes, status and power within an organization, sources of conflict within an organization and common communication methods used by managers within the organization.

Prerequisite: Qualifying score on writing assessment test OR ENGL0930

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Understand the concept of communication within the organization
- Discuss traditional views of status and power within the organization
- Apply conflict management techniques
- Discuss cultural control, diversity and change
- Apply techniques of running effective meetings
- Apply facilitation techniques
- Apply principles of effective presentations to groups
- Apply basic principles of negotiation
- Apply principles of crisis communication
- Apply principles of external communication
- Apply concepts of leader-member relationships

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 0

**BUSN 1510 - Entrepreneurship (3)**

Students will learn the process of creating and developing a business venture. The course will cover four phases of new venture development, (1) opportunity identification, (2) feasibility analysis, (3) execution strategy and business plan development, and (4) growth, change and harvest strategies. The focus will be on the planning, financing, and managing of a selected venture. In addition to learning the process, students will select an idea for a new venture and create a business plan.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and qualifying score on writing assessment test OR ENGL0930

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

- The following outcomes will be addressed in the course:
- Describe the challenges and rewards of entrepreneurship
  - Generate ideas for new ventures
  - Analyze the feasibility of new venture ideas
  - Develop a business plan
  - Define the significance of entrepreneurship

Develop alternative business models for new venture ideas  
Define entrepreneurial ethics  
Describe the major requirements of starting a business in Minnesota  
List the typical characteristics of entrepreneurship  
Describe debt and equity financing

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Credit Details: lecture: 3 lab: 0

### **BUSN 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A `Specialized Lab Training Agreement` must be signed by the student and the instructor and submitted to the registrar at the time of registration.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply computer skills in a business setting

Apply presentation and writing skills to assigned business projects

Analyze business information

Demonstrate knowledge of business problem solving and critical thinking

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Campus:

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Credit Details: lecture: 0 lab: 1-4

### **BUSN 2000 - Business Analysis (4)**

This is a college level introductory course in business analysis. This course will detail the roles and responsibilities of the Business Analyst. The course will teach techniques to define the scope of work which includes: identify requirements-gathering techniques, identify the unique needs of stakeholders, customers and the I/T department in the business analysis process among the many facets of the business analyst's responsibilities.

Prerequisite: ITEC2055

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Define the roles and responsibilities of a business analyst

Define team roles and work division strategy

Build a business case

Evaluate a business case

Plan requirements for a project

Manage requirements for a project

Conduct effective interviews and questionnaires with stakeholders

Identify business rules

Document business rules

Acquire agreement from stakeholders on the business case

Determine causes of problems using causal analysis

Identify the stakeholders of a business process

Choose elicitation techniques for questioning stakeholders

Implement techniques for gathering information about a business process

Develop appropriate business requirements models and documents for business owner and stakeholders

Present business requirements to business owner and stakeholders using visual diagrams/models

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 4 lab: 0

### **BUSN 2005 - Marketing Concepts and Strategies (4)**

An overview of basic marketing principles and practices, this course includes discussion of the marketing mix, the four `p's` of marketing, buyer behavior, target markets, and electronic marketing concepts. Concepts will be learned through case studies and the creation of a marketing plan for a hypothetical company.

Prerequisite: Qualifying score on writing assessment test OR ENGL0930

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe strategic marketing

Describe the marketing environment

Apply marketing research to marketing plan

Identify consumer buying behavior

Analyze market segments  
Evaluate markets  
Explain the role of product in the marketing mix  
Analyze marketing channels to distribute products  
Demonstrate the role of advertising and publicity in the marketing mix  
Identify the role of pricing concepts in the marketing mix  
Explain the role of personal selling and sales promotion in the marketing mix  
Create a marketing plan for a product or service

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 4 lab: 0

### **BUSN 2010 - Requirements Management with Use Cases (3)**

This is a college level course in developing and documenting project requirements. This course will teach the Business Analyst a logical methodology for the requirements process through practice developing effective requirements. The course will teach and reinforce techniques to identify relevant stakeholders, elicit and document business requirements, and develop use cases describing the business system within which they are working.

Prerequisite: BUSN2000

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Develop effective business objectives  
Identify all relevant stakeholders in the project  
Elicit business requirements  
Document business requirements  
Elicit end-user process requirements  
Capture end-user process requirements  
Recognize business rules  
Document business rules  
Capture non-functional requirements  
Write non-functional requirements  
Translate the business/user requirements into system requirements  
Write effective requirements specifications  
Create effective use cases for stakeholder understanding

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 0

### **BUSN 2015 - Marketing Applications (3)**

Marketing involves all of the activities that help businesses reach their target market(s) effectively including public relations, sales promotion, advertising, social media, pricing, distribution and many other functions. In this course, students will gain practical experience in applying these activities through projects and case studies related to the development of a marketing plan. In addition, students will experience the importance of aligning their marketing objectives with the strategic goals of a business organization.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and qualifying score on writing assessment test OR ENGL0930

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify the strategic business goals of a business organization

Develop marketing objectives for a product or service aligned with the goals of a business organization

Apply the four primary functions of a Marketing Strategy

Apply effective tactics for target market selection, segmentation and positioning

Present an advertising campaign as part of a marketing strategy

Present a social media campaign as part of a marketing strategy

Present a sales promotion plan as part of a marketing strategy

Develop a pricing and distribution plan as part of a marketing strategy

Create a sales strategy for a business organization as part of a marketing strategy

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 0

### **BUSN 2040 - Introduction to Event Planning (3)**

A career in event planning covers a broad array of industries and types of meeting including corporate meetings, trade shows and expos, weddings, sporting events, fundraising and concerts. In this course, students will learn about the many career opportunities in this field, and the basic skills required for an event planner. The course provides an introduction to client relationships, industry partnerships and the planning process that will drive success!

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and qualifying score on writing assessment test OR ENGL0930

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and

evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Identify meeting planning process basics
- Describe the opportunities in the event planning industry
- Recognize aspects of corporate events, special events and public events
- Apply financial management to meeting and events
- Identify the importance of client/vendor relations
- Describe effective networking for the meeting and events industry
- Identify event marketing and promotion strategies
- Describe aspects of non-profit and fundraising events
- Identify meeting planning logistics

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

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Credit Details: lecture: 3 lab: 0

**BUSN 2050 - Event Site Sourcing and Contracts (3)**

In planning a business event, one of the first steps is deciding how, when and where attendees will gather. Convention or conference centers, hotels, etc. can offer a myriad of services with varying pricing and conditions. Sourcing these locations can be a complex task. In this class, students will learn to develop a "request for proposal" (RFP) where your needs and specifications are clearly spelled-out to potential venues. Learning to evaluate and compare these responses and negotiate a contract requires skill, confidence and know-how.

**Prerequisite:** Qualifying score on reading assessment test OR ENGL0921 and qualifying score on writing assessment test OR ENGL0930

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Recognize the various decisions involved in meeting site selection
- Identify event details, event spaces and event conditions
- Describe the process for developing a Request for Proposal (RFP)
- Identify industry technology applications for RFP development
- Identify how to evaluate/compare/select from RFP responses
- Describe event contract terms
- Recognize contract negotiation strategies, attrition and termination clauses
- Recognize contract risk and liability
- Apply communication strategies with team members and partners

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Credit Details: lecture: 3 lab: 0

**BUSN 2055 - Principles of Management (4)**

This course is an introduction into the exciting world of management. Today`s managers are faced with many difficult and exciting challenges. Therefore, this lecture course covers the latest trends in management thinking that is essential to successfully guide large, small, profit and nonprofit, organizations toward their goals.

Prerequisite: Qualifying score on writing assessment test OR ENGL0930

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Identify the challenges facing the twenty-first century manager

Identify the elements of planning

Discuss strategic management techniques

Apply decision-making and creative problem solving strategies

Identify elements of organizing

Describe human resource management concepts

Compare various approaches to motivation

Identify group dynamics and teamwork

Analyze leadership components

Identify control and quality processes

Identify diversity issues in management

Describe ethical practices in management

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

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Credit Details: lecture: 4 lab: 0

**BUSN 2075 - Digital Marketing (3)**

Internet technologies have revolutionized the practice of marketing. Digital marketing has become an essential component of any firm's marketing strategy. This course will provide a foundation in the key concepts around this rapidly changing field, including internet marketing strategies, search engine optimization, inbound marketing, email marketing, social media campaigns, mobile apps, content strategy, paid search advertising, and web analytics. We will also work to establish the practice of keeping up to date on emerging digital technologies relevant to business and to marketing.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and qualifying score on writing assessment test OR

## ENGL0930

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

### Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe potential future trends in digital marketing
- Identify the marketing impact of changes in the digital landscape
- Explain how digital marketing strategies fit with company's overall marketing strategy
- Create a comprehensive digital marketing strategy and plan
- Describe the major tools of digital marketing
- Demonstrate the use of social media to stimulate traffic, engagement and brand awareness
- Demonstrate the use of search engine marketing (SEM)
- Measure the effectiveness of digital marketing efforts using analytics tools
- Generate the Google Analytics Individual Qualification certificate

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

### Special Accommodations:

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Credit Details: lecture: 3 lab: 0

## **BUSN 2085 - Small Business Operations (4)**

The Small Business Operations course is designed for students interested in learning how to manage a small business. The course focuses on operating a small business in today's dynamic business environment, and covers such topics as risk taking and entrepreneurship, forms of ownership, planning, organizing and managing, marketing, financing, human resources management, governmental regulation and taxation, franchising, starting or buying a small business, and other relevant subject areas.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and qualifying score on writing assessment test OR ENGL0930

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

### Learning Outcomes:

The following outcomes will be addressed in the course:

- Compare the various approaches to starting a small business
- Describe the advantages and disadvantages of the various legal structures of a small business
- Describe the opportunities for small business as global enterprises
- Develop small business marketing strategies to create value for customers
- Develop competitive strategies for capturing business opportunities
- Discuss the elements of the operating system in small business, and the role of quality in operations management
- Identify strategies for human resources management in small business
- Describe the risk management process to be followed in small businesses
- Identify the basic requirements for a small business accounting system
- Analyze the financial needs of a small business
- Identify appropriate sources of funds for financing short and long term business needs
- Explain the options for harvesting or closing the small business, and the related importance and outcomes

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

href="https://www.hennepintech.edu/finance-operations/campus-store.html" target="\_blank">bookstore</a>.

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 4 lab: 0

### **BUSN 2100 - Capstone (3)**

This is a `capstone` experience usually taken during the last semester where business students will be required to work in teams using acquired technical skills to handle a business case study or to complete a business study project. Industry may be asked to review the work and evaluate work completed.

Prerequisite: BUSN1000, BUSN1051, BUSN1140, BUSN1200, BUSN1300, and ITEC2801

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Work independently and as part of a team

Organize work schedule

Follow prescribed procedures

Demonstrate initiative

Demonstrate cooperation

Integrate previously acquired skills

Integrate previously acquired knowledge

Use critical thinking and problem solving skills

Demonstrate a positive attitude

Display good judgement

Demonstrate dependability

Exhibit professionalism

Text and References: A list of textbooks required for this course is available at the <a rel="noopener noreferrer" href="https://www.hennepintech.edu/finance-operations/campus-store.html" target="\_blank">bookstore</a>.

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 3 lab: 0

### **BUSN 2170 - Supervised Occupational Experience (4)**

This course is designed to provide the student with a purposeful occupational experience in the field of selling business to business. Since each supervised occupational experience is an individualized experience, a training plan is created specifically for each student in conjunction with the training site the student will be working. The supervised occupational experience can be offered as a cooperative arrangement, an internship arrangement, or other appropriate work experience arrangement.

Prerequisite: Completion of at least 16 Business credits with a grade of "C" or better in each course or an arrangement with instructor

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Work independently

Plan work schedule

Follow prescribed procedures

Demonstrate initiative

Apply previously acquired skills

Apply previously acquired knowledge

Apply good judgment

Demonstrate dependability

Demonstrate professional business etiquette

Apply critical thinking and problem solving skills

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 4 lab: 0

## CARP - Carpentry

### **CARP 1101 - Introduction to Residential Construction (2)**

This course is designed to introduce students to basic construction procedures and operations used to construct a residence. Emphasis will be placed on construction principle of measurement, layout and power tool operation and safety along with OSHA 10 compliance.

Prerequisite: Qualifying score on reading assessment test OR Qualifying score on ESL reading assessment test

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Implement measurement techniques

Manipulate measurement devices

Demonstrate safety and operation procedures for stationary and portable power tools

Execute proper and safe operational procedures for stationary and portable power tools

Identify hand tools

Manipulate hand tools  
 Identify residential framing components  
 Execute wall framing layout procedures  
 Demonstrate knowledge of various construction methods  
 Identify the basic practices required by "OSHA 10"  
 Demonstrate safe work habits

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 1

### **CARP 1111 - Floor and Wall Framing (5)**

This course covers floor and wall framing. It is designed to introduce students to framing materials used to build floors and walls and a working knowledge of layout and framing practices. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Qualifying score on reading assessment test OR Qualifying score on ESL reading assessment test

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate safe use of tools
- Translate blueprints
- Practice proper tool maintenance
- Identify floor framing techniques
- Construct floor framing system
- Complete stairway openings
- Determine wall openings
- Apply floor sheathing
- Classify exterior wall framing methods
- Layout exterior plates
- Practice exterior wall framing
- Determine wall framing methods
- Construct interior walls
- Align walls

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 4

### **CARP 1130 - Additions and Retrofit (2)**

This course introduces the student to construction processes used to attach and/or modify rooms, porches and garages. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Interpret blueprints
- Identify materials on the existing structure
- Assess existing framing conditions
- Assess existing exterior conditions
- Evaluate plumbing/electrical/heating involvement
- Estimate materials required
- Examine demolition methods
- Apply floor/wall framing techniques
- Apply roof framing techniques
- Employ exterior finish techniques
- Examine methods of connecting to existing structures
- Practice safe work habits

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lab: 2

### **CARP 1140 - Engineered Roof Systems (2)**

This course will introduce the student to some of the engineer designed products used to support the roof on a house. Students will then use this information to build one or more roofs.

Prerequisite: Qualifying score on reading assessment test OR Qualifying score on ESL reading assessment test

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify roof truss design

Practice handling and storage of roof truss  
 Determine installation requirements  
 Demonstrate proper bracing  
 Analyze sheathing application  
 Practice safe construction techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 1 lab: 1

### **CARP 1150 - Rafter Framing (3)**

This course is designed to provide the opportunity for students to layout, cut and install rafters. Projects may include a full scale roof, a shed roof, Cape Cod dormers and snub gables.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Distinguish roof terminology and components

Read roof framing plan

Calculate rafter lengths

Layout rafters

Identify uses of a dormer

Determine dormer framing methods

Layout dormer rafters

Install rafters

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 2

### **CARP 1180 - Stair Framing (2)**

This course introduces the student to the layout, cutting, and installation of stairs.

Prerequisite: CARP1511

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Define stair terminology
- Identify code requirements
- Calculate rise, run, and drop
- Determine well opening dimensions
- Layout stair stringer
- Cut stair stringers
- Install stair stringers

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **CARP 1185 - Stair Layout (1)**

This is an advanced course for students working in the carpentry trade wanting to upgrade their skills in the theory of stair layout, cutting and installation of stringers and landings.

Prerequisite: One year minimum work experience

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe the code requirements for various types of stairways
- Incorporate stair terminology
- Apply mathematics to determine stair layout
- Lay out various types of stair stringers
- Construct various stairways

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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 Brooklyn Park Campus - 763-488-2477  
 Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1

### **CARP 1190 - Deck Construction (1)**

This course is an introduction to deck building for the carpentry student or homeowner. This course will touch on design/code requirements. The student will install footings, frame the floor, install decking, install railings and stairs as needed. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Explore deck building materials
- Install footings
- Construct posts, beams, and ledgers
- Install decking, handrails, and guardrails
- Calculate stairs
- Interpret building code requirements
- Demonstrate blueprint reading skills
- Exhibit safe work habits

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lab: 1

### **CARP 1240 - Exterior Finishes (4)**

This course will introduce students to various types of exterior finishing techniques. Students will obtain knowledge of different types of roofing, siding and cornice products. An emphasis will be placed on expediting the installation techniques for each facet of exterior finishes.

Prerequisite: Qualifying score on reading assessment test OR Qualifying score on ESL reading assessment test

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Investigate various roof covering products

- Estimate material requirements
- Compare fastening methods
- Determine the roof surface integrity
- Identify flashing requirements
- Apply roof covering
- Identify siding materials
- Demonstrate use of various siding tools
- Practice cutting techniques
- Describe siding techniques
- Install siding products
- Apply air barrier
- Identify cornice materials and styles
- Analyze detail drawings
- Install soffit and fascia
- Practice safe construction techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 3

### **CARP 1420 - Concrete Stairs, Walks and Drives (1)**

This course introduces the student to procedures used to form, pour and finish concrete stairs, walks and driveways.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Verify blueprint and code requirements
- Construct stair forms
- Construct sidewalk and driveway forms
- Place concrete
- Practice concrete finishing methods
- Estimate material quantities

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lab: 1

### **CARP 1430 - Install Concrete Slabs (1)**

This course introduces the student to the procedures used to form, pour and finish concrete slabs.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Verify blueprint and code requirements

Construct slab forms

Place concrete

Practice concrete finishing methods

Estimate material quantities

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lab: 1

### **CARP 1511 - Insulation and Drywall (3)**

This course introduces the student to the properties of insulation and gypsum wallboard and proper installation of both.

Prerequisite: Qualifying score on reading assessment test OR Qualifying score on ESL reading assessment test

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify the requirements of the state energy code

Examine R values and insulation techniques

Determine ventilation requirements

Install wall and ceiling insulation

Explore gypsum board products

Exercise wall moisture intrusion control methods

Differentiate gypsum board installation techniques

Ascertain scaffolding requirements

Install gypsum board products

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

[bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html)

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Credit Details:** lecture: 1 lab: 2

### **CARP 1710 - Stair Finishing (2)**

This course will introduce the students to the fundamentals of finishing an open and closed stair. It will include the application of treads, risers and railing parts.

**Prerequisite:** CARP1511

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Identify code requirements

Install finish stair parts

Mount wall hand rail

Compare newel post anchoring options

Construct open handrail system

Classify manufactured stair parts

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Credit Details:** lecture: 1 lab: 1

### **CARP 1720 - Interior Trim (4)**

This course introduces the student to interior trim. It will include the installation of jamb sets, pre-hung doors, door and window casing, moldings and hardware.

**Prerequisite:** CARP1511

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Identify interior trim materials
- Estimate material quantities
- Contrast nailing methods
- Identify nailing patterns
- Identify cutting methods
- Apply cutting methods
- Practice fitting methods
- Install doors
- Install moldings
- Install hardware
- Identify closet systems
- Install closet systems
- Exhibit safe work habits

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Credit Details: lecture: 1 lab: 3

**CARP 1760 - Cabinet Making (3)**

This course introduces the student to the elements of cabinet construction such as drawing, cutting and assembly of cabinet body parts, doors, drawing and plastic laminate tops.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Identify standard cabinet components
- Explore various cabinetmaking materials
- Identify standard cabinet sizes
- Produce working drawings
- Estimate materials
- Produce cut list
- Operate cabinet making tools
- Produce cabinet components
- Assemble cabinet components
- Determine joining techniques
- Use various scribing techniques
- Install cabinets and components
- Identify cabinet hardware
- Install cabinet hardware
- Apply machine/shop safety procedures

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 2

### **CARP 1810 - Residential Blueprint Reading (1)**

This course introduces the student to the fundamentals of blueprints and the reading of residential blueprints through the use of a standard workbook and construction blueprints.

Prerequisite: Qualifying score on reading assessment test OR Qualifying score on ESL reading assessment test

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Interpret blueprint terminology

Distinguish construction dimensioning techniques

Translate blueprints

Determine construction specifications

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1

### **CARP 1820 - Residential Estimating (2)**

This course introduces the student to estimating materials for rough framing and interior and exterior finishing.

Prerequisite: CARP1511

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Estimate concrete materials  
 Calculate concrete labor costs  
 Compute rough framing materials  
 Approximate rough framing labor  
 Estimate exterior finish materials  
 Calculate exterior finish labor  
 Compute interior finish materials  
 Estimate interior finish labor

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2

### **CARP 1830 - Building Code (1)**

This course is a study of the parts of the State Building Code that relate to residential construction.

Prerequisite: CARP1511

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe administration functions
- Interpret building construction codes
- Clarify energy conservation codes
- Examine stair construction codes
- Examine building finish codes
- Interpret mechanical systems requirements
- Discuss local ordinances

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1

### **CARP 1840 - Energy Efficient Construction (1)**

This course is a study of the State Energy Code and construction methods and strategies used to build energy efficient houses.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify the need to build energy efficient homes
- Determine ventilation requirements
- Compare methods to build energy efficient homes
- Examine testing methods of energy efficient homes
- Investigate retrofit strategies
- Manipulate energy assessment software

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1

### **CARP 1850 - Introduction to Computer Assisted Drawing (1)**

This course will introduce students to a computer program for drawing blueprints. After completing the program, students will be able to draw and dimension a blueprint, insert windows and doors and other components.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify software components
- Manipulate software to draw and dimension exterior walls
- Manipulate software to draw and dimension interior walls
- Compare scale
- Select and place windows and doors in plan
- Modify window and door openings
- Select and place cabinets in drawing
- Select and place various fixtures in the plan
- Create various plans views
- Operate various modes
- Create a DX file

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab

credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lab: 1

### **CARP 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A `Specialized Lab Training Agreement` must be signed by the student and the instructor and submitted to the registrar at the time of registration.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Exercise professionalism

Demonstrate initiative

Integrate previously acquired skills and knowledge

Follow procedures

Apply systematic concepts to lab specific circumstances

Combine cutting, measuring and installation procedures

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lab: 1-4

### **CARP 2000 - Green Building Concepts (3)**

This course covers the integration of green building technologies into conventional residential construction practices. Principles and practices to reduce negative environmental effects on regional and global scales while improving building performance, health and comfort of the occupants will be explained.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and

evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Explain the principles that influence building performance

Identify sustainable/green building terminology

Recognize sustainable/green building practices

Recognize the requirements of green buildings

Compare building science principles and practices to mainstream residential construction practices

Apply building science principles and practices to mainstream residential construction practices

Explain how to select air, moisture, and thermal barriers

Explain how to select high performance windows and doors

Recognize reasons for testing structures for air leakage and thermal bypasses

Interpret pertinent residential green building program requirements

Discuss the details involved in energy efficient construction and techniques used in constructing a high-performance house

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Credit Details: lecture: 3

### **CARP 2005 - Green Building Materials (2)**

This course is a survey of alternative building materials, products, and methods of construction, with an emphasis on the efficient use of materials and energy. This course also incorporates the environmentally responsive use of materials and building practices in green building technology.

**Prerequisite:** None

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Recognize building materials and how they integrate with each other

Select building materials appropriate for the construction of green/sustainable home

Integrate optimal value engineering techniques and strategies into the construction of a green/sustainable house

Establish appropriate locations for the installation of air, moisture, and thermal barriers

Choose a range of materials that are appropriate for use in various aspects of a green/sustainable house

Identify engineered components that are appropriate for use in various aspects of a green/sustainable house

Select resource-efficient materials, systems, and technologies which have minimum impact on the health of our environment and ourselves

Select materials, systems, and technologies that enhance the quality of the indoor environment with fresh air, ventilation, nontoxic materials, and filtration

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or

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Special Accommodations:

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Credit Details: lecture: 2

### **CARP 2010 - The House as an Integrated System (4)**

This course will introduce the student to building-science principles and how a building works as a system. This course also identifies the relationship between a building, its various mechanical systems and the environment.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Recognize interface issues of various products and systems

Identify building strategies and components that constitute a sustainable/green built environment

Recognize how components of the environment affect building performance

Identify the basic components of building mechanical /plumbing systems

Research the relationships between the building and its various mechanical systems

Examine how weather affects the performance of various insulations

Apply building science principles and practices to mainstream residential construction

Explain the whole building-design concept

Identify climate zones

Discuss climate-appropriate design and construction details

Describe how a building works as a system

Describe the fundamentals of heat, air, and moisture flow with regard to the building enclosure

Select appropriate energy efficient HVAC systems, lighting, and appliances for a green-built house

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

### **CARP 2015 - Weatherization of New and Existing Homes (3)**

This course will cover improving the energy efficiency and the health, comfort and safety of the occupants of new and existing buildings. The emphasis will be on cost effective weatherization strategies and techniques. This course includes an introduction to energy audits and diagnostics.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Recognize the need to conserve energy
- Define the principles of energy
- Examine home energy usage
- Analyze the relationship between energy and the building shell
- Identify construction flaws affecting energy usage
- Recognize air sealing methods and materials
- Demonstrate finding air leaks
- Apply air sealing methods and materials
- Identify health/safety issues related to the indoor environment

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2 lab: 1

## **CARP 2020 - Introduction to Home Rating Systems (2)**

This course is an introduction to the various home rating systems, including LEED, MN Green Star and Energy Star. Their history, function in today's building climate, differences and commonalities will also be addressed.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify the various home rating systems
- Discuss techniques and strategies for a project
- Develop a list of potential credits for a project
- Prepare construction documents for a preconstruction meeting
- Complete a home rating system checklist

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2

### **CARP 2025 - Carpentry Internship (1 - 3)**

This course will provide the student with 40 hours per credit of on-the-job training in the building industry. The student will use the knowledge gained in previous courses, and further develop their skills by working in the residential building industry.

Prerequisite: CARP1511

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate professional attitude
- Demonstrate dependable workplace behavior
- Demonstrate proper care and use of tools
- Demonstrate good communication skills
- Demonstrate good time management skills
- Use safe industry standards

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: OJT: 1-3

## **CBTG - Cabinetmaking and Wood Product Design**

### **CBTG 1100 - Introduction to Woodworking Technology (2)**

In this course, students will be introduced to skills for blueprint reading, power tool operation, and safety. This course will also receive hands-on experience with different techniques for machining, assembling and finishing wood components.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Interpret product blueprints and documents  
Manipulate product blueprints and documents  
Create stock bills and sheet optimization for wood components  
Manipulate woodworking equipment safely  
Execute machining techniques for wood product component parts to specific tolerances  
Demonstrate proper wood product assembly procedures  
Demonstrate proper wood product finishing techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **CBTG 1110 - Joinery (2)**

This course is designed to introduce the student to the safe and proper use of hand and layout tools used to construct basic woodworking joinery. Course emphasis will be the hands-on techniques necessary to produce several required wood joints.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Construct woodworking joints  
Implement measurement techniques  
Execute layout techniques  
Conduct hand tool maintenance  
Identify hand tools  
Identify woodworking joinery

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Campus:

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Credit Details: lecture: 1 lab: 1

### **CBTG 1121 - Power Tool Operation (5)**

This course is designed to introduce the student to the proper and safe operation and maintenance of the basic woodworking power tools and stationary equipment used in the cabinet industry. One or more required projects will be fabricated by the student during the hands-on operation of the tools and equipment covered during this course.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Analyze stationary power tools
- Analyze portable power tools
- Manipulate measurement devices
- Analyze tooling for woodworking equipment
- Execute proper techniques for installing machine tooling
- Discuss safety procedures for woodworking equipment
- Execute proper machine setups safely
- Maintain woodworking equipment
- Execute proper machining techniques for solid wood material
- Execute proper machining techniques for plywood material
- Apply machining techniques for woodworking joinery
- Execute layout processes for wood products
- Calculate and machine wood product component parts
- Execute proper sanding procedures for wood finishing tools
- Execute proper product assembly procedures with fastening tools

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 3 lab: 2

### **CBTG 1130 - Materials (1)**

In this course the student will learn the various wood and wood products used in cabinetmaking. Solid lumbars, plywoods, veneers, melamines, laminates, abrasives, adhesives and fasteners will be covered and discussed. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Examine wood properties
- Examine hardwood lumber
- Examine plywood materials
- Identify lumber species

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1

### **CBTG 1141 - Basic Case Construction (4)**

This course covers the fundamentals of cabinet construction, including project layout, stockbilling and material selection. Basic construction techniques will be covered and demonstrated. Cabinet projects for the student are required to achieve the hands-on experience appropriate to the course.

**Prerequisite:** Qualifying score on reading assessment test OR ENGL0901

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Analyze cabinet construction joinery

Analyze cabinet layout and stockbilling

Analyze cabinet construction techniques

Prepare layout rods

Prepare component stock bills

Prepare sheet stock layouts

Conduct cutting operations for cabinet components

Machine cabinet joinery

Execute cabinet assembly techniques

Conduct cabinet finishing operations

Complete cabinet hardware installation operations

Identify cabinet terminology

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2 lab: 2

### **CBTG 1170 - AutoCAD (4)**

This course will introduce the student to basic AutoCAD techniques used in creating geometric shapes. Software orientation, basic commands, geometry creation, dimensioning, text, display and plotting will be covered.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify AutoCAD's user interface
- Identify file management procedures
- Identify view commands
- Identify geometry commands
- Identify modify commands
- Identify layers
- Identify properties
- Create basic geometric drawings
- Identify text commands
- Create block libraries
- Create AutoCAD templates
- Create cabinet drawings
- Identify model and paper space components
- Perform plotting procedures

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 4

### **CBTG 1211 - Laminated Product Fabrication (4)**

This course is designed to increase the students laminating abilities. The student will construct kitchen countertops, bathroom vanity tops and laminate casework projects. Installation of the countertops and casework are part of the course.

Prerequisite: CBTG1121

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Analyze countertop construction
- Organize countertop stock bill
- Analyze laminate fabrication techniques
- Complete countertop construction
- Analyze countertop installation techniques
- Conduct laminate countertop installation
- Determine laminate casework production sequence
- Conduct laminate casework fabrication
- Analyze postforming techniques
- Construct postformed project
- Estimate cost of laminate project

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

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**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Credit Details: lecture: 2 lab: 2

### **CBTG 1220 - Blueprint Reading and Shop Drawings (3)**

This course teaches the fundamentals of reading blueprints and shop drawings related to the cabinetmaking industry. The students learn to retrieve information off these drawing to develop project estimates, cut lists, and production sequences.

**Prerequisite:** CBTG1141

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Identify line types

Identify scales

Identify drawing types

Analyze drawing dimensions

Read shop drawings

Create material take offs

Analyze drawing specification sheets

Prepare stock optimization sheets

Determine hardware needs

Discuss labor rate factors

Analyze AWI Quality standards

Create shop drawings

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Credit Details: lecture: 2 lab: 1

### **CBTG 1230 - Wood Finishing (2)**

This course is designed to give the student a basic understanding of wood finishing materials and finish application methods. Spray equipment is utilized as the final finish is applied to wood and wood products. This course will cover the characteristics of

hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: CBTG1121

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Analyze types of stains
- Apply stains
- Analyze film finishes
- Apply film finishes
- Analyze spray equipment
- Operate spray equipment
- Troubleshoot finishes
- Practice finish touch up repair

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1 lab: 1

### **CBTG 1240 - Millroom Operations (2)**

This course will acquaint the student with millroom operations. Areas of study will include molding design, knife-grinding procedures, molder set-ups, and molder operations.

Prerequisite: CBTG1121

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Analyze molding design
- Examine cutter head technology
- Create molding template
- Examine knife grinding procedures
- Complete knife grinding operations
- Analyze molder set ups
- Complete molder set ups
- Troubleshoot molder operation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Campus:

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Credit Details: lecture: 1 lab: 1

#### **CBTG 1250 - Production Woodwork (4)**

This course is designed to introduce the student to planning, organizing and layout of machining operations for production woodworking. Daily production teamwork is emphasized in the class lab atmosphere as production projects of substantial value are fabricated.

Prerequisite: CBTG1130 and CBTG1141

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Select project

Select team leader

Analyze project

Lay out project

Determine hardware needs

Analyze production process

Determine machining requirements

Anticipate job assignments

Develop time study guide lines

Develop material optimization sheets

Complete machining operations

Assemble project

Implement hardware installation

Conduct finish application

Determine project cost

Generate time study analysis

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 3

#### **CBTG 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A `Specialized Lab Training Agreement` must be signed by the student and the instructor and submitted to

the registrar at the time of registration.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Conceptualize intended learning experience  
 Coordinate learning experience with Instructor  
 Outline accomplished goal from learning experience

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Campus:

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Credit Details: lab: 1-4

### **CBTG 2311 - Residential Cabinet Design (3)**

This course will introduce the student to fundamentals of cabinet design, hardware implementation, plan preparation and layout. The student will prepare drawings, make hardware selections, and lay out residential face frame cabinets.

Prerequisite: CBTG1121 and CBTG1170

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Analyze drawer guides  
 Analyze door hinges  
 Analyze specialty cabinet hardware  
 Identify frameless cabinet construction styles  
 Perform frameless upper cabinet rod layouts  
 Perform frameless base cabinet rod layouts  
 Identify framed cabinet construction styles  
 Perform framed upper cabinet rod layouts  
 Perform framed base cabinet rod layouts  
 Analyze kitchen design  
 Perform kitchen rod layout  
 Complete field measurement  
 Calculate material take off  
 Calculate cabinet pricing

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 1 lab: 2

**CBTG 2332 - Framed Cabinetry Fabrication (5)**

This course will teach the student procedures for manufacturing framed residential cabinetry. Layout, machining, assembly, finishing and installation for custom residential cabinetry will be presented.

Prerequisite: CBTG1121 and CBTG1170

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.<br />

Learning Outcomes:

The following outcomes will be addressed in the course:

Determine kitchen measurements and design

Analyze installation requirements

Determine appliance requirements

Determine hardware needed

Analyze materials needed

Demonstrate cabinet drawing procedures

Design kitchen layout

Develop stock billing procedures

Perform cutting and machining procedures of component parts

Perform assembly procedure for casework

Perform sanding finishing procedures

Perform installation of hardware

Determine shipping requirements

Perform installation procedures

Analyze material usage and labor

Text and References: A list of textbooks required for this course is available at the <a rel="noopener noreferrer" href="https://www.hennepintech.edu/finance-operations/campus-store.html" target="\_blank">bookstore</a>.

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.<br />

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 3 lab: 2

**CBTG 2362 - Frameless Cabinetry Fabrication (5)**

This course will teach the student procedures for manufacturing frameless residential cabinetry. Layout, machining, assembly, finishing and installation for custom residential cabinetry will be presented.

Prerequisite: CBTG1121 and CBTG1170

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.<br />

Learning Outcomes:

The following outcomes will be addressed in the course:

- Determine kitchen measurements and design
- Analyze installation requirements
- Determine appliance requirements
- Determine hardware needed
- Analyze materials needed
- Demonstrate cabinet drawing procedures
- Design kitchen layout
- Develop stock billing procedures
- Perform cutting and machining procedures of component parts
- Perform assembly procedure for casework
- Perform sanding finishing procedures
- Perform installation of hardware
- Determine shipping requirements
- Perform installation procedures
- Analyze material usage and labor

Text and References: A list of textbooks required for this course is available at the <a rel="noopener noreferrer" href="https://www.hennepintech.edu/finance-operations/campus-store.html" target="\_blank">bookstore</a>.

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 2

### **CBTG 2410 - Furniture Design (2)**

In this course the student will learn to identify specific furniture styles and their components. The student will be required to research and design a specific piece of furniture.

Prerequisite: CBTG1170

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify period furniture components
- Identify period furniture styles
- Identify period furniture hardware
- Analyze a specific furniture area
- Design a specific piece of furniture
- Develop construction principles for the designed piece of furniture
- Develop manufacturing techniques for the designed piece of furniture

Text and References: A list of textbooks required for this course is available at the <a rel="noopener noreferrer" href="https://www.hennepintech.edu/finance-operations/campus-store.html" target="\_blank">bookstore</a>.

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2

### **CBTG 2421 - Furniture Joinery (4)**

This course will focus on the joinery and techniques involved in the construction of furniture. Specific project work will be accomplished.

**Prerequisite:** Required: CBTG1121 and CBTG1170. Recommended: CBTG2410

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Analyze furniture drawings and construction techniques

Develop layouts and stock bills for furniture projects

Conduct machining techniques for furniture construction

Complete dovetail drawer construction techniques

Complete veneering techniques

Conduct assembly procedures for furniture construction

Complete finishing techniques for furniture construction

Calculate project cost

Evaluate design and construction details

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 2

### **CBTG 2431 - Furniture Fabrication (5)**

This course will focus on the joinery and techniques involved in the construction of furniture. Specific project work will be accomplished.

**Prerequisite:** CBTG1121 and CBTG1170

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Analyze furniture design for manufacturing
- Develop a product construction plan
- Estimate project costs
- Estimate product timeline
- Determine material needs
- Determine hardware needs
- Determine joinery needs
- Perform layout procedures
- Develop stock billing procedures
- Perform joinery machining procedures
- Perform assembly procedures
- Perform installation of hardware
- Apply finishing procedures
- Calculate project cost
- Analyze product timeline

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 3 lab: 2

**CBTG 2440 - Mozaik Cabinet Design (3)**

This course will focus on residential cabinet design, layout and part automation using Cabinet Vision software. Emphasis will be placed on producing cabinet drawings, pictorial views, cut lists, panel optimization, CNC code generation and manipulation.

Prerequisite: None

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Examine System setup
- Examine Materials and Hardware libraries
- Examine door and drawer libraries
- Examine Cabinet constructions
- Create cabinets drawings
- Modifying cabinets components

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2 lab: 1

### **CBTG 2450 - Solid Surface Fabrication (2)**

This course will introduce the student to solid surface materials and focus on industry accepted fabrication techniques. Projects will be constructed. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: CBTG1121

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify solid surface materials

Analyze solid surface machining techniques

Conduct machining operations

Conduct seaming operations

Complete finishing operations

Complete installation operations

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 1

### **CBTG 2522 - CNC Programming (3)**

This course will use Router CIM software package to produce tool path code for CNC woodworking routers. Emphasis will be placed on program drawings, file management, geometry consideration and the creation of accurate tool path code for wood and plastic component parts.

Prerequisite: CBTG1170 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Create file management system

Create program drawings

Manage Router CIM software

Analyze part optimization

Analyze G code language  
 Manage automation software  
 Examine part optimization and nesting procedures  
 Manage product components for machining  
 Examine parametric programming

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 3

### **CBTG 2532 - CNC Router Operation (3)**

This course will cover basic programming techniques, setup, operation and maintenance of CNC woodworking routers. Basic manual code creation, controller manipulation, maintenance, tooling, machine orientation and hands on part manufacturing will be presented. Specific parts will be programmed and machined.

Prerequisite: CBTG1170

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Conduct machine startup techniques
- Conduct tool height offset operations
- Conduct tool diameter offset operations
- Perform program loading procedures and editing
- Complete different types of fixturing
- Manipulate fanuc controller operations
- Complete machine setup and run programs
- Edit programs
- Assess programs and part quality

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 3

### **CBTG 2552 - CNC Wood Product Manufacturing (3)**

This course will use Router-CIM software and an Onsrud CNC router to create component parts for the purpose of manufacturing wood-related products. Students will design, draw, machine and assemble wood products to understand the application of this technology in the wood industry.

Prerequisite: CBTG1170, CBTG2522, and CBTG2532

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Analyze product drawings for part machining
- Determine joinery needs
- Engineer part product drawings
- Determine machine processes and fixture requirements
- Determine material tolerances
- Create machine programs
- Machine components
- Evaluate component parts and machine programs
- Assemble product

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

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Credit Details: lecture: 2 lab: 1

## **CCDS - Career Development Services**

### **CCDS 1000 - How to Succeed in College (1)**

This course provides students the skills and knowledge to succeed in college. Topics will include accessing college resources; learning how to utilize college technology such as eservices, D2L, and email; and developing college success strategies.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify opportunities for personal and academic growth
- Utilize appropriate college resources and services
- Demonstrate proficiency in college technology platforms
- Evaluate learning strategies

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

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**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Credit Details:** lecture: 1

### **CCDS 1020 - Interviewing Skills (1)**

Preparing for a job interview could very well be one of the most important moments of a career search. This course will help students sharpen interviewing skills such as open-ended questioning, active listening, and reading body language - all essential in a variety of interview situations. Just a little preparation and thought ahead of time can have wondrous effects on interviewing skills. This course will provide an in-depth analysis of the interviewing process.

**Prerequisite:** Qualifying score on writing assessment test OR ENGL0930, qualifying score on reading assessment test OR ENGL0921, and successful completion of CCDS1040 strongly recommended

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Prepare for an interview

Explain interview styles

Identify interview question types and appropriate responses

Demonstrate appropriate nonverbal behavior for an interview

Identify nonverbal cues within an interview

Perform interview follow-up procedures

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Credit Details:** lecture: 1

### **CCDS 1040 - Job Seeking Skills (2)**

Finding a job is one of the most difficult tasks we ever face. Research shows people may change careers from three to nine times during their working lifetime. Students will learn the skills necessary to explore the job market, create a salable resume and application letter, and present one's self effectively in an interview.

**Prerequisite:** None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate personal strengths
- Compile resume
- Write cover letter
- Identify job qualifications
- Develop networking techniques
- Create career portfolio
- Apply interview questions appropriately
- Determine appropriate communication skills
- Assess transferable job skills

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2

### **CCDS 1100 - Student Success (3)**

This course is designed to help students identify and develop necessary strategies to enhance life skills and college success. Focused topics will include overcoming barriers to success; study skills, such as time management and note taking; learning styles; college expectations and resources; money management; career exploration; and maintaining physical, mental and emotional health.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Develop time management strategies
- Demonstrate money management skills
- Identify emotional intelligence strategies
- Utilize appropriate college resources
- Recognize effective strategies for goal setting
- Discover personal learning styles
- Define stress management strategies
- Develop individualized career and education plan
- Develop critical thinking and problem solving skills
- Employ strategies for test taking and study skills
- Demonstrate effective oral and written communication skills
- Develop team building strategies

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or

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Special Accommodations:

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Credit Details: lecture: 3

### **CCDS 1500 - Individualized Studies Degree Planning (2)**

This course is intended for students who want to design an educational plan that is flexible and individualized. Special attention is given to assessment techniques, identification of learning goals, career development theory and Hennepin Technical College Individualized Studies policies and procedures. This course is required for students who seek admission to the Individualized Studies degree program.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Assess personal traits

Outline prior learning experience

Examine academic strengths and weaknesses

Explore career areas of interest

Identify academic goals and career objectives

Compare self-assessments with career objectives

Develop an Individualized Studies degree plan

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2

## **CDEV - Child Development Careers**

### **CDEV 1000 - Introduction to Early Childhood Education (3)**

The student will examine the various roles, responsibilities, and best practices of educators who serve children and families in a professional manner. The history, philosophies, and foundations of early childhood education will be explored. Observations of different types of early childhood programs will be required.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Examine history of the early childhood profession

Examine career opportunities

Explain worker requirements and roles

Compare types of early childhood programs

Research developmental theory

Utilize a variety of techniques for communicating with families

Evaluate parent involvement techniques

Describe teaching practices that support diversity

Evaluate teamwork

Practice the National Association for the Education of Young Children (NAEYC) Code of Ethics

Examine program policies

Examine licensing requirements

Utilize community resources

Text and References: A list of textbooks required for this course is available at the <https://www.hennepintech.edu/finance-operations/campus-store.html> bookstore.

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

### **CDEV 1010 - Child Growth and Development (3)**

This course examines the major developmental milestones, both typical and atypical, for children from birth through adolescence in the areas of physical, social-emotional, language, cognitive and aesthetic/creative development. While studying developmental theory, investigative/observational research methods, and developmentally appropriate practices, students will observe children and analyze characteristics of development at various stages. The course emphasizes variations across cultures and interactions between maturational processes and environmental factors.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Examine the major theories of early childhood development and learning and their implications for practice

Examine social-emotional development of infants and toddlers

Examine cognitive development of infants and toddlers

Examine physical development of infants and toddlers

Examine social-emotional development of preschool children

Examine cognitive development of preschool children

Examine physical development of preschool children

Examine social-emotional development of school-age children

Examine cognitive development of school-age children

Examine physical development of school-age children

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

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Credit Details: Lecture: 3

### **CDEV 1020 - Observation and Assessment (3)**

This course focuses on the appropriate use of assessment and observation strategies to document development, growth, play and learning in promoting children's success. The students will explore recording strategies, rating systems, multiple assessment tools and portfolios. There will be a focus on increasing objectivity in observing and interpreting children's behavior, observing developmental characteristics and increasing the awareness of normal patterns of behavior. For required course activities students are expected to arrange observations of a child between the ages of 3-5 years throughout the semester.

Prerequisite: Required - ENGL1100

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Evaluate a variety of assessment tools

Select authentic assessments

Categorize objective and subjective observation statements

Interpret physical development

Interpret cognitive development

Interpret social-emotional development

Interpret language and literacy development

Develop a method for organizing assessments

Summarize assessment documents

Generate an individual plan for your child based on observations

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

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Credit Details: Lecture: 3

### **CDEV 1030 - Creative Activities and Environments (3)**

The student will gain knowledge and skills related to providing age appropriate learning experiences and environments for young children (birth – age 8). The student will examine the role of the teacher in providing learning experiences to meet each child's needs, capabilities, and interests, and ways to implement the principles of developmentally appropriate practices. The student will explore how to plan environments and select materials that provide play experiences that support development, independence, and exploration through sequential and integrated learning.

Prerequisite: Qualifying score on writing assessment test OR ENGL0960

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Examine why the environment is important to children's learning
- Investigate ways to modify activities to accommodate individual needs and interest
- Examine appropriate materials that promote children's culture, needs, interest and development
- Design developmentally appropriate cognitive, creative, social-emotional and sensory-motor learning experiences
- Describe the foundations of an emotional supportive and equitable environment
- Examine the developmental domains
- Describe multiple ways that teachers facilitate learning in the environment
- Examine Minnesota Early Learning Standards
- Create an interesting and safe environment that encourages play, exploration, and learning
- Demonstrate the critical role of hands-on, experiential learning and environment

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

### **CDEV 1520 - Guiding Children's Behavior (3)**

The student will examine positive strategies to guide children's behavior. The student will examine ways to establish supportive relationships with children guiding them in order to enhance learning, development, and well-being. Students will receive an introduction to positive child guidance techniques for individual and group situations. For required course activities students are expected to arrange observations and interact with a child between the ages of 3 and 8 throughout the semester.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Analyze strategies to promote children's understanding, acceptance, and appreciation of human differences due to social, cultural, physical, or developmental factors
- Examine the importance of creating in each child a sense of belonging, security, personal worth, self-esteem, and self-confidence toward learning
- Communicate with colleagues and family to provide consistency in guidance
- Design developmentally appropriate routines and schedules
- Critique problem prevention strategies
- Critique positive communication strategies
- Design strategies to assist children in learning to express emotions in positive ways, solve problems and make decisions

including self-regulation and calming strategies

Evaluate an environment where young children are able to explore and expand their creative abilities

Assess consequences and antecedents of behaviors to understand their effect on behaviors

Critique pro-social problem solving methods

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

### **CDEV 1530 - Health, Safety and Nutrition (3)**

This course will guide the student in obtaining skills needed to establish and maintain a physically and psychologically safe and healthy learning environment for young children. The student will identify key components that ensure physical health, mental health, and safety for both children and staff. Topics include preventing illness and accidents, handling emergencies, providing health, safety, and nutrition educational experiences, meeting children's basic nutritional needs, child abuse, and current health-related issues. This course does NOT include CPR or first aid certification.

Prerequisite: Qualifying score on writing assessment test OR ENGL0960

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Examine the characteristics of an early childhood program that supports the healthy physical development of young children

Prepare developmentally appropriate learning experiences for the young child in regards to health, safety and nutrition

Analyze health requirements, symptoms of common illness and environmental hazards as well as universal precautions to limit the spread of disease and incident of injury

Evaluate early childhood environments that are physically and psychologically safe and healthy for young children

Examine the educator's role as a mandated reporter

Analyze signs of child abuse and neglect

Explain how daily health checks can be used to teach children about their health

Describe universal precautions to limit the spread of diseases and incident of injury

Examine environmental factors that affect a child's health

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **CDEV 1550 - Curriculum Planning (3)**

The student will gain an advanced understanding of curriculum planning. Emphasis is on organizing and evaluating developmentally appropriate curricula.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Adapt curriculum to meet the individual needs of children
- Practice instructional strategies
- Use communication techniques with families
- Develop curriculum to promote physical competence in children
- Develop curriculum to promote social-emotional competence in children
- Develop curriculum to promote cognitive competence in children
- Develop curriculum to promote competence in the arts
- Explain the role of play
- Synthesize types of classroom curriculum planning

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **CDEV 1725 - Practicum I (3)**

This course provides students an opportunity to demonstrate the early-childhood-teaching competencies explored in other classes while guided by a teacher in a licensed early-childhood program. These competencies include: developing active and developmentally appropriate environments accessible to the multiple needs of learners, positive behavior guidance strategies, communication skills, and development of professional skills such as communication and respectful interactions with families, colleagues, and other potential partners in the care and education of young children.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Communicate with all individuals involved in the education and care of the young child in a manner that indicates understanding of children's multiple needs, equal access for all, mandated reporting and confidentiality
- Explore the scope of professionals that may collaborate in planning learning environments and demonstrate the communication skills required for effective interactions with these professionals as well as families and colleagues
- Demonstrate professionalism
- Demonstrate techniques to guide children's behavior positively
- Demonstrate supportive relationships with children

Observe and assess children  
 Communicate observation results  
 Evaluate teaching strategies  
 Plan and create active learning environments that balance opportunities for individual, small- or large-group activities emerging from the interests of the children, foster the development of positive behavior, and interaction skills and involve children in the planning and implementation of these ideas

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 0.5 SOE: 2.5

### **CDEV 1750 - Practicum II (3)**

After successful completion of Practicum I, students will continue to demonstrate early childhood teaching competencies under guided supervision making connections between theory and practice. Students will continue to practice professional behaviors as they apply child-centered, play-oriented approaches to teaching and learning. They will demonstrate knowledge of curriculum content areas as they develop, implement, and assess curriculum that promote positive development and learning.

Prerequisite: CDEV1725 and Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Perform nutrition promotion skills

Perform appropriate communication skills with colleagues and families

Lead routine activities

Implement age appropriate activities and materials

Analyze cultural sensitivity and diversity

Implement language development experiences

Exhibit characteristics of intentional teaching

Implement activities for individual children

Evaluate effectiveness of the early childhood curriculum

Model appropriate language and social behavior including problem solving and conflict resolution strategies

Apply principles of effective advocacy in your practice

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Credit Details: lecture: 0.5 SOE: 2.5

### **CDEV 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A `Specialized Lab Training Agreement` must be signed by the student and the instructor and submitted to the registrar at the time of registration.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Course goals addressed will depend on the area and type of specialization the student wishes to study, and will be defined in the "Specialized Lab Training Agreement"

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lab: 1-4

### **CDEV 2000 - Children with Differing Abilities (3)**

The student will examine a child with differing abilities. Students will integrate strategies that support diversity and anti-bias perspectives, provide inclusive programs for young children, and apply legal and ethical requirements including but not limited to Americans with Disabilities Act (ADA) and Individuals with Disabilities Education Act (IDEA). Students will differentiate between typical and atypical or exceptional development, analyze the differing abilities of children with physical, cognitive, health/medical, communication, and/or behavioral/emotional disorders, and work collaboratively with community and professional resources. Students will utilize an individual education plan, adapt curriculum to meet the needs of children with developmental differences, and cultivate partnerships with families who have children with developmental differences.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe types of programs and interventions

Examine differing abilities

Evaluate authentic assessments

Explain family involvement in a developmental plan for their child

Adapt activities for children with special needs

Explain adaptations for learning environment and curriculum for children with differing abilities

Critique materials to ensure acceptance of all children's gender, family, language, culture, and special needs

Examine teaching practices that support children with variations in learning styles, ability, and special needs  
 Analyze individualized planning for children with special needs  
 Design curriculum goals to meet unique developmental characteristics of children

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **CDEV 2016 - Leadership in Early Childhood (3)**

The student will discuss personal and professional reasons for becoming a teacher, ways to advocate in this profession and develop a plan for continuous education and professional development. Students will improve skills in working with others by learning strategies for team building, coping with stress, and problem-solving. Students will study professional ethics.

Prerequisite: Required - ENGL1100

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explore the National Association for the Education of Young Children (NAEYC) Code of Ethics

Analyze teacher roles

Evaluate accreditation process

Demonstrate teamwork

Summarize leadership

Demonstrate professional behavior

Advocate for an early childhood issue

Examine professional resources

Develop a professional development plan

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

### **CDEV 2075 - Working with Diverse Families and Children (3)**

The student will examine how to work with many types of families. The student will investigate the importance of the family/school partnership, study methods of effectively communicating with families, and identify community organizations and networks that support families. Various classroom strategies will be explored emphasizing culturally and linguistically appropriate anti-bias approaches supporting all children in becoming competent members of a diverse society.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain the concepts of belonging and family connectedness

Analyze how family, culture and society impact children

Communicate positively with families

Analyze diverse family systems

Compare theories of family dynamics and relationships

Summarize how to support families in assessing educational and parenting options

Examine community resources and services

Evaluate how a child's learning is influenced by individual experiences, prior learning, culture, and community values

Assess how to dehumanize bias, discrimination, prejudice, and institutional oppression

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **CDEV 2125 - Infant/Toddler Development and Learning (3)**

The student will examine infant and toddler development as it applies to an infant or toddler setting. Students will integrate strategies that support diversity and anti-bias perspectives and examine research-based curriculum models. They will analyze development and examine culturally and developmentally appropriate environments for infants and toddlers. For this course students should either be currently working with infants or toddlers or have consistent access to a group of infants or toddlers.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Examine developmental characteristics of infants and toddlers

Examine characteristics and roles of infant/toddler caregivers

Select parent and caregiver partnership strategies

Evaluate an infant/toddler environment

Evaluate toys that promote development

Evaluate role of play in learning

Examine role of culture in development

Investigate daily routines

Summarize strategies for working with infants and toddlers

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **CDEV 2200 - NOCTI Early Childhood Exam (0)**

The NOCTI Early Childhood Care and Education examination is given by Hennepin Technical College and is a nationally recognized student outcome assessment.

Prerequisite: CDEV1725 to be taken concurrently

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following goals will be addressed in the course.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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### **CDEV 2230 - Preschool Development and Learning (2)**

The student will study caregiving methods for preschool children in either home or center-based settings. Activities and materials that nurture children's development will be explored. The student will describe characteristics of a developmentally appropriate program as well as plan preschool curriculum. For this course students should either be currently working with children or have consistent access to a group of preschool children.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Examine preschool environments

Analyze guidance techniques

Summarize the importance of play  
Examine the role of the teacher  
Examine curriculum development  
Plan developmentally appropriate activities

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2

### **CDEV 2255 - Schoolage Development and Learning (2)**

The student will study caregiving methods for school-age children in either home or center based settings. The student will identify components of a developmentally appropriate program. Activities and materials that nurture children's development will be explored. The student will also examine new teaching strategies that are effective with school age children. For this course students should either be currently working with children or have consistent access to a group of schoolage children.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Examine development of school age children

Evaluate program support for parents

Analyze guidance techniques

Plan developmentally appropriate activities

Summarize school age play

Research community resources and services

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2

**CDEV 2300 - Multicultural Learning Experiences (2)**

The student will examine multicultural and anti-bias learning experiences for children. Students will integrate knowledge of child development, environments and teaching methods to promote and enhance multiculturalism and respect for all in a classroom or setting.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Examine the impact of diversity in a classroom
- Examine types of diversity observed in a classroom
- Examine history and methodology of anti-bias education
- Assess anti-bias learning experiences
- Plan an anti-bias classroom environment
- Implement anti-bias learning experiences

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2

**CDEV 2500 - Introduction to Language and Literacy (3)**

Students will integrate knowledge of children's language and literacy development, learning environments and teaching strategies to select, plan, present, and evaluate literature experiences to children of different abilities and diverse backgrounds. For required course activities students are expected to arrange observations, and present activities with a group of children between the ages of 3 and 8.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Examine language development
- Investigate receptive language experiences
- Investigate expressive language experiences
- Demonstrate how to respect children's cultures and home languages
- Analyze how to expand children's speech
- Plan creative expression activities
- Practice printing skills and print awareness
- Create pre-reading and reading opportunities
- Prepare listening activities
- Prepare language experiences for use in the child's home
- Evaluate a literacy environment

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

**Special Accommodations:**

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**Credit Details:** Lecture: 3

## CHEM - Chemistry

### **CHEM 1000 - Introduction to Chemistry (4)**

This course is intended as a broad introduction to Chemistry. This is a combination lecture and laboratory class designed to prepare students for further study in biology, chemistry, physics courses and for engineering technology. Topics covered include the scientific method, atomic structure, the periodic table, bonding, acids and bases, nomenclature, equations, stoichiometry, gas laws, oxidation and reduction. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

**Prerequisite:** Qualifying score on math assessment test OR MATH0940

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Explain the classification of matter

Examine the structure of elements and chemical compounds

Classify chemical reactions

Apply the periodic table of elements to predict trends

Solve chemical equations using stoichiometry and chemical laws

Classify the bonding in compounds and molecules

Define the steps involved in the scientific method

Synthesize chemical concepts and experimental methods

Formulate hypotheses

Document experimental data from virtual lab experiments in accordance with proper scientific technique

Identify precision and accuracy, significant figures and scientific notation

Identify the uses of chemistry in our environment and everyday life

Collect data using a variety of laboratory equipment

Write lab reports

Analyze data

Exhibit safe laboratory practices

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3 Lab: 1

MnTC Goal Areas: 3.

### **CHEM 1100 - General, Organic, and Biological Chemistry Foundations (4)**

This course is intended as a broad introduction to general, organic, and biochemistry. Topics covered include the scientific method, measurements, atomic structure, radioactivity, ionic and covalent compounds, reactions, oxidation-reduction, solutions, acids and bases, organic compounds and biological macromolecules. This is recommended for students intending to enroll, or already enrolled in, the health sciences programs. This course includes two hours of required lab per week. The laboratory introduces students to safe handling of chemicals, appropriate use of labware, and transcription of observations and data. Attendance in the week 1 lab safety session is mandatory.

Prerequisite: Qualifying score on math assessment test OR MATH0940

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Use physical and chemical properties to explain the structure of matter from macroscopic to subatomic levels

Describe the types of chemical bonds in compounds

Compare different types of chemical reactions

Rationalize the occurrence of chemical reactions from a thermodynamic standpoint

Identify organic functional groups found in biological molecules

Explain the physical and chemical influence in biological systems based on the reactivity of organic functional groups

Explain the main metabolic pathways in humans

Identify the relationships between chemistry and nutrition, disease and pharmacology

Complete quantitative problems involving unit conversions, chemical equations and formulas

Apply appropriate laboratory ways and means

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

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Credit Details: Lecture: 3 Lab: 1

MnTC Goal Areas: 3.

## **CMAE - 360 Programs-Center for Mfg & Applied Eng**

### **CMAE 1502 - 360 Technical Mathematics (3)**

This is an introductory technical math course. This course is for students who have basic math skills and for those who need basic technical math concepts. The primary goals of this course are to help individuals acquire a solid foundation in the algebra

and geometry used in a technical setting. This course will show how these skills can model and solve authentic real-world problems.

Prerequisite: Qualifying score on the reading assessment test OR ENGL0901 and Qualifying score on math assessment test OR MATH0950

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Solve practical problems using correct order of operations, fractions and percent, units of linear measure, signed numbers, and metric system

Solve practical problems in technical algebra concepts that include operations of polynomials and monomials, addition, subtraction, multiplication and division principles of equality, manipulating equations, formulas, ratios, and proportions

Solve practical problems in technical geometry concepts that include lines and angles, angular measurement, types of triangles, interior angles of a triangle, areas of geometric shapes, characteristics of geometric shapes, principles of circles, and the Pythagorean Theorem

Utilize a systematic approach to problem solving

Use a scientific calculator to solve technical math problems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 3

## **CMAE 1506 - 360 Introduction to Computers (2)**

This is an introductory course in Microsoft Office computer applications for technical fields. The primary goal of this course is to help individuals acquire a hands-on working knowledge of current personal computer applications including word-processing, spreadsheets, database, presentation, and internet browser software.

Prerequisite: Qualifying score on the reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Compose technical documents using a word-processing application

Sort and query database information

Create spreadsheets utilizing functions, formulas, and charts

Construct a professional level multi-media presentation

Utilize internet browser software to find credible information

Demonstrate professional email etiquette

Manage files, email application, business calendars, and contacts while using professional etiquette

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or

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Credit Details: lecture: 2

### **CMAE 1510 - Print Reading (2)**

This course will give students an understanding of basic mechanical drawing principles. Topics include the alphabet of lines, arrangement of views, orthographic projections, scaling, dimensioning, tolerancing, and symbols. Students will read and interpret mechanical drawings.

Prerequisite: Qualifying score on the reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Interpret types of multi-view drawings within manufacturing

Evaluate drawings based on information in title block, notes, and tables

Explain line types, symbols, and dimensions on mechanical drawings

Apply tolerances to determine dimensional limits on drawings

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2 lab: 0

### **CMAE 1514 - Safety Awareness (2)**

This course aligns with the Manufacturing Skill Standards Council's (MSSC) assessment and certification system for Safety. The curriculum is based upon federally endorsed national standards for production workers including Occupational Safety Health Association (OSHA) standards relating to Personal Protective Equipment (PPE), lockout/tagout (LOTO), Hazardous Material (HAZMAT), tool safety, and confined spaces.

Prerequisite: Qualifying score on the reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Implement safe and effective workplace practices  
Apply procedures for variety of emergency situations  
Choose correct Personal Protective Equipment (PPE) for workplace environment  
Choose applicable OSHA requirements for maintenance, installation, and repair

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2 lab: 0

### **CMAE 1518 - Manufacturing Processes and Production (2)**

This course aligns with the Manufacturing Skill Standards Council's (MSSC) assessment and certification system for Manufacturing Processes. The curriculum is based upon federally-endorsed national standards for production workers emphasizing lean manufacturing principles, basic supply chain management, communication skills, and customer service.

Prerequisite: Qualifying score on the reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify the needs of the customer

Determine resources required for the production process

Interpret job assignments to meet production goals

Analyze work flow of team members and work groups to meet production goals

Utilize lean and high-performance manufacturing principles to improve the manufacturing process

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2 lab: 0

### **CMAE 1522 - Quality Practices (2)**

This course aligns with the Manufacturing Skill Standards Council's (MSSC) assessment and certification system for Quality Practices. The curriculum is based upon federally-endorsed national standards for production workers. Emphasis is placed on

Continuous Improvement concepts and how they relate to a quality management system. Students will be introduced to a quality management system and its components. These include corrective actions, preventative actions, control of documents, control of quality records, internal auditing of processes, and control of non-conforming product.

Prerequisite: Qualifying score on the reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Summarize the basics of quality management systems including the PDCA cycle

Illustrate calibration of gauges and other data collection equipment

Apply key principles of quality systems including Lean, ISO, and TQM

Apply process control practices for quality assurance

Document test results and corrective actions to restore or maintain quality

Apply key principles of 6 Sigma

Evaluate internal quality audit practices, outcomes and trends to improve quality and processes

Develop a Quality Policy Statement utilizing the fundamentals of quality documents

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2 lab: 0

## **CMAE 1526 - Maintenance Awareness (2)**

This course aligns with the Manufacturing Skill Standards Council's (MSSC) assessment and certification system for Maintenance Awareness. The curriculum is based upon federally-endorsed national standards for production workers. The course introduces the concepts of predictive and Total Productive Maintenance (TPM) with the fundamental principles of lubrication, electricity, hydraulics, pneumatics, and power transmission systems.

Prerequisite: Qualifying score on the reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain the concepts of predictive and Total Productive Maintenance (TPM) systems

Interpret monitoring indicators for optimal equipment performance

Analyze potential maintenance issues with production equipment

Explain documentation within a maintenance plan

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Campus:

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Credit Details: lecture: 2 lab: 0

### **CMAE 1528 - 360 Career Success Skills (1)**

This is an introductory career success skills course. The primary goals of this course are to help individuals acquire a solid foundation in the basic skills for a successful career. This course will identify the skills important to businesses and help the student assess his/her level of skill. The course will provide suggestions for how the student can improve his/her level of skill.

Prerequisite: Qualifying score on the reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Characterize appropriate and inappropriate professional behavior

Evaluate areas of personal strengths and weaknesses related to a successful career

Identify the skills needed to be a productive, responsible, and professional employee for a business

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1 lab: 0

### **CMAE 1550 - DC Power (3)**

This course covers the basic principals in DC electric circuits including series, parallel and complex circuit analysis, Ohm's Law, meters, conductors, insulators, resistors, batteries, and magnetism. The use and understanding of test equipment for circuit analysis is stressed.

Prerequisite: Qualifying score on the reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following goals will be addressed in the course Demonstrate basic safety procedures designed to protect the learners, components, and equipment

Describe basic concepts of electricity

Define Ohm's law and use it to solve for resistance, current, and voltage

Describe various types of resistive materials and how resistors are used in electrical circuits

Analyze series and parallel current paths and the laws that govern them

Identify and solve problems associated with both, series and parallel circuits

Construct and verify operation of DC circuits

Accurately read analog and digital multi-meters and install them properly in circuits so they may be used for circuit analysis  
 Define the principles of magnetic fields, electromagnetic induction  
 Identify voltage sources and describe their proper application

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2 lab: 1

### **CMAE 1552 - AC Power (3)**

This course covers investigation of alternating current and its behavior in resistive, inductive and reactive series, parallel, and series/parallel circuits; use of test instrumentation; and electromagnetic induction.

Prerequisite: CMAE1550 or equivalent course

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate basic safety procedures designed to protect the learners, components, and equipment

Perform calculations using Pythagorean Theorem, the laws of Sine and co-sine, and vector analysis, in relation to electric circuits

Analyze the principles of AC generation and the phase relationships in AC circuits

Define inductance and analyze the effects of inductor in AC circuits

Define capacitance and analyze the effects of capacitor in both AC and DC circuits

Analyze alternating circuits containing resistance, inductance, and capacitance and the laws that govern them

Construct and make measurements for AC circuits from simple to complex

Describe the relationship between true power and apparent power

Identify and solve problems associated AC circuits

Examine transformer applications and the different types of transformers

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2 lab: 1

### **CMAE 1554 - Digital Electronics (3)**

This is a first course in Digital Electronics. The primary goals of this course are to help individuals acquire a fundamental knowledge of digital electronics, Boolean algebra, digital devices, analog to digital conversion and digital to analog conversion, and how to apply their knowledge and skills through problem solving, simulation and practical projects.

Prerequisite: Qualifying score on the reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Draw and read digital logic and schematic diagrams
- Write Boolean logic statements
- Read and interpret truth tables
- Design and build basic digital logic decision and interface circuits
- Design and build basic timing, counter circuits
- Design and build basic digital to analog and analog to digital circuits
- Convert between binary, octal, hexadecimal, and decimal number systems
- Use a Programmable Logic device to implement a Boolean logic statement

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1 lab: 2

### **CMAE 1556 - Analog Circuits (3)**

This course covers diodes, power supplies, transistor operation, biasing, and specifications along with amplifier configuration and applications. It also covers operational amplifier operation, applications, and related circuitry. Troubleshooting, design, and circuit analysis are emphasized.

Prerequisite: CMAE1552 or equivalent course

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Exhibit shop safety procedures
- Demonstrate the correct use of test equipment in the lab
- Analyze and construct diode circuits
- Analyze and construct power supply circuits
- Analyze and construct transistor amplifier circuits
- Analyze and construct solid state oscillator circuits
- Analyze and construct op amp circuits
- Analyze and construct SCR, DIAC, and TRIAC circuits

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or

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Credit Details: lecture: 2 lab: 1

### **CMAE 1558 - Motor Control (3)**

This course introduces the learner to motor control components and provides them with a basic knowledge of control circuitry. The learner will build on his/her experiences from Basic Electricity by designing, building, and troubleshooting more complex circuits. Devices such as contactors, motor-starters, relays, timers, mechanical, and proximity switches are used. Electronic motor controls and programmable devices such as variable frequency drives are introduced in this course.

Prerequisite: CMAE1552 or equivalent course

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate the ability to identify, select and install the correct devices for the control of machine operations

Identify control circuit and logic symbols and implement appropriate documentation procedures

Compare the design and operation of various motors

List the conditions of starting and stopping, speed control, and protection of electric motors

Draw the wiring diagram symbols and explain the operation of various pilot devices including push buttons, pressure switches, float switches, flow switches, limit switches, and temperature switches

Develop a schematic and a wiring diagram to obtain a specific control function, connect the circuit, test and troubleshoot the circuit

Describe motor maintenance practices

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2 lab: 1

## **COMM - Communications**

### **COMM 1007 - Communication for Success in the Workplace (2)**

This non-MnTC college-level human communication course is designed for technical careers. Focus areas will include real-

world application of skills and techniques of communication as they relate to verbal and nonverbal communication, time and stress management, cultural differences, ethics, relationships and accountability, conflict, and much more. Students will identify personal communication goals as they relate to workplace and career success.

Prerequisite: Basic computer skills and understanding of Internet strongly recommended for successful course completion

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe self-management techniques for effective communication
- Identify time and stress management skills
- Analyze the influence of nonverbal communication
- Identify communication techniques for navigating cultural differences
- Examine principles for making ethical communication choices
- Investigate accountability in workplace relationships
- Differentiate workplace communication and its channels
- Define characteristics of an effective team
- Discuss skills for resolving workplace conflict
- Investigate communication challenges and changes in the workplace

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 2

### **COMM 1200 - Intercultural Communication (3)**

This course provides training in understanding the importance of intercultural communication and theories. Topics covered include: definitions of communication, definitions of culture and diversity of cultural patterns, cultural variables influencing communication, such as language, non-verbal communication, perception, values, and beliefs; factors that facilitate or inhibit intercultural communication competence; and examination of American culture in comparison to other cultures.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Understand the model of communication
- Define the major components of culture
- Explore cultural self-awareness and other-culture awareness
- Acquire knowledge, skills and attitudes that increase intercultural competence
- Recognize how people from other cultures perceive Americans
- Gain a critical perspective on local/global issues
- Perform appropriate perception checking skills
- Understand the importance of context (social, cultural, historical and political dimensions) in intercultural relations
- Expand student's range of verbal and nonverbal skills
- Recognize the influence student's own culture has had on their self concept

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 1 & 7.

### **COMM 1250 - Interpersonal Communication (3)**

This course focuses on the practical and theoretical concepts of human communication and the styles of communication used in academic, social and professional environments. Students will learn the characteristics and process of interpersonal communication including perception, speech and language, non-verbal behaviors, listening and feedback, conflict recognition and resolution, small group dynamics, the ethics of interpersonal communication and relationship development and maintenance. In this course you will learn to communicate more effectively in all settings.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify the elements of the interpersonal communication process

Analyze the role of verbal and nonverbal communication in various interpersonal episodes and diverse contexts

Develop skill sets in active listening and providing constructive feedback

Identify perception barriers and apply appropriate perception checking skills

Analyze constructive conflict management techniques

Articulate the role of interpersonal processes in the development and maintenance of relationships

Identify barriers that impede effective interpersonal communication

Engage in reflection of one's own interpersonal communication strengths and weaknesses

Demonstrate responsible and owned language in interpersonal contexts

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 1 & 7.

### **COMM 1260 - Small Group Communication (3)**

This course focuses on the theoretical and practical application of skills used in a small group setting. Students will participate in

groups, completing group projects and analyzing group interaction. Emphasis will be on group formation and development, effective leadership, decision making in groups, active participation, conflict resolution, planning and conducting meetings. Gathering information, argumentation and preparing agendas and minutes will also be practiced.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Analyze how groups develop using theories of group growth and development
- Develop skill sets in applying principles and practices, including verbal and nonverbal skills in small group communication
- Identify components of small group communication
- Demonstrate effective listening skills with the ability to paraphrase group messages
- Manage the interpersonal dynamics of small group communication
- Identify group roles and principles of leadership in the group process
- Develop skill sets with group problem solving and decision-making to achieve desired goals
- Analyze small group communication and barriers to effective communication
- Assess group conflicts using appropriate small group communication tools

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 1 & 2.

### **COMM 1280 - Public Speaking (3)**

In this course, students will learn organization, preparation, and delivery skills to become effective communicators in both individual and group presentations. Emphasis will be on audience analysis, research and organization, speech construction, and delivery techniques. Listening and evaluation skills will also be practiced.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe the components of speeches
- Demonstrate appropriate topic selection, audience analysis, organization, and content development in a speaker-audience setting
- Evaluate sources of information and support materials
- Create preparation and delivery outlines for speeches
- Document support material using correct citation format
- Perform informative and persuasive messages
- Demonstrate effective verbal and nonverbal delivery techniques that are well suited to the occasion and audience
- Utilize appropriate research strategies to discover and ethically integrate supporting materials from diverse sources and points of view
- Demonstrate the ability to provide feedback on public discourse

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

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**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

**Credit Details:** Lecture: 3

MnTC Goal Areas: 1.

## CPLT - Computer Literacy

### **CPLT 0900 - Keyboarding and Computer Basics (2)**

This course will introduce the non-computer user to the following basic computer concepts: booting up and shutting down the computer; sending and receiving email; and creating, saving, and printing short Microsoft Word documents. Students will also learn basic keyboarding skills.

**Prerequisite:** Qualifying score on reading assessment test OR ENGL0901

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course: Power up the computer Shut down the computer Open email Send email Access email attachments Keyboard accurately Open Microsoft Word Create a Microsoft Word document Save a Microsoft Word document Print a Microsoft Word document

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

**Credit Details:** lecture: 1 lab: 1

### **CPLT 1000 - Computer Keyboarding (2)**

Nearly every career requires the use of a computer. By practicing outside of class and participating in classroom practice sessions, students will develop basic keyboarding skills. Emphasis will be on learning the `touch` method for using both the keyboard and the numeric keypad. The keyboarding goal will be the attainment of a minimum rate of 20 net words per minute on alphabetic copy. (Net words per minute is determined by subtracting 2 for each error from the gross words per minute.) It will be necessary to have access to a computer outside of class. A student computer lab is available on each campus.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Use the touch method for keyboarding

Key 20 net words per minute

Key with 5 or fewer errors on a 3-minute timing

Enter numeric keypad data at a rate of 80 digits per minute

Key a business letter and report using Microsoft Word

Print Word documents

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **CPLT 1005 - Advanced Keyboarding and Document Processing (3)**

This advanced keyboarding course is designed to increase keyboarding speed and accuracy. Students will improve keyboarding techniques with exercises emphasizing the touch method technique. Document processing will include the production of business letters, memorandums, reports, agendas, minutes and itineraries. It will be necessary to have access to a computer outside of class to complete assignments. A student computer lab is available on each campus. A keyboarding test will be administered in the classroom the first session to confirm course eligibility.

Prerequisite: Qualifying score on keyboarding assessment test OR CPLT1000 and qualifying score on computer literacy assessment test OR CPLT1100

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following goals will be addressed in the course:

Use the touch method of keyboarding

Key 40 net words per minute on a 3-minute timing

Key business style letters and envelopes using Microsoft Word

Key agendas and minutes using Microsoft Word

Key reports using Microsoft Word

Key interoffice memorandums using Microsoft Word

Key itineraries using Microsoft Word

Proofread Word documents

Edit Word documents

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

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Credit Details: lecture: 3

**CPLT 1095 - Office 365 Cloud Apps (1)**

This course introduces a Hennepin Technical College student to cloud applications using the student's My.HennepinTech.edu account. Students will explore online productivity tools and learn how to utilize collaborative online features. It is necessary to have access to a computer and the internet outside of class in order to complete collaborative assignments. A student computer lab is available on each campus.

Prerequisite: Basic computer skills and understanding of Internet strongly recommended for successful course completion

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Communicate using My.HennepinTech.edu account

Manage cloud storage

Create personal notes for mobile retrieval

Construct online documents, spreadsheets and presentations

Collaborate online for team presentation

Differentiate Office cloud vs Office desktop apps

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 0

**CPLT 1100 - Computer Essentials (3)**

This course introduces the student to the basics of personal computer use, including the operating system and an overview of Microsoft Office including Word, Excel, PowerPoint, and Email using Outlook. Learn about the Computer, Internet, and digital literacy in today's global environment. It will be necessary to have access to a computer outside of class in order to complete the assignments. A student computer lab is available on each campus.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT0900

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Send email messages
- Use search engines to obtain information
- Create documents using Word
- Create worksheets and charts using Excel
- Create PowerPoint presentations
- Edit documents
- Print documents
- Demonstrate knowledge of computer terminology
- Learn to utilize the Internet
- Learn the basics of Computer Hardware

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

### **CPLT 1200 - Introduction to Macintosh (3)**

This is an introductory course intended to give the student basic knowledge of the Macintosh operating system as well as a general overview of computer components, Microsoft Office Suite for Mac, and (iLife) Apple's Creativity applications. This course will allow the student to explore basic operating system functions, computer components, terminology, file management hierarchy, storage devices, and hardware/software integration. Included in the curriculum is Word's basic editing techniques, tabs, indents and style sheets; PowerPoint's industry standard presentation package and entry level Excel spreadsheet skills. Apple's powerful iLife applications include Photos, iMovie, and iPhoto.

Prerequisite: Qualifying score on computer literacy assessment test OR CPLT0900 or CPLT1000

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Differentiate operating system components
- Identify storage devices
- Prepare files and folders
- Describe word processing software functions
- Utilize document formatting
- Construct spreadsheet document
- Compare equipment features
- Differentiate iLife applications
- Summarize presentation software
- Acquire resources from the Web

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Credit Details: lecture: 3

## CULA - Culinary Arts

### **CULA 1000 - Culinary Calculations (1)**

Functions with whole numbers, fractions, decimals, and percentages are covered and applied to food service problems. Special problems of menu pricing, food costs and their percentages, recipe conversions, labor cost and payroll deductions.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901 and qualifying score on math assessment test

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Review basic arithmetic, whole numbers and symbols of operation

Perform recipe yield conversions

Perform the process of recipe costing

Determine selling price of menu items

Calculate food costs, beverage costs, labor costs and percentages

Describe a profit and loss statement

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

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Credit Details: lecture: 1

### **CULA 1106 - Culinary Culture and Industry (2)**

This course is designed to introduce the foodservice industry, its history, organization, the importance of safety/sanitation and the care and use of kitchen tools and equipment. Students will become familiar with the organizational structure and basic functions of departments within hospitality and foodservice establishments. It will also include basic product identification, recipe structure, menu planning, plus cooking methods.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Define food service industry segments
- Explain kitchen safety and sanitation rules
- Identify professional kitchen equipment
- Explain various cooking methods
- Identify professional foodservice organization structures
- Define food service terms
- Calculate recipe costs
- Describe various menu structures
- Identify the pre-preparation process
- Demonstrate the use of professional cutlery
- Identify basic foods
- Identify units of weight and measure

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 1

### **CULA 1117 - Sanitation and Safety (2)**

Students are introduced to the basic principles of sanitation and safety and how to apply them to the food service operations. This course reinforces personal hygiene habits and food handling practices that protect the health of the consumer. The culmination of the course is the Food Manager Certification exam.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Define the fundamentals of good personal hygiene
- Identify microorganisms which are related to food spoilage and food-borne illnesses
- Identify the seven HACCP Principles and the critical control points during all food handling processes as a method for minimizing the risk of food-borne illness
- Demonstrate acceptable procedures when preparing potentially hazardous foods to include time/temperature principles
- Define common causes of typical accidents and injuries in the foodservice industry and outline a safety management program
- Explain Safety Data Sheets (SDS) and their requirements in handling hazardous materials

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: Lecture: 2

### **CULA 1126 - Foundations of Baking and Pastry (4)**

This course is designed to give the student fundamental knowledge, skills and understanding of baking methods and techniques. Topics covered are yeast breads, quick breads, cakes, pies, cookies, various pastries, desserts and dessert sauces.

Prerequisite: CULA1000, CULA1106, and CULA1117 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Exhibit professional, safe and sanitary work practices

Define baking terms

Discuss equipment and utensils used in baking and their proper use and care

Demonstrate proper selection of ingredients, equipment and utensils for specific application

Apply basic math skill to recipe conversions

Demonstrate proper scaling and measurement techniques

Describe properties and function of various ingredients

Describe the variety of mixing methods utilized to produce bakery products

Prepare a variety of yeast-leavened and quick-breads

Make a variety of pies and tarts

Produce a variety of types of cookies

Prepare a variety of cakes

Demonstrate basic icing and decorating techniques

Prepare a variety of laminated dough products

Prepare a variety of pate choux products

Prepare a variety of meringue products

Prepare a variety of creams, custards, puddings and related sauces

Demonstrate the presentations of baked goods and desserts

Evaluate the quality of baked goods and desserts

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 3

### **CULA 1136 - Garde Manger and Entremétier (4)**

This course is designed to give the student fundamental knowledge, skills and understanding in the preparation of various types of salads, cold dressings and sauces, fruits, vegetables and starch products, sandwiches, canapés and hors d'oeuvres.

Prerequisite: CULA1000, CULA1106, and CULA1117 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Exhibit professional, safe and sanitary work practices
- Demonstrate knife skills, hand tool and equipment operation, emphasizing proper safety techniques
- Utilize standard weights and measures to demonstrate proper scaling and measurement techniques
- Describe various food ingredients to include fruits, vegetables, starches, legumes and grains
- Use various cooking methods and techniques as appropriate to the specific foods
- Explain the importance of presentation and garnishing of various foods
- Prepare a variety of fruits, vegetables, starches, legumes and grains
- Prepare a variety of salads with appropriate accompaniments
- Prepare a variety of hors d'oeuvre, appetizers, canapés and basic garnishes
- Demonstrate food presentation techniques using a variety of plates, platters and trays
- Prepare a variety of hot and cold sandwiches
- Produce decorative centerpieces using fruits and vegetables
- Use herbs, spices, oils and vinegar, condiments, marinades and rubs
- Present a variety of prepared forcemeat products
- Describe the use of a variety of dairy products.
- Evaluate by taste and presentation various foods to determine their quality

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 3

### **CULA 1156 - Classic Culinary Techniques (4)**

This course is designed to give the student fundamental knowledge, skill, and understanding of protein fabrication, stocks, sauces, soups, meat, poultry, fish, shellfish cookery, and breakfast food preparation techniques. This course also serves as a review of prerequisite courses in sanitation, math, baking, and garde manger/entremétier preparations.

Prerequisite: CULA1000, CULA1106, and CULA1117 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Exhibit a commitment to professionalism in the culinary arts
- Evaluate the quality of raw and prepared meats, seafood, poultry, and variety meats
- Prepare a variety of food products commonly served at breakfast
- Perform basic fabrication tasks with meat, poultry, seafood and variety meats
- Demonstrate the preparation of various stocks
- Use various thickening agents
- Demonstrate the preparation of a variety of soups from each category
- Prepare the five grand sauces and their small sauce derivatives
- Demonstrate moist, dry and combination cooking methods

Prepare meats, poultry, and fish to the correct doneness  
 Demonstrate a variety of cooking methods  
 Use various methods to preserve foods including brining, salting, curing, and smoking  
 Prepare written requisitions for production requirements  
 Demonstrate the preparation of baked goods, salads, appetizers, vegetables, starches, legumes and grains  
 Evaluate the taste and visual presentation of various food items

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 3

**CULA 1165 - Basic Sugar Work (2)**

This course is offered as Pass/No Credit (P/NC). This course is designed to give the student knowledge, skill and understanding in the various types of sugar work.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Demonstrate quality assurance standards
- Apply safety standards
- Identify tools and equipment
- Identify sugar work ingredients
- Understand use of silicone molds
- Demonstrate showpiece symmetry and stability
- Apply ability to pull sugar bands
- Demonstrate blowing and casting sugar showpieces
- Demonstrate gum paste recipes
- Apply taught techniques to prepare cold porcelain showpieces
- Demonstrate time management, skill and ability in all three areas of study
- Identify colorings for sugar work
- Understand use of straw sugar

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **CULA 1260 - Food Truck Foundations (3)**

This course provides students with a fundamental knowledge of food truck equipment, operations, food preparation, service, safety and sanitation, and regulatory requirements. This class includes a combination of classroom discussion with hands-on, food truck learning.

Prerequisite: Culinary Assistant Occupational Certificate, current registration to earn one, or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify essential food truck equipment and storage

Demonstrate knife skills, hand tool and equipment operation, emphasizing proper safety techniques

Explain important differences between food truck operations and restaurant operations

Demonstrate various cooking methods and techniques to prepare and serve food truck menu items

Evaluate characteristics of various food truck menu items

Demonstrate acceptable procedures when preparing potentially hazardous foods to include time/temperature principles

Maintain active Safety Data Sheets (SDS) for regulatory requirements

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: Lecture: 2 Lab: 1

### **CULA 1270 - Creams, Custards, Mousses, and Sauces (2)**

This course focuses on providing the student in-depth knowledge and skills in preparing a variety of creams, custards, mousses, meringues, buttercreams, icings, glazes and dessert sauces. This lab course provides students with hands-on experiences with bakery production.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate professional, safe and sanitary work practices

Apply basic math skills to recipe conversions

Evaluate formulations and recipes for creams, custards, mousses, and sauces

Select correct equipment for recipes

Demonstrate proper mixing, cooking, and baking methods

Prepare a variety of custards and creams

Prepare a variety of mousses and other fillings

Prepare a variety of dessert soufflés and cheesecakes

Prepare a variety of dessert sauces  
 Demonstrate abilities to pipe, design decorative features, and write with piping bag

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Lab: 2

### **CULA 1275 - Artisan Breads (4)**

This course focuses on providing students advanced skills and comprehension of artisan bread making. Topics covered are different flours, the role of yeast, water, and salt in dough making; different mixing styles; equipment and measuring tools; baguette, ciabatta, pane francese, pizza dough, bagel dough, pain de mie, Challah dough, brioche dough, and croissant dough.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate professional, safe, and sanitary work practices

Apply basic math skills to recipe conversions

Demonstrate proper scaling and measurement techniques

Describe properties and functions of various ingredients

Identify proper mixers and mixing styles

Identify properties of different ovens

Prepare a variety of baguette and ciabatta dough

Prepare a variety of pane francese dough

Prepare a variety of pizza dough

Prepare a variety of bagel dough

Prepare a variety of pain de mie dough

Prepare a variety of Challah dough

Prepare a variety of brioche dough

Prepare a variety of croissant dough

Evaluate the quality of baked breads

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: Lecture: 1 Lab: 3

### **CULA 1280 - Chocolates and Confections (2)**

This course focuses on providing the student in-depth knowledge of the principles of decorative product preparation and its presentation. Topics covered include, but not limited to, chocolate, marzipan, decorative sugar work, and nougatine.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate professional, safe, and sanitary work practices

Demonstrate production guidelines for confections and sugar work

Identify terms and techniques including tempering, handling, and storage of chocolates

Evaluate formulations and recipes for chocolates, confections, and sugar work

Select ingredients and equipment for desired chocolates, confections, and sugar work

Execute proper mixing and cooking methods for chocolates, confections, and sugar work

Assemble amenities and showpieces in restaurant settings

Text and References: A list of textbooks required for this course is available at the <https://www.hennepintech.edu/finance-operations/campus-store.html> bookstore.

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 1 Lab: 1

### **CULA 1290 - International and Regional Pastry (4)**

This course is designed to give students a better understanding of traditional and contemporary pastry techniques from local and global regions. Students will explore how culture, traditions, religion and geographies influenced indigenous baking and pastry techniques. Topics covered are yeast breads, quick breads, cakes, pies, cookies, various pastries, desserts and dessert sauces.

Prerequisite: CULA1117 and CULA1126, or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Prepare food following proper sanitation practices and standards

Apply basic math skills to recipe conversions in a production setting

Demonstrate proper selection of equipment and utensils for specific application

Prepare original local baked goods according to provided recipes

Prepare variety of baked goods and pastry according to the recipes from around the world

Demonstrate knowledge of the cultures which produced each baked good or dessert

Describe the value of different international foods and cultures

Identify global influences on American cuisine

Demonstrate the presentations of baked goods and desserts in restaurant setting

Assess the quality of baked goods and desserts

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: Lecture: 1 Lab: 3

### **CULA 1295 - Entremets and Specialty Cakes (2)**

This course focuses on providing students in-depth knowledge of the principles of decorative product preparation and its presentation. Topics covered include, but are not limited to, a variety of special occasion cakes, gateaux, tortes, entremets, petits fours glacé, and traditional cakes.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate professional, safe, and sanitary work practices

Apply basic math skills to recipe conversions

Demonstrate proper scaling and measurement techniques

Demonstrate the ability to assemble tiered cakes

Create edible decorative components

Create tiered cakes

Demonstrate production guidelines and conversion factors for gateaux, tortes, entremets, petits fours glacé, and traditional cakes

Select ingredients and equipment for desired gateau, torte, entremets, petits fours glacé, and traditional cake recipes

Assemble decorative gateaux, tortes, entremets, petits fours glacé, and traditional cakes from prepared cake layers, cake fillings, and icings

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 1 Lab: 1

### **CULA 1301 - Culinary Arts Nutrition (2)**

The study of nutrition principles and the relationship of food to health from the perspective of culinary professionals. Students

become familiar with the structure, function, and sources of nutrients including protein, carbohydrates, fats, vitamins, minerals, and water. Current dietary guidelines, energy balance, food fads and trends are discussed. Students prepare traditional and nutritionally modified recipes.

Prerequisite: CULA1117

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify current USDA My Pyramid principles and food groups

List the nutrient contributions of each food group

Develop recipes and menus using dietary guide-line recommendations, food guides and food labels

List the primary characteristics, functions and sources of vitamins, water and minerals

Describe the process of human digestion

Identify common food allergies and determine appropriate substitutions for gluten, sugar, and lactose free diets

Demonstrate cooking techniques and storage principles and portion sizes for maximum retention of nutrients and effective weight management

Discuss contemporary nutritional issues including weight management, exercise, vegetarianism, heart healthy menus and religious dietary laws

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **CULA 1321 - Decorative Work and Showpieces (2)**

Principles of decorative product preparation and the presentation of various food mediums including but not limited to ice carving, cake decorating and confectionery work. Food styling factors such as balance, design, color, and the techniques of garniture used in the professional kitchen will be emphasized.

Prerequisite: Required - CULA1117 and Recommended - CULA1126

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate appropriate safety and sanitation practices

Identify examples of showpieces/centerpieces

Produce decorative showpieces/centerpieces using a variety of food mediums including chocolate, sugar, dough, tallow and ice

Use carving, molding, and modeling equipment and tools

Identify three-dimensional shapes utilized in sculpturing

Demonstrate appropriate mise en place for projects

Decorate various pastry/confectionery items

Demonstrate food display techniques to enhance presentations

Exhibit teamwork with a high level of professionalism

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 1

### **CULA 1325 - Menu Planning (2)**

This course is designed to apply the principles of menu planning and layout to the development of menus for a variety of types of facilities and service.

Prerequisite: CULA1000

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

List basic menu planning principles

Identify principles of menu layout and design

Create menu item descriptions following established truth-in-menu guidelines

Apply principles of nutrition to menu development

Determine menu prices utilizing proper cost controls

Plan a la carte, cycle, ethnic, banquet and buffet menu

Discuss importance of sales mix and its' impact on profit

Develop a menu layout for a foodservice operation

Discuss the availability of foods for seasonal menus

Discuss menu planning resources

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2

### **CULA 1335 - Purchasing and Cost Control (2)**

This course is designed to develop an understanding of the overall concept of purchasing and receiving practices in quality foodservice operations. Methods to control costs while maintaining strict quality standards through effective management practices are examined.

Prerequisite: CULA1000

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe various formal and informal purchasing methods
- Analyze market fluctuations and product cost
- Discuss legal and ethical considerations of purchasing
- Explain regulations for inspecting and grading of various food products
- Write a bid specification
- Evaluate received goods to determine conformity with user specifications
- Conduct yield and quality tests on various products
- Inventory food and non-food items on hand
- Describe proper procedures of issuing product according to requisition
- Describe current computerized systems for purchasing and inventory control
- Explain methods to control cost of food, beverage, labor, supplies and services
- Describe cost, volume and profit relationships

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 1 lab: 1

### **CULA 1526 - Dining Experience and Expectations (3)**

This course examines the detailed operation of a restaurant dining room. Topics include types of table service, dining room organization and table settings, staffing, responsibilities of dining room personnel, customer sales and service. Includes practical experiences in a public dining room.

Prerequisite: CULA1117 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate the general rules of table settings and service
- Perform service methods such as banquets, buffets, catering and a la carte
- Describe the functions of dining service personnel
- Describe training procedures for dining room staff
- Describe procedures for processing guest checks using current technology
- Explain inter-relationships and work flow between dining room and kitchen operations
- Describe sales techniques for service personnel including menu knowledge and suggestive selling
- Exhibit knowledge and skills in tableside food preparation and service
- Develop human relations skills necessary for working in a front of the house position

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course

Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: Lecture: 1 Lab: 2

### **CULA 1530 - Advanced Baking and Pastry (4)**

This course is designed to give the student advanced knowledge, skills and understanding of baking methods and techniques as done a restaurant setting. Topics covered are yeast breads, quick breads, cakes, pies, cookies, various pastries, desserts and dessert sauces.

Prerequisite: CULA1117 and CULA1126

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Prepare food following proper sanitation practices and standards
- Apply basic math skill to recipe conversions in a production setting
- Demonstrate proper selection of equipment and utensils for specific application
- Explain the variety of doughs and batters used in a quantity food production
- Select appropriate mixing methods to produce various items
- Use a baker's balance scale
- Make yeast products in volume
- Make quick breads in volume
- Make cakes and icings in volume
- Demonstrate advanced icing and decorating techniques
- Prepare cookies, pies and pastries in volume
- Prepare creams, custards, puddings, syrups and sauces
- Prevent or retard the staling of baked items
- Make frozen desserts such as ice cream, sherbet or sorbet
- Demonstrate the presentations of baked goods and desserts in restaurant setting
- Assess the quality of baked goods and desserts

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 3

### **CULA 1535 - Advanced Garde Manger and Entremétier (4)**

This course is designed to give the student advanced knowledge, skills and understanding in the preparation of various types of

salads/salad dressings, vegetable and starch products, sandwiches, canapés and hors d'oeuvres in restaurant production setting.

Prerequisite: CULA1117 and CULA1136

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Select tools and equipment used in garde manger, emphasizing safety and sanitation procedures

Determine work station needs for pre-preparation, monitor throughout shift, and stock as needed

Convert recipes

Demonstrate organizational skills needed to prepare foods in volume production

Obtain ingredients for recipes and weigh and measure

Identify table side salads

Select and cut fruits, vegetables, and tubers

Cook fruits, vegetables, tubers, farinaceous products, cereals, grains, and beans

Prepare a variety of hors d'oeuvre, appetizers, canapés and basic garnishes

Make various salads and cold entrees

Make cold sauces and dressings

Make basic and complex sandwiches

Use cheese as an ingredient in recipes

Demonstrate food presentation techniques using a variety of plates, platters and trays

Produce decorative centerpieces using a variety of food mediums

Evaluate the taste and visual presentation of various food items

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 3

#### **CULA 1540 - Advanced Culinary Techniques (4)**

This course is designed to give the student advanced knowledge, skill, and understanding of stocks, sauces, soups, meat, poultry, fish, shellfish cookery, and breakfast food preparation techniques in a restaurant production setting.

Prerequisite: CULA1117 and CULA1156

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Use knives with precision and accuracy

Prepare breakfast meats, eggs, cereals, and battered products in a production setting

Determine time-frame for preparing foodstuffs and schedule accordingly

Plate and present food according to standards

Test by taste various foods to be used as meal components

Write standardized recipes

Demonstrate safe and appropriate use of equipment and tools

Monitor items during cooking process

Make and use thickening agents  
 Make soups, stocks, and sauces  
 Prepare meat, fish, shellfish and poultry for a la carte and banquet production standards  
 Prepare various fruits, vegetables, starches and farinaceous items  
 Complete written requisitions for foodstuffs according to standards  
 Follow cleaning and sanitation program  
 Plan production menus that utilize a variety of service styles  
 Demonstrate various cooking methods and techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 3

## **CULA 1700 - Human Relations Management (2)**

This course is designed to prepare for the transition from employee to supervisor. To evaluate styles of leadership and develop skills in human relations and personnel management.

Prerequisite: CULA1000, CULA1106, and CULA1117 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe process of management through effective communication skills

Summarize leadership styles and analyze when each is most appropriate

Outline the supervisor's role in decision-making, problem solving and delegation of duties

Compare a variety of training methods

Discuss effective employee training programs which include follow-up training and cross-training

Describe necessity of change and ways of implementing change with the least employee resistance

Evaluate methods of conflict resolution and grievance procedures in union and non-union organizations

Discuss reasons for disciplinary problems and the supervisor's role in handling them

Analyze motivational techniques and problems

Discuss procedures for attitudinal changes

Analyze ways of dealing with stress in the workplace

Discuss legal issues related to managerial decisions including sexual harassment, discrimination, violence/anger and unemployment compensation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2

### **CULA 1710 - Beverage Management (2)**

This course focuses on the management of both alcoholic and non-alcoholic beverages and the legal and liability issues involved with them. Product knowledge, storing, pricing, merchandising, and serving wines and spirits in restaurant settings are emphasized. The course examines the theory of matching food with wines, beers, and other beverages.

Prerequisite: CULA1000, CULA1106, and CULA1117 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify local, state and federal laws pertaining to the purchase and service of alcoholic beverages

Explain the basic production process for distillation and fermentation

Distinguish wines by grape and/or other fruit variety, country, growing region and production process

Evaluate the relationship of beverages to food

Demonstrate the presentation of beverage

Identify equipment and glassware used for beverage preparation and service

List opening and closing procedures of a beverage operation

Discuss the fundamentals and importance of responsible alcohol service

Text and References: A list of textbooks required for this course is available at the <https://www.hennepintech.edu/finance-operations/campus-store.html> bookstore.

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2

### **CULA 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A `Specialized Lab Training Agreement` must be signed by the student and the instructor and submitted to the registrar at the time of registration.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Work independently.

Organize work schedule.

Follow prescribed procedures.  
 Demonstrate safety.  
 Demonstrate initiative.  
 Integrate previously acquired skills.  
 Integrate previously acquired knowledge.  
 Display good judgment.  
 Demonstrate dependability.  
 Exhibit professionalism.  
 Organize work area.  
 Demonstrate cooperation.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lab: 1-4

#### **CULA 2056 - Global Cuisine (4)**

This course is intended to give students a better understanding of the cuisines, major and minor, famous and less so, of the different regions of world. It will explore how they arose from their cultures and geographies, what factors influence menu choices in those regions, and what indigenous techniques are used in their preparation. In addition, the course will provide useful information in the search for ingredients in preparing those cuisines.

Prerequisite: Food manager's certificate, current registration to earn one, or instructor's approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate knowledge of the cultures which produces each cuisine
- Demonstrate cooking techniques familiar to a variety of world regions
- Demonstrate knowledge of the ingredients used in different regions of the world
- Participate in discussions of global food and culture
- Demonstrate teamwork in the preparation of each session's menu
- Evaluate characteristics of regional food & beverage traditions
- Demonstrate professionalism in the areas of preparation, clean up and sanitation
- Demonstrate understanding of the role of products in the culinary environment
- Demonstrate the ability to source produces for a global menu
- Design a regional specific menu
- Demonstrate the knowledge of the influence climate has on global and regional cuisine
- Identify global influences on American cuisine

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

#### **CULA 2060 - Food Truck Operations (4)**

This course builds upon the skills developed in Food Truck Foundations, with a focus of hands-on food truck operations. Students will develop the full range of skills necessary for operating and sustaining a successful food truck business of their own.

Prerequisite: CULA1260 or instructor approval. Completion of or concurrent enrollment in any of the following: ACCT1000, BUSN1510, BUSN2015, or BUSN2085

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the functions of food truck personnel

Identify the costs of starting, operating, and sustaining a food truck

Identify required licensing and regulatory compliance for food truck operations

Develop a full food truck menu

Analyze purchasing and cost controls to achieve profitability

Explain inter-relationships between commissary kitchens and food truck work flow

Describe procedures for processing guest checks using current technology

Demonstrate acceptable procedures when preparing potentially hazardous foods to include time/temperature principles

Describe sales techniques, including menu knowledge and suggestive selling

Develop human relations skills necessary for operating a food truck

Provide full food-truck service to a targeted consumer base

Demonstrate cleaning and sanitation program in the constraints of a food truck operation

Text and References: A list of textbooks required for this course is available at the <https://www.hennepintech.edu/finance-operations/campus-store.html> bookstore.

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: Lecture: 1 Lab: 3

#### **CULA 2075 - Catering (2)**

This course is designed to give the student advanced knowledge, skills and understanding of off-premise and on-premise catering as a branch of the hospitality industry. Topics such as party planning, customer service, site preparation, licensure, safety, catering equipment, sanitation, staff scheduling, food preparation and menu development will be discussed.

Prerequisite: CULA1301, CULA1321 CULA1325, CULA1335, CULA1526, CULA1530, CULA1535, and CULA1540. Or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and

evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

#### Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify the different types of catering events
- Prepare grilled foods
- Develop banquet menus with itemized costs
- Create catered events on campus
- Create a catering contract with a client
- Identify local licensure and health regulations
- Visit local catering companies for equipment rental needs
- Develop staffing schedules for catered events

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

#### Special Accommodations:

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Eden Prairie Campus – 952-995-1544

#### Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **CULA 2090 - Advanced Baking for Health and Special-Needs (2)**

This course focuses on providing students advanced comprehension of special dietary needs that should be considered when preparing bakery and pastry goods. The course will cover, among other topics, common food allergens, dietary conditions, ingredient modification and alternatives, as well as skills and techniques for developing and modifying healthful and special-needs baking formulas.

Prerequisite: Recommended: CULA1117 and CULA1126

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

#### Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate professional, safe, and sanitary work practices
- Identify dietary conditions that affect today's consumers
- Demonstrate the ability to adapt bakeshop formulas to meet dietary needs
- Identify common food allergies
- Identify ingredient substitutes and alternatives for gluten, sugar, and lactose free diets
- Select proper equipment for making and serving health modified menu items
- Demonstrate the presentation of menu items in restaurant setting

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

#### Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: Lecture: 1 Lab: 1

### **CULA 2185 - Baking and Pastry Capstone (2)**

This culminating course provides students the opportunity to apply knowledge gained throughout the Baking and Pastry program. Students will create and execute a menu, prepare a variety of baked goods and desserts, and present their work in a restaurant setting.

Prerequisite: CULA1117, CULA1126, CULA1270, CULA1275, CULA1280, CULA1290, and CULA1295 or Instructor Approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate professional, safe and sanitary work practices

Describe the menu planning process

Apply basic math skills to recipe conversions

Create a catering menu covering a variety of baked goods and dessert

Select ingredients for desired plated desserts

Select equipment for desired plated desserts

Select service ware for desired presentation

Select finishing and garnishing elements for desired presentation

Determine layout and design of dessert buffets and/or centerpieces

Demonstrate the presentations of baked goods and desserts in a restaurant setting

Evaluate the quality of baked goods and desserts

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Lab: 2

## **DNTL - Dental Assistant**

### **DNTL 1000 - Dental Team/Practice Management (2)**

This course is designed to give the student a fundamental understanding of the characteristics of dentistry. It will include the history of dentistry, its team members, specialties, professional organizations, legal and ethical considerations and the differences between Certification and Licensure. Dental business office procedures are also included. Students will make appointments, complete patient financial records and insurance forms, and realize the importance of good telephone techniques.

Prerequisite: Successful completion of 1st semester courses

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Explore the history of dentistry
- Examine the responsibilities of the dental health team
- Investigate dental organizations
- Measure the character of a dental assistant
- Characterize the duties of a Certified and Licensed dental assistant
- Examine patients' rights
- Model dental office procedures
- Prepare dental office documents
- Demonstrate oral presentation techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2

### **DNTL 1121 - Dental Science (4)**

This course is designed to provide information on dental terminology, basic head and neck anatomy, tooth morphology, oral histology and embryology and the basics of the human body systems. Oral pathology is included and contains a background in the identification, causes, symptoms and transmission of various oral diseases.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Define dental terminology
- Identify the anatomic features of teeth
- Identify tooth annotation
- Identify tooth morphology
- Explain oral embryology
- Explain oral histology
- Differentiate oral structures
- Identify bones of the skull
- Explain the innervation of teeth
- Explain blood flow to the teeth
- Explain body systems
- Identify oral pathological conditions

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit

Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 4

### **DNTL 1140 - Dental Materials (3)**

This course will introduce the student to various materials used in dentistry. These include gypsum, waxes, impression materials, cements (protective layers) and restorative materials. The student will learn identification, purposes and properties as well as the proper manipulation/preparation procedure for each. Laboratory equipment, safety measures and lab emergency protocol will be emphasized. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Admission into the Dental Assistant Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain dental laboratory safety procedures

Describe emergency protocol for the dental laboratory

Compare gypsum products

Explain dental waxes

Manipulate dental impression materials

Produce custom impression trays

Interpret dental cements

Interpret dental liners and varnishes

Identify dental restorative materials

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **DNTL 1160 - Preclinical Chairside Assisting (3)**

In this course the student will learn about microbiology, sterilization, monitoring and recording vital signs as well as how to respond to various medical emergencies that may arise in the dental office. The course will emphasize the prevention of disease transmission. The student will learn about anesthesia and pharmaceuticals used in dentistry. Hazardous communication and management in the dental office is also included. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Admission into the Dental Assistant Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify the basics of microbiology
- Demonstrate the principles of disinfection
- Demonstrate the techniques of instrument sterilization
- Demonstrate concepts of infection control
- Identify waterborne diseases present in the dental setting
- Examine pharmacology principles
- Examine methods of pain control
- Differentiate methods of emergency management

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **DNTL 1180 - Chairside Assisting I (4)**

In this course the student will identify dental office design, assemble tray set-ups, perform an intra oral examination and complete services rendered. Students gain knowledge in dental supplies, inventory control, equipment and basic dental instruments. Maintenance and safety of dental instruments is evaluated. Practical learning experience will include how to chart the oral cavity, position the dental team and patient, control of moisture in the oral cavity as well as high velocity evacuation techniques. Students will also learn the expanded function of placement and removal of matrix bands.

Prerequisite: Admission into the Dental Assistant Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Summarize office design
- Illustrate dental chair positioning
- Perform High Volume Evacuation (HVE)
- Demonstrate isolation procedures
- Categorize dental hand instruments
- Compare rotary instruments
- Differentiate dental handpieces
- Organize dental tray set ups
- Demonstrate treatment planning
- Interpret dental charting
- Position dental matrices
- Determine inventory systems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or

impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 2

### **DNTL 1200 - Dental Health (2)**

This course will assist the student in identifying psychological variables that are significant in dealing with dental patients and co-workers. The student will also study nutrition and its effects on the human body. Emphasis is made on proper oral hygiene techniques and evaluation of the patient's health care status.

Prerequisite: Admission into the Dental Assistant Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Examine the relationship of diet to dental caries

Create an oral hygiene presentation

Characterize the risk factors that contribute to periodontal disease

Formulate the components of a preventive dentistry program

Ascertain the type of dental management a medically compromised patient would receive

Explore how nutrition affects the oral cavity

Differentiate motivational techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2

### **DNTL 1220 - Chairside Assisting II (4)**

This course is designed to develop skills in four-handed dental assisting, including tray set up preparation. It also will introduce the student to the specialized areas of dentistry and the instruments, materials and procedures needed for each.

Prerequisite: Successful completion of 1st semester courses

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate the delivery of dental care  
 Demonstrate the role of a clinical assistant  
 Prepare for local anesthesia  
 Simulate the role of the dental assistant in restorative dentistry  
 Examine the basics of prosthodontics  
 Explain endodontics  
 Explain periodontal procedures  
 Examine oral and maxillofacial surgery  
 Examine orthodontics  
 Explain pediatric dentistry  
 Investigate public health dentistry  
 Use cavity preparation terminology

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 2

### **DNTL 1241 - Dental Radiology (4)**

This course is designed to introduce the student to the basic principles of x-ray production. Biological effects of ionizing radiation and safety procedures are covered. Also included is the exposing, processing, monitoring and evaluating of dental film. The student will gain practical experience in producing intraoral radiographs on typodonts in a clinical setting. Radiation safety policies are practiced and monitored. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Admission into the Dental Assistant Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify principles of radiation  
 Explain factors in image formation in dental radiography  
 Identify processing techniques  
 Process dental films  
 Interpret quality control data  
 Demonstrate mounting procedures  
 Differentiate between various types of radiographs  
 Demonstrate paralleling technique  
 Demonstrate bisecting technique  
 Interpret exposure errors  
 Identify radiographic landmarks  
 Explain the biologic effects of radiation  
 Identify radiation safety protocol

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

### **DNTL 1261 - Expanded Functions (7)**

This course is designed for the students to learn and practice the expanded functions in the Hennepin Technical College dental clinics. These procedures are required by the Minnesota State Board of Dentistry to be eligible to take the Minnesota Licensure examination. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

**Prerequisite:** Successful completion of 1st semester courses

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Expose radiographs

Take alginate impressions for study casts

Take appropriate bite registration

Perform dental dam procedure

Apply topical anesthetic

Apply topical fluoride

Describe bleaching techniques

Perform mechanical polishing to clinical crowns

Demonstrate orthodontic separators

Prepare enamel surfaces before orthodontic appliances and sealants

Remove excess bond with hand or rotary instruments

Preselect orthodontic bands

Demonstrate ligatures on orthodontic appliances

Remove excess cement with hand instruments only

Perform pit and fissure sealants

Remove sutures

Demonstrate periodontal dressings

Manipulate temporary restorations

Perform nitrous oxide-oxygen inhalation analgesia

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3 lab: 4

### **DNTL 1305 - Externship Seminar (1)**

This course is designed to prepare the student for their externship experiences including the knowledge of Minnesota dental laws. Students will attend a weekly meeting at the college to share experiences and review for State and National Board Exams.

Prerequisite: Successful completion of 1st and 2nd semester courses. DNTL1321 and DNTL1325 must be taken concurrently with this course

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe the Minnesota Dental Practice Act
- Complete the Minnesota Jurisprudence Exam
- Prepare for dental assistant board exams

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1

### **DNTL 1321 - Clinical Externship I (4)**

This course provides the opportunity for the student to perform skills learned in the program and apply them at a partnering dental facility. The dental facilities include general dentistry and specialties such as oral surgery, orthodontics, endodontics, public health or pediatric dentistry.

Prerequisite: Successful completion of 1st and 2nd semester courses

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Adhere to the dental office protocol
- Portray a professional image in the dental facility
- Demonstrate competence in chairside assisting
- Perform the Minnesota Dental Practice Act expanded functions
- Demonstrate compliance in infection control standards
- Complete required paperwork
- Demonstrate front office procedures
- Perform laboratory procedures
- Complete required externship hours

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

**Credit Details:** SOE: 4

### **DNTL 1325 - Clinical Externship II (4)**

This is a partnership between Hennepin Technical College and a dental facility. This course provides the opportunity for the student to perform skills learned in the program and apply them to an employment like environment. This will include general dentistry and specialties such as oral surgery, orthodontics, endodontics, public health or pediatric dentistry.

**Prerequisite:** Successful completion of 1st and 2nd semester courses

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Adhere to the dental office protocol

Portray a professional image in the dental facility

Demonstrate competence in chairside assisting

Perform the Minnesota Dental Practice Act expanded functions

Demonstrate compliance in infection control standards

Complete required paperwork

Demonstrate front office procedures

Perform laboratory procedures

Complete required externship hours

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

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**Credit Details:** SOE: 4

### **DNTL 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A 'Specialized Lab Training Agreement' must be signed by the student and the instructor and submitted to

the registrar at the time of registration.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Work independently.

Organize work schedule.

Follow prescribed procedures.

Demonstrate safety.

Demonstrate initiative.

Integrate previously acquired skills.

Integrate previously acquired knowledge.

Display good judgment.

Demonstrate dependability.

Exhibit professionalism.

Organize work area.

Demonstrate cooperation.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lab: 1-4

## ECON - Economics

### **ECON 1200 - Principles of Microeconomics (3)**

This course will focus on tools and techniques used by economists that impact decisions made by individuals, businesses, and governments. Particular attention will be placed on the determination of prices, types of markets, government's role in the economy, and trade.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Compare and contrast different economic systems

Demonstrate the benefits of trade using opportunity cost and comparative advantage

Apply marginal analysis to the decision making of individuals, firms, and governments

Demonstrate the impact of changes in both market supply and demand on equilibrium price and output

Analyze the causes and consequences of different market failures

Analyze the relationship between production function and costs.

Categorize markets into the four types of market structures

Determine optimal price and output for firms in the four types of market structures  
Demonstrate the impact of government tax, subsidy and regulation on firms  
Demonstrate how changes in the factor market impact the product market  
Identify the causes of poverty and income inequality  
Assess the government response to poverty and income inequality

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 5 & 9.

### **ECON 1300 - Principles of Macroeconomics (3)**

This course focuses on the theories that explain the overall performance of the economy and the government policies that stabilize the economy and promote economic growth. Students will learn the principles of markets, the price system and supply and demand. The course will also cover national income, unemployment, inflation, the role money, the banking system, and the foundations of international trade and finance.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain the implications of scarcity for society and decision-making

Determine the opportunity cost of a particular choice

Apply the concepts of marginal analysis to optimize behavior

Apply the model of supply and demand to analyze market behavior

Interpret macroeconomic indicators

Analyze the causes and consequences of unemployment, inflation, and economic growth

Analyze the economic health relationships in a highly interdependent world economy

Evaluate the effectiveness of using monetary and fiscal policy to achieve macroeconomic goals

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 5 & 8.

# ELEC - Electronics Technology

## ELEC 1000 - DC Circuits (4)

This course will provide the student with basic electronic concepts as they apply to direct current circuits. Circuits will consist of a voltage source and one or more resistors. The student will compute circuit parameters and these will be compared to measured values from a breadboarded or computer simulated circuit. The student will learn the IEEE color code and to safely and correctly use both analog and digital meters to measure voltage, current and resistance.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify electrical symbols and units
- Measure circuit parameters
- Identify resistor types and their characteristics
- Analyze simple Direct Current electrical circuits
- Use Ohm's law to calculate circuit parameters for a Direct Current circuit
- Analyze series, parallel and combination Direct Current circuits
- Design loaded and unloaded voltage dividers
- Evaluate balanced bridge circuits
- Troubleshoot series, parallel and combination circuits
- Compute loaded and unloaded voltage divider values
- Explain the Maximum Power Transfer theorem
- Analyze voltages referenced to ground

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

## ELEC 1050 - AC Circuits (4)

This course is designed to provide the student with the basic electronic concepts as they apply to the generation and measurement of alternating current. The student will compute AC voltages and currents in resistive capacitive and inductive circuits. These will then be compared with data measured with both the multimeter and oscilloscope. The student will learn to correctly and safely use Two Trace Oscilloscopes, AC meters and function generators. Circuits will be designed and evaluated by breadboarding and/or computer simulation software.

Prerequisite: ELEC1000 or equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain the principles of alternation

Explain the laws of magnetism

Operate the Oscilloscope and the Signal Generator

Use an Oscilloscope to measure voltage, period and phase relationships of different waveforms

Demonstrate probe compensation in an Oscilloscope

Calculate the peak, root mean square, average and Instantaneous voltage values of waveforms

Measure the characteristics of square and rectangular waveforms

Calculate inductance and inductive reactance in series and parallel circuits

Calculate capacitance and capacitive reactance in series and parallel circuits

Identify the physical properties of inductors and capacitors

Analyze series and parallel characteristics of inductors and capacitors

Identify transformers and their performance characteristics

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

## **ELEC 1075 - Careers in Manufacturing (2)**

This course introduces students to the skills, technology, work environment, potential salary, and job placement for occupations in the fields of Machine Tool Technology, Mechatronics (Automation Robotics, Electronics, Fluid Power), Welding and Metal Fabrication, Plastics Engineering Technology, and Engineering CAD (Computer-Aided Design) Technology. This dynamic course includes industry-specific tours, as well as hands-on projects that familiarize students with field practices and shop safety. A technical aptitude assessment will be administered to assist students in determining if a career in manufacturing fits with their interests and abilities. The steps for enrolling in a program at HTC will be reviewed.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the characteristics of a career in Machine Tool Technology

Describe the characteristics of a career in Mechatronics

Describe the characteristics of a career in Welding and Metal Fabrication

Describe the characteristics of a career in Plastics Manufacturing Technology

Describe the characteristics of a career in Engineering CAD Technology

Apply shop safety principles

Determine the manufacturing career fields best suited to individual attributes and interests

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit

Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **ELEC 1100 - Complex AC Circuits (3)**

This course is designed to provide the student with the basic electronic concepts as they apply to RCL circuits such as resonant, filter and timing circuits. The student will compute voltages, currents and times in these circuits. These will then be compared with data measured with both multimeter and oscilloscope. Circuits will be designed and evaluated by breadboarding and/or computer simulation software.

Prerequisite: ELEC1050 or equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain the operation of RCL circuits

Calculate the impedance of combination RCL circuits

Analyze series and parallel resonant circuits

Calculate the circuit Q, bandwidth and Resonant Frequency of RCL circuits

Discuss the applications of resonant circuits

Calculate the Power Factor of a circuit

Analyze low pass different types of filter circuits

Determine time constants for different circuit configurations

Analyze the universal time constant chart

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **ELEC 1150 - Diodes and Rectifiers (2)**

This course is designed to provide the student with the basic electronic concepts as they apply to semiconductor diode and rectifier circuits including special purpose diodes such as light emitting diodes, laser diodes, varactor diodes and zener diodes. The student will compute component and circuit parameters. These will then be compared with measured data. Circuits will be designed and evaluated by breadboarding and/or computer simulation software.

Prerequisite: ELEC1100 or equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe the characteristics of semi-conductors
- Identify diodes and their characteristics
- Discuss the operation of a zener diode
- Explain the functions of halfwave, fullwave and bridge rectifiers
- Evaluate circuits using simulation software
- Calculate circuit parameters to different levels of approximation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **ELEC 1200 - Soldering Skills (1)**

This course develops skill in soldering components to a printed circuit board and replacing defective components by desoldering, preparing the board and resoldering new components. A soldering project is fabricated as part of the class. The student will learn the proper use and care of soldering and desoldering equipment. The student will learn the proper use of flux and other chemicals. Safety concerns will be a major component of this course.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate proper stripping of wire insulation
- Demonstrate proper tinning of solder wire
- Demonstrate soldering a wire to a turret terminal
- Demonstrate cup terminal soldering of a D connector
- Demonstrate soldering a wire to a lug terminal
- Demonstrate de-soldering technique using a solder wick
- Demonstrate de-soldering technique using a solder sucker
- Demonstrate the through hole soldering technique

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college

activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Campus:

Brooklyn Park Campus: 952-995-1300

lab: 1

### **ELEC 1220 - Electronic Soldering and Inspection (2)**

This course provides basic training in IPC recommended (international trade association for Electronics Manufacturing) procedures for assembly, soldering and inspection of electronic components. The student will be introduced to IPC recommended techniques for assembling, soldering and inspecting through hole, SMD, Wires & Terminals. The course has both a discussion and a hands-on component. The hands-on activities are an opportunity to practice the IPC recommended techniques discussed in the lectures.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate wire stripping and tinning procedures per IPC standards

Solder Through-Hole components per IPC standards

Solder Surface Mount Devices per IPC standards

Solder Wires and Terminals per IPC standards

Solder wires to a D-connector per IPC standards

Apply heat-shrink tubing per IPC standards

Inspect soldered components and wires for conformity to IPC Standards

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 1

### **ELEC 1250 - Solid State Components and Circuits (5)**

This course will introduce students to a wide range of active solid-state devices such as transistors, unijunction transistors and silicon-controlled rectifiers. It also teaches how these devices are used in practical circuits such as amplifiers, speed controls, switching circuits and timing circuits. The student will compute component and circuit parameters. These will then be compared with measured data. Circuits will be designed and evaluated by breadboarding and/or computer simulation software.

Prerequisite: ELEC1150 or equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify the characteristics of the Bipolar Junction Transistors
- Calculate the alpha and beta values for a transistor
- Compare different type transistors
- Test transistors using an ohmmeter and a transistor tester
- Analyze the base bias of transistors
- Explain the Q point in transistor operation
- Analyze different types of transistor bias networks
- Evaluate the AC equivalent circuits for transistors
- Analyze small signal amplification of transistors
- Evaluate common emitter, common collector and common base amplifiers
- Analyze class A, class B and class AB amplifiers
- Examine the operating characteristics of field effect transistors
- Extract information from transistor specification sheets
- Analyze common trigger devices
- Evaluate solid state circuits using simulation software

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 2

### **ELEC 1285 - Practical Circuit Analysis with Multisim (2)**

This course introduces students to the fundamentals of Multisim, an interactive software suite by National Instruments. Multisim can be used for schematic capture, board layout and integrated testing of electronic circuits. In this course, students build schematics and evaluate circuit performance through interactive simulation and analyses. A majority of this course involves hands on activities which includes constructing, simulating and troubleshooting circuits. At the end of this course students will demonstrate competence by designing and simulating a circuit that demonstrates a real-world application.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Construct and simulate electrical/electronic circuits using Multisim
- Develop skills in the use of instruments like Oscilloscope, Function Generator, etc
- Manipulate circuit parameters to change and observe different outcomes
- Evaluate complex electronic circuits using basic circuit principles
- Build and test circuits with real world applications
- Explore techniques to interface Multisim with LabVIEW
- Demonstrate proficiency with Multisim by building and testing an assigned project

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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Credit Details: lecture: 1 lab: 1

**ELEC 1300 - Operational Amplifiers (2)**

This course will introduce students to integrated analog amplifier, timing and waveshaping circuits. Students will test the components for proper operation and parameters. Students will design and build a variety of practical circuits utilizing operational amplifiers. They will test all circuits for proper operation and compute component and circuit parameters. These will then be compared with measured data. Circuits will be designed and evaluated by breadboarding and/or computer simulation software.

Prerequisite: ELEC1250 or equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Evaluate ideal and real operational amplifier characteristics

Determine the slew rate, common mode rejection ratio, and gain bandwidth product of an op amp

Analyze inverting and non-inverting op amps

Analyze the summing and difference op amps

Analyze the differentiator and integrator op amps

Analyze the comparator op amp

Analyze the transconductance and transresistance op amps

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Credit Details: lecture: 1 lab: 1

**ELEC 1375 - LabVIEW Fundamentals and Applications (2)**

LabVIEW (Laboratory Virtual Instrument Engineering Workbench) is a graphical programming environment used to model applications that require testing, measurement and control. In this course, students will develop data acquisition, instrument control, data logging and measurement analysis applications. LabVIEW's graphical approach allows students to program without the need to master complex coding. LabVIEW's user interface can display the results as Graphs, Gauges and LEDs. A majority of this course involves hands on activities, including modelling and simulating real world applications. At the end of this course students will demonstrate competence by creating an application to acquire, process, display and store real-world data.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and

evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Describe the basic features of LabVIEW as a programming language
- Demonstrate the use of the Front Panel and Block Diagram in LabVIEW
- Model and simulate simple electrical systems using LabVIEW
- Demonstrate the use of LOOP control structures in LabVIEW
- Build a simple Instrument Control System for data acquisition using LabVIEW
- Use LabVIEW to model physical systems with practical applications
- Demonstrate proficiency with LabVIEW by building an assigned project

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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Credit Details: lecture: 1 lab: 1

### **ELEC 1400 - Basic Troubleshooting (3)**

This course will allow students to troubleshoot larger circuits and systems. Students will utilize schematics, wiring diagrams, functional block diagrams, component placement diagrams, deductive reasoning and test equipment to determine faulty circuits and components. A practical troubleshooting exercise will be the final test.

**Prerequisite:** ELEC1250 or equivalent

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Examine board level functional relationships of a function generator
- Investigate the front panel control operations of a given function generator
- Operate the function generator controls to display waveforms on an oscilloscope
- Identify the different wave function blocks on a given function generator
- Explain the functional block level interactions in a given function generator
- Trace the signal flow through a given function generator
- Analyze circuit board interactions of a given function generator
- Troubleshoot a given function generator for defects

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Credit Details: lecture: 2 lab: 1

### **ELEC 1450 - Basic Digital Logic (3)**

This course introduces the student to digital electronic circuits. Numbering systems are introduced and a variety of binary codes discussed. Logic family characteristics are discussed. Truth tables, Boolean algebra and Karnaugh Maps are used to analyze, troubleshoot and design digital circuits.

Prerequisite: ELEC1250 or equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Recognize the binary, octal, decimal and hex numbering systems

Perform math and logical operations with the different number systems

Identify logic symbols and circuits

Troubleshoot digital circuits

Construct a logic circuit from a boolean equation and viceversa

Construct Truth Tables and switching circuits for the AND, OR, NOT, NAND, NOR, XOR and XNOR logic gates

Analyze the AND, OR, NOT, NAND, NOR, XOR, XNOR and combination circuits

Discuss ICs and digital logic hardware

Recognize different IC packaging and logic families

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **ELEC 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A `Specialized Lab Training Agreement` must be signed by the student and the instructor and submitted to the registrar at the time of registration.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Work independently  
Organize work schedule  
Follow prescribed procedures  
Demonstrate safety  
Demonstrate initiative  
Integrate previously acquired skills  
Integrate previously acquired knowledge  
Display good judgment  
Demonstrate dependability  
Exhibit professionalism  
Organize work area  
Demonstrate cooperation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lab: 1-4

### **ELEC 2000 - Advanced Digital Circuits I (4)**

This course applies the concepts presented in the course Basic Digital Logic. It also covers the circuits that are in basic digital systems. Registers, counters, adders and comparators. Complex digital circuits, such as Memory circuits, the ALU and a basic computer system are discussed and analyzed. Other common digital integrated circuits are also included in this course.

Prerequisite: ELEC1450 or equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Analyze counters and frequency dividers  
Analyze shift and storage registers  
Analyze different flip-flop configurations  
Evaluate the 4-bit storage register  
Analyze the 4 and 8-bit shift registers  
Analyze half and full-adder circuits  
Evaluate ripple, up and down counters  
Discuss registers and memory in computers  
Discuss the arithmetic logic unit  
Analyze the multiplexer and de-multiplexer circuits  
Analyze the decoder and encoder circuits

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Credit Details: lecture: 3 lab: 1

**ELEC 2020 - Advanced Digital Circuits II (3)**

This course presents the operation of complex digital circuits. Examples of circuits that are explored are selector circuits, multiplexers, demultiplexers, analog to digital and digital to analog converters. Digital test instruments and digital troubleshooting are also discussed.

Prerequisite: ELEC2000 or equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Analyze different types of random access memory circuits

Analyze the 64-bit memory chip

Evaluate programmable and generic array logic circuits

Discuss basic computer functions

Discuss the memory chip selector circuit

Analyze memory mapping and architecture

Define the binary and hex addressing systems

Analyze digital to analog conversion circuits

Analyze analog to digital conversion circuits

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Credit Details: lecture: 2 lab: 1

**ELEC 2050 - Advanced Troubleshooting (4)**

This course will allow students to troubleshoot complex circuits and systems. Students will utilize schematics, wiring diagrams, functional block diagrams, component placement diagrams, deductive reasoning and test equipment to determine faulty circuits and components. A timed practical troubleshooting exercise and the work done during the course will be used to evaluate the student.

Prerequisite: ELEC1400 or equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify the oscilloscope's operating parameters
- Identify panel control functions
- Evaluate the functional blocks of an oscilloscope
- Conduct a signal flow analysis of an oscilloscope
- Examine the X-Y and tester mode operations of an oscilloscope
- Analyze the horizontal sweep circuits of the oscilloscope
- Examine the vertical section circuits of the oscilloscope
- Examine the deflection and cathode ray tube circuits of the oscilloscope
- Examine the trigger and blanking circuits of the oscilloscope
- Examine the switching and calibrate circuits of the oscilloscope
- Analyze power supply circuits for direct current and ripple content
- Troubleshoot an oscilloscope

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1 lab: 3

### **ELEC 2100 - Motor and Motor Controllers (3)**

This course covers the characteristics of D.C., A.C. and stepper motors. Controller operation for these motors is also covered. Motor generators sets are used to study conversion of mechanical energy to electrical energy.

Prerequisite: ELEC1250 and ELEC1300 or equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Explain direct current motors and their characteristics
- Explain direct current motor controllers
- Explain the alternating current motor characteristics
- Explain split-phase terminal characteristics
- Determine the Error Free Start Stop (EFSS) and slew rate characteristics of motors
- Analyze single-phase, two phase and half step controllers
- Examine the functions of separately excited shunt generator
- Examine self-excited compound generators under variable rpm and load characteristics

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **ELEC 2200 - Microprocessors and Microcomputers I (4)**

This course introduces the student to system and microprocessor architecture, timing and the instruction set. Using the instruction set, the student will be able to write simple application programs.

Prerequisite: ELEC2000 and ELEC2020 or equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe microcomputer systems, memory maps and decoding techniques

Analyze a system I/O map and decoding techniques

Describe I/O, mapped I/O, memory mapped and interrupt driven I/O

Describe the different types of interrupts

Describe interrupt initializing procedures

Describe the microprocessor instruction set and addresses

Describe program development steps

Describe program debugging methods

Write a program using parallel input I/O and output I/O

Write a program using the interrupts

Write commonly used programs in industry

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 1

### **ELEC 2220 - Microprocessors and Microcomputers II (4)**

This course builds on the concepts presented in Microprocessors and Microcomputers I. The student will write programs that service various simple input and output devices. Various issues concerning small microcomputer design will also be discussed, such as hardware/software trade offs.

Prerequisite: ELEC2200

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe memory maps  
Analyze decoding techniques  
Describe I/O functions  
Identify I/O types  
Describe I/O devices  
Analyze programmable I/O port operation  
Describe I/O types  
Analyze a system I/O map  
Analyze discrete and programmable port I/O operation  
Write programs that use parallel I/O, interrupt driven I/O, and serial I/O  
Interface common peripheral I/O devices  
Write commonly used programs in industry

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 1

### **ELEC 2300 - Troubleshooting Computers (3)**

This course provides practical experience in troubleshooting the IBM compatible systems. The student will diagnose hardware and software problems using DOS and Windows operating systems. The student will troubleshoot to the lowest repairable module (LRM). A final performance test will be given.

Prerequisite: ELEC1000 and ELEC1050 or equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Manipulate files stored on a diskette  
Disassemble and reassemble a personal computer system  
Diagnose the computer for physical/logical disk errors  
Optimize system speed of a personal computer  
Identify hardware problems using diagnostic software and codes  
Replace a bad hard drive, floppy drive and power supply on a personal computer  
Replace a video graphics card, ribbon cable and system board on a personal computer  
Load the DOS and Windows operating systems to a personal computer  
Use the Windows startup menu to troubleshoot hardware problems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 2

### **ELEC 2400 - Industrial Controls (2)**

This course covers the fundamental concepts of input and output transducer circuits, position and motion detection. These concepts will be studied from an analog and digital point of view.

Prerequisite: ELEC1450, ELEC2000 and ELEC2020 or equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Evaluate photoelectric and temperature transducers
- Explain temperature transducer circuits and motion detection
- Compute linear and rotary velocity and acceleration rates
- Explain the photo interrupter and photo reflector detection systems
- Explain analog and digital position detection
- Explain the binary coded wheel, encoded wheel and increment wheel operations

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 1

### **ELEC 2420 - Telemetry (2)**

This course covers the fundamental concepts of signal interfacing and telemetry circuits in industrial situations.

Prerequisite: ELEC2400

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Evaluate serial and parallel digital to analog conversion
- Evaluate analog to digital frequency conversion
- Examine pulse frequency modulation, pulse amplitude modulation, pulse position modulation and pulse width modulation concepts
- Evaluate single pulse and parallel pulse code modulation
- Examine frequency division multiplexing and time division multiplexing and circuits

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **ELEC 2450 - Regulated Power Supplies (2)**

In this course students will learn how circuits can regulate and control voltages and currents. A variety of practical power supply circuits will be built and tested. Circuits will be designed and evaluated by breadboarding and/or computer simulation software.

**Prerequisite:** ELEC1300 or equivalent

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Analyze automatic current limiting circuits

Analyze direct current to direct current converters

Analyze switching power supplies

Analyze linear regulators

Analyze pulse width modulated regulated power supplies

Analyze feedback regulator with current boosting

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **ELEC 2475 - Electronics Internship (1 - 4)**

This course allows the student to gain on-the-job experience in the Electronics industry. The student is responsible for locating and arranging the internship site. One (1) to four (4) credits can be taken, with each credit requiring 40 hours of time spent on the job. Student performance will be monitored by the instructor and evaluated by the employer. This will be a cooperative training program between Hennepin Technical College and a company. The student will apply competencies learned in the program to an employment-like work experience. Tasks and course goals will be determined by the instructor and the job site supervisor on an individual student basis. All industry internships require you be registered at the college for the internship and have instructor approval.

**Prerequisite:** Instructor approval and completion of at least 50% of your degree or diploma

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

The specific goals of this course will be defined in the 'Internship Agreement' signed by the student, employer and instructor and will be tailored to the experiences available at the internship site

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: SOE: 1-4

## EMSV - Emergency Medical Services

### EMSV 1000 - Introduction to EMS Systems (1)

This is a general introductory course for students planning studies in Emergency Medical Services. Students will learn the history, development, and current model for the delivery of out-of-hospital medical services in the United States. Topics include legal and ethical issues and communication systems.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Summarize the general history of EMS

Describe the role of legislative and regulatory agencies

Explain the components of a modern EMS system

Describe the roles and responsibilities of Paramedic/EMT

Analyze various EMS deployment systems

Explain the basic types of modern ambulance organizations

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1

### **EMSV 1020 - CPR/First Aid (1)**

The student will learn how to: recognize a life threatening emergency; remain calm; how and when to call 911; perform healthcare provider level CPR skills on all age groups including 2 rescuer CPR; assist a conscious or unconscious choking adult, child or infant; use an Automatic External Defibrillator.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Perform basic life support with AED (Automated External Defibrillator) and basic airway management on adults, infants, and children

Value proper infection control techniques and demonstrate the proper use of barrier devices

Perform proper first aid in selected emergencies on adults, infants, and children

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1

### **EMSV 1030 - OSHA 10 First Aid/CPR (2)**

This course is appropriate for employees in healthcare, manufacturing and a variety of industrial settings. OSHA 10 General Industry training provides the knowledge needed for workers to predict, prevent, identify and stop common worksite hazards. In addition, this course will provide the training needed for students to recognize and respond to life threatening emergencies. This includes understanding how to perform Heartsaver First Aid/CPR/AED on all age groups, how to assist conscious or unconscious choking adults, children or infants and how to use an Automatic External Defibrillator. Students must attend all class sessions in order to be eligible for certification.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate the proper use of personal protective equipment

Prepare OSHA record keeping forms

Identify slip, trip and fall hazards

Explain the dangers related to electrical hazards

Recognize fixed and portable ladder safety

Identify the causes and prevention of musculoskeletal and repetitive motion disorder injuries in the workplace

Describe the hazards associated with combustible liquids and compressed gases

Discuss fire prevention, protection and emergency egress safety

Discuss the dangers of unguarded equipment

Perform basic life support with AED (Automated External Defibrillator) and basic airway management on adults, infants, and children

Demonstrate proper infection control techniques and the proper use of barrier devices

Perform proper first aid in selected emergencies on adults, infants, and children

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 0

### **EMSV 1050 - Emergency Medical Responder (First Responder) (3)**

This course uses the new education standards and meets the requirements established by the Minnesota EMS Regulatory Board (MN EMSRB). This course is designed to provide the Emergency Medical Responder (First Responder) at the scene of a Medical or Trauma Emergency with the necessary knowledge and skill to manage patient care until the arrival of ambulance personnel. The course is intended for Law Enforcement, Firefighters, Rescue Personnel, Ski Patrol, Athletic Coaches, School Nurses, Camp Counselors, Special Event Coverage Personnel, Industrial Emergency response teams and other individuals charged with "first response" duties.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Assess the patient condition

Examine the patient for injuries

Evaluate equipment available to package the patient

Manage patients condition under standards of care

Utilize equipment to treat the patient

Communicate effectively with patient and staff

Advocate for the patient

Demonstrate skills necessary for patient care

Identify patient priority

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **EMSV 1070 - Pediatric Education for Prehospital Providers (1)**

This is a course designed for the healthcare provider which covers advanced pediatric assessment and skills. The students will use different assessment skills, and learn how to access, treat, and package the pediatric patient. The course will follow the Pediatric Education for Prehospital Provider (PEPP) standards. Upon successful completion of the program, the students will receive certification as an PEPP provider.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Assess pediatric patient using appropriate assessment algorithm

Provide appropriate stabilization

Prepare patient for transport

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1

### **EMSV 1100 - Emergency Medical Technician - Basic (6)**

This course uses the new education standards and meets the requirements established by the Minnesota EMS Regulatory Board (MN EMSRB). Upon successful completion of the course, passing the class readiness exam and National Registry of EMT Practical Skills exam (additional \$125 fee required), you are then eligible to take the NREMT written exam (additional \$80 fee required). State and National certifications will be issued upon passing these tests. Current EMT certification is a prerequisite for most paramedic programs.

Prerequisite: EMSV1050 and required vaccinations

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify elements involved in a focused trauma assessment a patient

Identify elements involved in a rapid trauma assessment on a patient

Identify elements involved in a medical assessment on a patient

Perform rapid trauma assessment on a patient

Perform focused trauma assessment on a patient

Perform medical assessment on a patient

List the phases of an ambulance call

Demonstrate his/her role and responsibilities as a member of the emergency medical team

Formulate accurate written and oral communication skills in the workplace

Select continuing educational opportunities to maintain professional licensure credentials

Manage effective patient/client care with the use of critical thinking skills  
 Practice emergency medical safety principles in the workplace  
 Practice ethical and legal obligations in the field of emergency medical services

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 4 lab: 2

### **EMSV 1105 - Ambulance Operations (2)**

This course will focus on additional technical and clinical skills that are needed for use to work in the EMS field, but not covered in depth during the EMT-Basic course. Students will have the opportunity to prepare for ambulance work, clinical internships, and future courses in EMS. The course is challenging, and is based on experimental educational principles; students will learn by doing. The class is designed to help transfer classroom learning to field operations. This class is a prerequisite for most paramedic programs. The King Map book required for class and a uniform is required during the class (\$125.00).

Prerequisite: EMSV1100 or current Certified EMT-B and EMSV1130

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Assess patient condition

Chart patient information

Classify patient priority

Demonstrate effective map reading

Demonstrate vehicle safety check

Text and References: A list will be distributed the first day of class.

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lab: 2

### **EMSV 1110 - Lifting Techniques for Health Professionals (1)**

This course will focus on the use of proper body mechanics, lifting techniques, back strengthening exercises and general cardiovascular conditioning necessary for pre-hospital and in-hospital personnel.

Prerequisite: Be in good health and have no lifting restrictions

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Implement procedures for safe lifting
- Demonstrate proper lifting techniques
- Describe causes of back injuries

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 0.5 lab: 0.5

### **EMSV 1115 - Passenger Assistant Technician (1)**

This course meets partial requirements for Special Transportation Services by the Minnesota Department of Transportation (MN DOT). Topics include Passenger Assistance Part I and II, abuse prevention and first aid.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Handle patient/client safely
- Relate Universal Human Rights to specific situations
- Identify psycho-social needs of elderly and disabled individuals
- Demonstrate Minnesota state guidelines for patient/client transports

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1

### **EMSV 1120 - Ambulance Clinical (2)**

Students will participate in the various aspects of an EMT at a major Twin Cities metropolitan ambulance service. This may include Advanced Life Support (ALS). The ride-along clinical is eighty hours.

Prerequisite: EMSV1100 and current State Certified EMT-B

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Adapt to changes in patient condition

Acknowledge patient wishes

Administer appropriate patient therapies

Anticipate patient condition based on critical thinking skills

Communicate effectively with the patient, staff and physician

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: SOE: 2

### **EMSV 1130 - Emergency Vehicle Driving Skills (1)**

This course includes classroom and behind the wheel training for Emergency Medical Services personnel. The course includes basic and advanced driving skills and discussion of Code 3 driving. A driving range is used which includes straight-line braking, control braking, backing, and serpentine.

Prerequisite: 18 years old, and valid driver's license with good driving record

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Adapt to road and weather conditions

Adjust driving skills as needed

Be aware of your driving conditions

Demonstrate safe emergency driving practices

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1

### **EMSV 1136 - Understanding EKGs (2)**

You will review the anatomy and cardiovascular physiology of the heart. Basic understanding and interpretation of arrhythmias are included. Practice of EKG strips identification is covered. Legal and ethical aspects are discussed.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate ability to read 12 lead EKG

Apply electrodes to patient

Assemble all necessary equipment needed

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2

### **EMSV 1140 - CPR Instructor (1)**

In this course, you will acquire the knowledge and skills necessary to fairly and accurately instruct and test students in Basic Life Support CPR procedures. Graduates will receive a successful completion certificate that can be given to a local Training Center (TC) to obtain their American Heart Association BLS Instructor certification.

Prerequisite: Current CPR for Health Care Provider Certificate or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate teaching techniques

Identify learning styles needed

Observe students teaching methods

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1

### **EMSV 1146 - Medical Terminology for EMS/ER Personnel (3)**

You will analyze the construction of medical root words plus use of common medical prefixes and suffixes. Medical abbreviations will be included to assist you in your documentation on Emergency Department (ED) patient records/EMS run sheets and communication with other health professionals.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Classify terms in body functions

Communicate effectively using medical terminology

Explain medical terms

Demonstrate ability to use medical terminology

Describe patient injury or sickness using medical terminology

Explain the patient condition using medical terminology

Identify patient condition using medical terminology

Select treatment using medical terminology

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Online: 3

### **EMSV 1150 - First Responder (3)**

This course is designed to provide the 1st Responder at the scene of a Medical or Trauma Emergency, with the necessary knowledge and skill to manage patient care until the arrival of ambulance personnel. The course is intended for Law Enforcement, Firefighters, Rescue Personnel, Ski Patrol, Athletic Coaches, School Nurses, Camp Counselors, Special Event Coverage Personnel, Industrial Emergency response teams and other individuals charged with `first response` duties. This course meets or exceeds the guidelines set forth by the United States Department of Transportation and the Minnesota EMSRB.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Assess the patient condition
- Examine the patient for injuries
- Follow equipment available to package the patient
- Utilize equipment to treat the patient
- Communicate effectively with patient and staff
- Advocate for the patient
- Demonstrate skills necessary for patient care
- Identify patient priority

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

### **EMSV 1155 - Phlebotomy Techniques (3)**

In this course, you will learn venipuncture and special collection procedures. Quality management and legal issues, specimen collections, documentation and lab procedures will be covered. You will acquire the basic knowledge of the circulatory system as it pertains to phlebotomy. Safety and infection control measures are extensively explored. Clinic lab is included. Scrubs are required.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Assemble equipment necessary
- Communicate with the patient
- Confirm right patient
- Demonstrate skills needed
- Organize equipment
- Perform skills
- Administer treatments
- Analyze procedures and equipment needed

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit

Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 2

### **EMSV 1170 - ER Procedures and Clinical (3)**

This course will provide the student with the necessary skills to assist with various Emergency Dept. (ED) procedures such as IV set up, sterile technique, insertion of catheters, wound cleansing, suturing assistance and other medical procedures used in ED settings. Also included are various orthopedic procedures and use of devices such as: cast set up and removal, splints, crutch sizing and usage. Upon completion of classroom/lab sessions students will participate in a clinical in a ED setting by observing patient care. This will take place in the Emergency Department.

Prerequisite: Instructor approval. Students must be at least 18 years old

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Assemble necessary equipment
- Complete assigned task appropriately
- Communicate with your patient
- Perform tasks assigned
- Clean used equipment
- Demonstrate skills
- Identify equipment needed
- Modify equipment and procedures for patient
- Organize equipment

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 SOE: 1

### **EMSV 1180 - Principles of Basic Life Support for Healthcare Providers (1)**

This course is intended for students in healthcare-related programs needing CPR certification, as well as students desiring more depth in their knowledge in Basic Life Support (BLS). The student will receive an American Heart Association card showing certification as a provider of BLS for Healthcare Providers. Anatomy, physiology and pathophysiology as it relates to heart disease and stroke will be discussed. Certification in adult, child, and infant Cardiopulmonary Resuscitation (CPR) and choking will be provided using the latest guidelines provided by the American Heart Association. Personal and victim safety, ethical/legal

considerations, and special resuscitation situations will also be discussed.

Prerequisite: EMSV1020 OR Current CPR certification OR taken currently with EMSV1100

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Assess patients

Differentiate between treatment options

Utilize skills for treatment

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1

### **EMSV 1190 - Intravenous (IV) Access (1)**

This course is designed to teach the principals of Intravenous Access, along with assessing the patient who will need intravenous access and fluid resuscitation.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Assess the patient for intravenous access and fluid resuscitation

Provide effective care and technique of the venipuncture

Prepare equipment needed to perform the venipuncture

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 0.5 lab: 0.5

**EMSV 1195 - International Trauma Life Support (ITLS) (1)**

This is a course designed for the prehospital provider not covered in the EMT course for trauma assessment and skills. The student will use the rapid trauma assessment algorithm, learning how to assess, treat and package the patient. We will be following the ITLS standards and upon successful completion of this course the student will receive certification as an ITLS provider. \$25.00 fee required for purchase of a certification card.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Assess traumatic patient using the rapid trauma assessment algorithm  
Provide appropriate stabilization  
Prepare patient for transportation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1

**EMSV 1225 - Advanced Cardiac Life Support (ACLS) for EMT (1)**

EMTs can find themselves in critical situations that require advanced cardiac life support (ACLS). Although EMTs are not trained to provide advanced-level skills, there is much they can do to improve the quality of management, and thus the patient's chance for survival by understanding ACLS and facilitating its administration by ALS providers. Teamwork is the cornerstone of ACLS care. Advanced life support can only function on a foundation of solid, ongoing basic life support practices. As such, an understanding of the principles of advanced life support will enhance the ability of EMTs to work in collaboration to increase the survival rates of patients. Most importantly, better teamwork will improve care not only during cardiac arrests, but also during all emergency calls.

Prerequisite: Healthcare Provider Basic Life Support

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Assess cardiac patient using the appropriate assessment algorithm  
Provide appropriate stabilization  
Prepare patient for transportation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1

### **EMSV 1260 - First Responder Refresher (1)**

First Responder Refresher contains 16 hours of continuing medical education which meets The State of Minnesota and National Registry standards to recertify as a First Responder. This 16 hours contains mostly lecture and some hands on demonstration.

Prerequisite: Minnesota First Responder who is current in their certification

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Assess patients who may need medical help

Demonstrate proper medical procedures

Identify patient priority

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1

### **EMSV 2001 - Role Advocacy and Outreach (3)**

This is an introduction to the role and function of the Community Paramedic (CP). The student will learn about the Community Paramedic's specific role and function as a member of the health care team and part of the community. The student will identify the components of the role, define it, and explain the "scope of service" for the position of CP. Additionally, the student will learn about the role of the CP as an advocate for clients in the community.

Prerequisite: Instructor approval and currently certified as an Emergency Medical Technician Paramedic (EMT-P) and have two (2) years of full-time service as an EMT-P, or its part-time equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Recognize the "scope of practice" of the Community Paramedic

Explain the definition of health from a community perspective

Link communities with health and social service systems

Outline methods on how to use health care and social service systems

Articulate needs and perspectives of the community to health and social service systems

Describe how literacy levels can impact health  
 Identify social determinants of health  
 Develop a plan to address social determinants of health in the community

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **EMSV 2005 - Community Assessment (2)**

This course is designed to introduce the role of the Community Paramedic (CP) as a member of the health care team in community assessment. The student will map the community health care services, describe the demographics of the community and assess their impact on the health of the clients. Additionally, the student will gain understanding of community health services in order to give advice on health care needs in the community.

Prerequisite: Instructor approval and EMSV2001

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Map community health care systems

Understand community health services

Analyze community health resources

Document community health resources

Identify the health and social needs in underserved communities

Describe demographics of the community

Identify effects of demographics on the health of the community

Describe quantitative data as it relates to the health of the community

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2

### **EMSV 2011 - Care and Prevention Development Strategies (4)**

This course will introduce the responsibilities of the Community Paramedic (CP) for gathering appropriate patient/client information and maintaining accurate records, including documentation of encounters between the CP and the patient/client. The student will also learn about the CP's role in assessing health care needs and appraising health care conditions.

Prerequisite: Instructor approval and EMSV2001

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Select culturally appropriate health information to provide to citizens and health care providers for promoting wellness

Assess a health care situation accurately

Complete appropriate documentation and recording

Explain health promotion and disease prevention

Appraise health conditions through health screenings and healthcare information

Recommend appropriate preventive services

Describe insurance programs and other special community programs specific to the Community Paramedic's (CP's) jurisdiction

Analyze communication between provider and citizens to improve quality of care

Apply legally-mandated reporting requirements

Develop effective strategies for communication between individuals/groups and the community health care system

Explain the liability of the CP position, jurisdiction or supervision and malpractice insurance

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 4

### **EMSV 2025 - Care Coordination Practicum (1)**

This course will provide the student with clinical training under the supervision of a medical director, physician, nurse practitioner, physician's assistant or public health provider. The student will recommend appropriate health and/or social care professionals for the patient, prioritize jobs, and assist the patient in following an established Plan of Care. Prior to beginning this clinical experience the student will determine appropriate clinical competencies with guidance from the Medical Director and obtain a Memorandum of Understanding for each clinical site. The student's placement in the clinical is based on qualifications and past training and experience.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Evaluate care for appropriateness related to delivery location

Recommend the most appropriate health and/or social care professional

Provide follow-up services according to established care plan

Demonstrate competency in skill areas required for clinical interventions

Develop safe treatment and referral programs through policies and protocols

Demonstrate competency needed to share public information related to EMS prevention programs

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

Special Accommodations:

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Credit Details: SOE: 1

### **EMSV 2035 - Core Concepts in Primary Care (1)**

This course will provide the student with clinical training under the supervision of a medical director, physician, nurse practitioner, or physician's assistant and will include instruction on desired competencies and assessment of Primary Care patients. The student's placement in the clinical is based on qualifications and past training and experience.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Evaluate care for appropriateness related to delivery location

Prioritize jobs to ensure appropriate emergency response

Recognize limits of the Community Paramedic's (CP's) competence

Demonstrate competency in skill areas required for clinical interventions

Demonstrate competency needed to share public information related to EMS prevention programs

Explain the role of the CP in the community multi-disciplinary team

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: SOE: 1

### **EMSV 2040 - Needs Assessment Implementation Internship (3)**

This course will provide the student with clinical training under the supervision of a medical director, physician, nurse practitioner, physician's assistant or public health provider. The student will recommend appropriate health and/or social care professionals for the patient, prioritize jobs, and assist the patient in following an established Plan of Care. Prior to beginning this clinical experience the student will determine appropriate clinical competencies with guidance from the Medical Director and obtain a Memorandum of Understanding for each clinical site. The student's placement in the clinical is based on qualifications and past training and experience.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Provide patient-focused care
- Evaluate care for appropriateness related to delivery location
- Recommend the most appropriate health and/or social care professional for the patient
- Prioritize jobs to ensure appropriate emergency response
- Provide appropriate health care advice and preventive services to both patients and other groups and individuals
- Provide follow-up services according to established care plan
- Recognize limits of the Community Paramedic's (CP's) competence
- Demonstrate competency in skill areas required for clinical interventions
- Develop safe treatment and referral programs through policies and protocols
- Demonstrate competency needed to share public information related to EMS prevention programs
- Explain the role of the CP in the community multi-disciplinary team
- Assist in emergency preparedness for the community

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: SOE: 3

## ENGC - Engineering CAD Technology

### ENGC 1011 - Engineering Drawing (3)

This is a basic engineering drawing course. It is designed to give the student the necessary skills to draw a mechanical part. Sketching, orthographic projection, auxiliary views, sectional views, and pictorial representation will be covered.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Explore drafting careers
- Select CAD/CAM components
- Investigate drafting office equipment
- Sketch one-view drawing on grid-paper
- Create geometric constructions
- Construct curved-line drawings
- Compare first-angle and third-angle projection methods
- Prepare three-view drawings
- Determine minimum necessary views to describe a part

Draw auxiliary views  
 Draw secondary auxiliary views  
 Create offset cross-sections  
 Select appropriate section views for a given part  
 Explain three axonometric drawing representations  
 Create perspective drawings

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 2 lab: 1

### **ENGC 1021 - Working Drawings (3)**

This course introduces the student to the techniques, standards and methods used to place dimensions onto a production drawing. Methods for calculating tolerance, placing the tolerance onto a drawing and the effect of tolerancing on the dimensioning process is also covered. Drafting shortcuts such as tabulated drawings. Multiple detail drawings on a single sheet and assembly drawings will be covered as well. The student will also apply the drawing revision process.

Prerequisite: One of the following: ENGC1100, ENGC1160, ENGC1250, or ENGC2100

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Create multiview detail drawings
- Select dimensioning method appropriate for a working drawing
- Select appropriate drafting shortcuts
- Determine proper fits and tolerances
- Create a drawing checklist
- Specify surface finishes on drawings
- Compare screw thread forms
- Select standard threaded fasteners for assemblies
- Select miscellaneous fasteners for assemblies
- Compare properties of common manufacturing materials
- Select material for a mass-production part
- Compare casting and forging processes
- Create tabulated drawings
- Create multiple sheet detail drawings
- Differentiate types of assembly drawings
- Apply drawing revision process

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **ENGC 1041 - Geometric Dimensioning & Tolerancing (3)**

This course is designed to give the student a fundamental understanding of the terms, symbols and principles relating to controlling geometric variations of manufactured parts. Controls include tolerances of forms, orientation and position.

Prerequisite: MACH1056 or ENGC1011 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Determine engineering drawing components

Contrast geometric dimensioning and coordinate tolerancing

Explain modifiers and symbols of geometric dimensioning and tolerancing

Apply rules and terms of geometric dimensioning and tolerancing

Interpret form controls

Use datum system

Interpret orientation controls

Interpret tolerance of position controls

Interpret concentricity controls

Interpret symmetry controls

Interpret runout controls

Interpret profile controls

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **ENGC 1050 - Additive Manufacturing (3)**

This course is an introduction to additive manufacturing. Students will explore different types of additive manufacturing processes, create prototypes using fused deposition modeling (FDM), assemble a 3D printer, and participate in a guided design experience. Persons involved with mechanical engineering, research and development, CAD and other related fields should consider taking this course. This course would also benefit inventors and model makers by developing the skills to produce proof of concept models and create replacement parts utilizing 3D printing technologies.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:  
 Demonstrate safety procedures related to model making  
 Compare types of additive manufacturing techniques  
 Compare slicing software options  
 Design parts with Computer Aided Design (CAD) software  
 Implement reverse-engineering strategies  
 Produce 3D selfie  
 Modify 3D printer firmware  
 Assemble a 3D printer from a kit  
 Investigate properties of 3D printer filament  
 Troubleshoot 3D printing problems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.  
 Brooklyn Park Campus - 763-488-2477  
 Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 2

### **ENGC 1060 - Design for Additive Manufacturing (3)**

This course will examine best practices for producing prototypes with additive manufacturing. Topics covered include creating models larger than 3D printer volumes, designing joints for 3D printed objects, identifying and correcting errors in triangulated meshes and 3D scanning.

Prerequisite: Choose one of the following: ENGC1160, ENGC1250, ENGC2100, MMVP1545

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:  
 Compare limitations of additive manufacturing, subtractive manufacturing and mass production  
 Compare file formats for 3D printing  
 Correlate model and printer coordinate systems  
 Determine minimum feature size for quality prints  
 Investigate techniques to minimize support structures  
 Examine software options affecting print surface quality  
 Plan subdivisions in models larger than print volumes  
 Generate compound models using solid model primitives  
 Generate solid models using multiple sketched features  
 Design print-in-place joints  
 Prepare an object for 3D scanning  
 Generate a 3D scan of an object  
 Combine 3D scan and engineered object  
 Resolve triangulated mesh problems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

**Credit Details:** lecture: 2 lab: 1

### **ENGC 1070 - Additive Manufacturing Finishing Techniques (3)**

This course covers finishing techniques for models created with additive manufacturing. Model joining techniques such as threaded fasteners, adhesives, plastic welding, and interlocking joints will be discussed as well. Model smoothing and covering will be explored as well.

**Prerequisite:** Instructor approval or ENGC1050 and one of the following: ENGC1160, ENGC1250, ENGC2100, MMVP1545

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Apply safety procedures

Design purchased parts into 3D printed parts

Compare surface treatments

Apply material removal techniques

Construct models utilizing adhesives

Construct models utilizing plastic welding procedures

Build assemblies using fasteners

Apply plastic filler to models

Demonstrate proper painting techniques

Produce molds from 3D printed parts

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

**Credit Details:** lecture: 2 lab: 1

### **ENGC 1075 - Careers in Manufacturing (2)**

This course introduces students to the skills, technology, work environment, potential salary, and job placement for occupations in the fields of Machine Tool Technology, Mechatronics (Automation Robotics, Electronics, Fluid Power), Welding and Metal Fabrication, Plastics Engineering Technology, and Engineering CAD (Computer-Aided Design) Technology. This dynamic course includes industry-specific tours, as well as hands-on projects that familiarize students with field practices and shop safety.

A technical aptitude assessment will be administered to assist students in determining if a career in manufacturing fits with their interests and abilities. The steps for enrolling in a program at HTC will be reviewed.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the characteristics of a career in Machine Tool Technology

Describe the characteristics of a career in Mechatronics

Describe the characteristics of a career in Welding and Metal Fabrication

Describe the characteristics of a career in Plastics Manufacturing Technology

Describe the characteristics of a career in Engineering CAD Technology

Apply shop safety principles

Determine the manufacturing career fields best suited to individual attributes and interests

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **ENGC 1100 - AutoCAD (4)**

This course consists of setting up a drawing environment, creating geometric shapes, creating text, dimensioning drawings, manipulating and editing displays, plotting drawings, and retrieving entity data. Aspects of file management are also covered. The student will get 'hands-on' instruction using the latest release of AutoCAD.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify the components of a CAD system

Draw basic shapes

Set up a drawing environment

Organize drawings with layers

Manipulate the display of drawings

Use plotting options to obtain a scaled print

Apply object snaps to drawing elements

Create geometric constructions

Contrast text creation methods

Prepare drawing tables

Modify existing drawing geometry

Obtain drawing information

Compare polylines, multilines and splines

Create dimensions on a drawing

Modify dimension styles

Apply cross-hatching to drawings

Create drawing symbols (blocks)

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 4

### **ENGC 1160 - Inventor (4)**

This course is designed to educate the student in basic part and assembly modeling techniques. Students will explore topics such as, the Autodesk Inventor interface, sketching tools, part modeling tools, assembly modeling tools, the Design Assistant, creation of drawing views, working drawings and creating bills of materials.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain design intent

Design a basic parametric modeling procedure

Compose a model history tree

Customize modeling environment

Check fits and allowances

Construct solid model geometry

Create a detail drawing

Construct an assembly model

Reorganize model tree geometry

Apply placed features

Add parametric constraints

Amend unresolved model geometry

Construct datums and work planes

Differentiate Inventor file types

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 4

### **ENGC 1201 - Industrial CAD Project (3)**

This course is designed as an industrial simulation. The student will be assigned a project and be expected to make a complete set of CAD drawings and product documentation.

Prerequisite: MACH1056 or ENGC1011 and one of the following: ENGC1100, ENGC1160, ENGC1250, or ENGC2100

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Create component drawings
- Document drawing revisions
- Create tabulated drawings
- Create purchased part drawings
- Create photo drawings
- Create assembly drawings
- Create bill of materials
- Capture design intent of product
- Critique design intent of product
- Recommend design alternatives
- Create drawing portfolio
- Simulate industry environment

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **ENGC 1250 - SOLIDWORKS I (4)**

This course is designed to give students hands-on experience using SOLIDWORKS three-dimensional Parametric CAD software. SOLIDWORKS is a mechanical design software that takes advantage of the familiar Microsoft Windows graphical user interface. The students will use the software to create three-dimensional solid parts and assemblies. The students will also create orthographic projections from the solid geometry. Additive manufacturing may be presented in this course.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Utilize user interface
- Create document templates
- Create fully defined sketches
- Create extruded features

- Create revolved features
- Use Hole Wizard
- Apply engineering features (chamfers, rounds, shells, etc.)
- Create assemblies
- Create detail drawings
- Create assembly drawings with bill of materials
- Utilize datum features
- Create sweep features
- Create loft features
- Employ bottom-up and top-down assembly methodology
- Use sheet metal features
- Create design tables
- Capture design intent of a project

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 4

### **ENGC 1255 - SOLIDWORKS II (4)**

This course is designed to give additional hands-on experience using SOLIDWORKS three-dimensional Parametric CAD software. The students will use the software to create advanced features such as multibody solids, sweeps, lofts, and fillets. Additionally, the students will model sheet metal parts, convert solid parts into sheet metal parts, and model sheet metal in context of an assembly. Other topics that may be introduced at the teacher's discretion include file management, customizing the SOLIDWORKS interface, PhotoWorks, Mold Tools, weldments, and surface modeling.

Prerequisite: ENGC1250

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Create multibody solids
- Organize multibodies in parts and assemblies
- Explore sweep options
- Lay out sweep construction geometry
- Construct a lofted feature
- Compare swept and lofted features
- Create advanced fillets
- Create a deform feature
- Apply surface modeling techniques
- Construct injection mold cavity
- Design with sheet metal features
- Apply advanced sheet metal features
- Derive sheet metal parts from solid models
- Create sheet metal features in context of a top-down assembly

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 4

### **ENGC 1260 - SolidWorks Certification Review (1)**

This course will help prepare students to complete the Certified SolidWorks Associate Exam by creating and examining part and assembly files in a manner consistent with the format of the CSWA exam.

Prerequisite: Concurrent enrollment in or completion of ENGC1255 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain SolidWorks user interface components

Create solid models

Select assembly modeling strategy

Manipulate part orientation

Create drawing views

Apply drawing annotations

Obtain model and assembly mass properties

Use reference geometry in models and assemblies

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 1

### **ENGC 1265 - Certified SolidWorks Associate Exam (0)**

The Certified SolidWorks Associate Exam measures the knowledge and competency of SolidWorks software. This 0 credit course will measure the skills of those who are seeking HTC's SolidWorks Operator Certificate and employment using SolidWorks software. The test is given by SolidWorks Corporation and is proctored at Hennepin Technical College. Students that pass the CSWA-Academic Exam receive an electronic certificate listing their certification ID and educational institution name. The certification ID can be verified by schools and employers.

Prerequisite: ENGC1260

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following goals will be addressed in the course.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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### **ENGC 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A 'Specialized Lab Training Agreement' must be signed by the student and the instructor and submitted to the registrar at the time of registration.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Course goals addressed will depend on the area and type of specialization the student wishes to study, and will be defined in the "Specialized Lab Training Agreement".

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lab: 1-4

### **ENGC 2001 - Mechanical Design (3)**

This course covers several design topics including the nature of design, fastener selection, mechanical drive selection, bearing

selection, fixture design, and linkages. The student will gain experience selecting these components from vendor information and solving design/layout drawing problems.

Prerequisite: ENGC1021 and one or more of the following: ENGC1160, ENGC1250, ENGC2100

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Design a product using a defined design process

Calculate power requirements

Select power transmission components

Specify bearings for drive assemblies

Design cams

Create linkage drawings

Select threaded fasteners

Select non-threaded fasteners

Select springs

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: Lecture: 3

### **ENGC 2011 - Special Fields of Drafting (3)**

This is a basic engineering drawing course. It is designed to give the student the necessary skills to draw a variety of type of industrial drawings including weldments, cams, sheet metal developments, piping drawings, jigs and fixtures, and electrical drawings. This course will also introduce the student to the design process.

Prerequisite: MACH1056 or ENGC 1011 and one of the following: ENGC1100, ENGC1160, ENGC1250, or ENGC2100

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Interpret welding symbols

Create a weldment drawing

Utilize an existing design process

Compare assembly considerations in the design process

Explore project management tasks

Differentiate cams, linkages, and actuators

Design cam geometry

Develop transition pieces by triangulation

Generate sheet metal development drawings

Produce orthographic piping drawings

Create isometric piping drawings

Compose drill jigs

Design milling fixtures

Lay out electrical schematic diagrams

Create wiring diagrams

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **ENGC 2050 - AutoCAD Upgrade Training (1)**

This course covers only the changes, enhancements and additions that have occurred with the latest release of the AutoCAD software package.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Use new features of the currently available software

Explain differences between old and new versions of the software

Evaluate time saving features of the new software

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1

### **ENGC 2075 - Engineering Design Project (3)**

This course will introduce the student to the mechanical design process. The student will create prototypes using 3D printers, laser cutters, and milling machines. Maintaining an engineering notebook will be taught throughout the course. Students will work in teams to solve given design problems and work independently to discover design problems, define product characteristics, generate concepts, choose the best concept, and produce a prototype. Students will showcase their final idea to the class.

Prerequisite: MACH1056 or ENGC1011 and one of the following: ENGC1100, ENGC1160, ENGC1250, ENGC2100, or an approved three-dimensional CAD application

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe mechanical design process
- Create engineering specifications
- Generate ideas to meet engineering specifications
- Evaluate the quality of ideas generated
- Design a product for a specific manufacturing process
- Generate prototypes using a 3D printer, laser cutter, and milling machine
- Program a microcontroller
- Apply mathematic principles to solve problems
- Develop team collaboration skills
- Maintain an engineering notebook

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **ENGC 2100 - Basic Creo Parametric (4)**

This course is designed to give students hands-on experience using Parametric Technology's fully associative mechanical design automation software Creo Parametric (formerly Pro/ENGINEER). The student will use this feature-based, solid modeling program to create parts, assemblies, and drawings. Additive manufacturing may be introduced in the course as well.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Utilize user interface
- Create internal and external sketches
- Create extruded features
- Create revolved features
- Utilize datum features
- Apply engineering features (holes, chamfers, rounds, ribs, shells, etc.)
- Create blend features
- Create sweep features
- Create patterns
- Manipulate features
- Create detail drawings
- Create assemblies
- Create assembly drawings
- Apply model cosmetics
- Implement relations
- Capture design intent of a project

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 4

### **ENGC 2110 - Advanced Creo Parametric (4)**

This course is designed to increase the productivity of the novice Creo Parametric user. This project-based course covers advanced geometry creation topics of Creo Parametric (formerly Pro/ENGINEER) including variable section sweeps, blends, advanced helical sweeps, and advanced patterns. Design intent topics covered include datum creation, family tables, and relations. Assembly topics covered include repeat and replace components, mechanism and motion constraints, and flexible models. Student will use surface modeling to solve problems that basic features cannot and will develop core sheet metal modeling skills.

Prerequisite: ENGC2100 or equivalent or three months' work experience

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply advanced sketcher tools

Create 3D sweep trajectories

Create advanced blends

Create advanced helical geometry

Create advanced sweeps

Employ advanced non-planar patterns

Apply bend features

Create surface features

Create high-quality boundary blend surfaces

Create solid models with surfacing tools

Manipulate geometry using parameters and relations

Create family tables

Create interchange assemblies

Assign component flexibility

Use advanced assembly commands

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 4

### **ENGC 2200 - Engineering CAD Technology Internship (3 - 4)**

The student will receive 40 hours of on-site instruction in the drafting department of a `host` company for each credit for which he/she has registered. The student may register for 3 or 4 credits. The student will work in an industrial drafting environment on learning objectives mutually agreed to by instructors and a host-business. The student is responsible for finding and setting up the internship position prior to registering for the course. Student performance will be monitored by the instructor and evaluated by the employer.

Prerequisite: Instructor approval and prior completion of 50 percent of the Engineering CAD Technology program and an internship position in a host company

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

The specific goals of this course will be defined in the "Internship Agreement" signed by the student, employer, and instructor and will be tailored to the experiences available at the internship site.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: SOE: 3-4

## **ENGL - English**

### **ENGL 0901 - Reading Techniques (3)**

This course is designed for students who need to improve basic reading skills necessary for success in college course work. Reading Techniques will focus on the development of vocabulary strategies and literal comprehension techniques.

Prerequisite: Qualifying score on reading assessment test OR ESOL0821, ESOL0822 and ESOL0823. Basic computer literacy skills required

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Manage the college reading process

Develop test taking skills for objective tests in the academic and technical college setting

Apply text marking techniques to academic and technical readings

Develop skimming and scanning techniques for academic and technical readings

Determine word meaning from context clues in academic and technical readings

Detect academic and technical word meaning from word parts

Identify dictionary meaning that matches context within academic and technical vocabulary  
Expand general, academic and technical vocabulary including figurative and connotative meanings  
Identify implied and stated main ideas in academic and technical material Identify details in academic and technical material  
Identify patterns of organization in academic and technical material Categorize transitions in academic and technical material

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 3

### **ENGL 0921 - Applied Reading Techniques (3)**

This course is structured to give students an opportunity to apply the basic vocabulary and comprehension skills learned in Reading Techniques. In addition, the course will focus on higher level thinking skills including drawing inferences and reading critically.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901 with a grade of "C" or better. Basic computer literacy skills required

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Manage reading and studying of college textbook material

Summarize academic and technical readings objectively

Paraphrase academic and technical readings objectively

Adapt college reading process to task

Apply word recognition strategies to college level academic and technical vocabulary

Acquire college level academic and technical vocabulary words

Infer meaning from explicit and implied college level text information

Draw conclusions from explicit and implied college level text information

Apply college reading strategies to informational, expository, and persuasive text

Apply critical reading skills to college level text

Construct meaning from college level text

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

**ENGL 0930 - Fundamentals of Writing I (4)**

Writing is an indispensable element for successful communication in work and college settings. This course is designed for students who need to develop essential skills for using Standard American English as a mode of written expression in college. Students in this course will use the standards of American Written English to explore and produce writing in many different modes, moving from paragraphs and summaries to short essays.

Prerequisite: Qualifying score on writing assessment test OR ESOL0831 with a grade of "C" or better and the ability to word process simple documents. Basic computer literacy skills required

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Write grammatically correct sentences of varying patterns

Correct mechanical errors in written documents

Write unified paragraphs with appropriate transitions

Analyze audience, purpose, tone, and stylistic technique in various written documents as models for persuasive and informative writing

Write documents for a clear audience and purpose

Write summaries from various sources

Write short essays

Demonstrate the writing process

Distinguish between main ideas and supporting ideas

Write topic sentences that address purpose and audience

Write thesis statements that reflect purpose and mode

Develop topics with substantive specific details and examples

Incorporate secondary sources

Cite secondary sources appropriately

Demonstrate effective real-time writing

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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**Campus:**

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Credit Details: Lecture: 4

### **ENGL 0960 - Fundamentals of Writing II (4)**

This course is designed for students who are familiar with the basic rules of Standard American Written English, but who are still building their skills at formulating and supporting their ideas in longer written formats. This course will expose students to the broad range of writing they may encounter at the college level, using a variety of essay development strategies and writing contexts, with special attention to audience and purpose. Students will develop their ability to identify and correct common sentence-level errors in their own writing. In addition, students will be introduced to basic methods for incorporating ideas of others into their writing, as well as thinking and reading critically.

Prerequisite: Qualifying score on writing assessment test OR ENGL0930 or Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply different writing styles for different writing situations

Employ a writing process involving invention, outlining, drafting, revision, and editing

Demonstrate coherence and unity in real-time writing

Demonstrate coherence and unity in process writing

Address specific audiences in a variety of writing contexts

Present focused ideas in writing, using relevant evidence

Analyze the ideas of others

Apply basic research skills

Integrate the ideas of others in writing

Cite secondary sources appropriately in context

Revise texts to make them comprehensible for specific audiences and writing contexts, using Standard Edited American English

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Credit Details: Lecture: 4

### **ENGL 1007 - Writing for the Trades (3)**

The focus of this non-MnTC college-level course will be on creating job seeking and workplace documents, presentations, and other written communication that include appropriate information, language, and tone for specific audiences and contexts, using appropriate technologies and the conventions of Standard Edited American English. Focus areas will include a combination of the following: descriptions, summaries, work orders, career search correspondence (e.g. job search engines, internship/application letters, resumes, etc.), workplace letters and emails, text messages, and presentations.

Prerequisite: Recommended: Qualifying score on writing assessment test OR ENGL0960 or Instructor Approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Determine the needs of specific audiences in specific writing situations

Describe an observation or sequence of events in concise and accurate detail

Summarize information and data

Design job seeking and workplace documents appropriate for specific audiences and writing situations  
 Incorporate appropriate information and language based on audience needs  
 Use the writing process, including an accelerated writing process, to compose and refine effective professional documents  
 Use technology competently to create job-related workplace correspondences  
 Use technology competently to create presentations  
 Create graphics that support text  
 Apply the conventions of Standard Edited American English to all written documents

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.  
 Brooklyn Park Campus - 763-488-2477  
 Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

### **ENGL 1021 - Essay Fundamentals (3)**

This writing course provides instruction designed to prepare students for college-level writing courses. Students will learn conventions and techniques for clear written communication, using a variety of essay development strategies and writing contexts, with special attention to audience and purpose. Students will develop their ability to identify and correct common sentence-level errors in their own writing. In addition, students will be introduced to basic methods for incorporating ideas of others into their writing, as well as thinking and reading critically. This course is also offered in a Fast Track version, which enables students to take ENGL1021 and ENGL2121 in a single semester.

Prerequisite: Qualifying score on writing assessment test OR ENGL0930 with a grade of "C" or better. Basic computer literacy skills required

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Use different writing styles for different rhetorical situations

Employ a writing process involving invention, drafting, revision, and editing

Create texts that demonstrate coherence and unity in real-time writing

Create texts that demonstrate coherence and unity in process writing

Present focused ideas in writing, using relevant evidence

Analyze the ideas of others

Integrate the ideas of others in writing

Revise texts to make them comprehensible for specific audiences and writing contexts, using Standard Edited American English

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 3

### **ENGL 1026 - Writing for Careers (3)**

This course provides an introduction to a variety of documents commonly used in the workplace. Course emphasis is on planning, organizing, and writing effective workplace and technical documents using effective writing skills. Specific types of documents may include, but are not limited to e-mails, memos, letters, short reports, and web documents.

Prerequisite: Qualifying score on writing assessment test OR ENGL0930. Basic computer literacy skills required

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Determine the needs of specific audiences

Determine the purpose of a document

Determine the appropriate type of document for a certain situation

Write effective workplace documents

Follow standard formatting guidelines for common workplace documents

Use language appropriate for the audience

Use layout techniques to enhance the meaning of the text

Create graphics that support the text

Use appropriate organizational strategies for different writing situations

Apply rules of Standard Edited American English

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **ENGL 1060 - Food in Literature and Film ()**

This course will introduce students to stories about food and the environments in which it grows, feeds, entertains, communicates, creates community, and becomes art. As students analyze the intersections between food and diverse stories from local and global voices, including some of the newest voices on the topic of food and the environment, they will consider the major themes that emerge. They will also consider and discuss their own stories in relationship to those of others.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Examine the role of food in oral, verbal, and visual storytelling

Demonstrate awareness of the variety of food narratives

Analyze the elements of storytelling techniques used to engage the reader

Identify themes that emerge from food narratives

Analyze food narratives as expressions of individual and human values within historical, cultural, and environmental contexts that shape them

Discuss personal connections, reactions, and stories in relation to themes about food

Identify prominent names in contemporary stories about food and environment

Articulate environmental and natural resource issues that emerge from the narratives presented in text and film, as well as possible solutions to them

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: Lecture: 3

MnTC Goal Areas: 6 & 10.

### **ENGL 1070 - Technical Writing (3)**

This course emphasizes communication of technical information in documents and reports. Students will gather, document, and communicate information with a focus on clarity and accessibility. Students will gain experience with a variety of technical writing forms (technical descriptions, progress reports, incident reports, instructions, summaries) and at times integrate visuals appropriate to specific audiences. They will also gain practice in professional email strategies, oral presentation of the information they have documented, and strategies for applying concepts to career search documents and online profiles. Throughout the course, they will become familiar with current technology trends in communication.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 AND qualifying score on writing assessment test OR ENGL0960

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Use the writing process to compose effective technical documents

Analyze the needs of specific audiences in specific writing situations

Identify intercultural issues in technical writing

Select information appropriate for audience

Design technical documents appropriate for specific audiences and writing situations

Analyze sources for accuracy and relevance

Apply conventions of technical documents to original compositions

Analyze technical writing samples for effectiveness

Apply the conventions of Standard Edited American English to all written documents

Use technology competently when composing technical writing

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: Lecture: 3

MnTC Goal Areas: 1.

### **ENGL 1080 - Professional Writing (3)**

This course emphasizes the interpersonal and group communication aspects of workplace writing. Students will strengthen their writing skills using appropriate tone for a variety of audiences and contexts. They will gather, document, and share information with a focus on establishing, building, and maintaining internal and external workplace relationships. In doing so, students will write a variety of emails, reports, letters, text messages, presentations, online career search documents and profiles, and in the process will become familiar with current technology trends in workplace communication.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 AND qualifying score on writing assessment test OR ENGL0960

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Use the writing process to compose effective professional documents

Write professionally to initiate, maintain, and strengthen effective workplace communication and relationships

Analyze the needs of specific audiences in specific writing situations

Identify intercultural issues in professional writing

Select information appropriate for audience

Design professional documents appropriate for specific audiences and writing situations

Analyze sources for accuracy and relevance

Apply conventions of professional writing to original compositions

Analyze professional writing samples for effectiveness

Apply the conventions of Standard Edited American English to all written documents

Use technology competently when composing technical documents

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Credit Details: Lecture: 3

MnTC Goal Areas: 1.

### **ENGL 1100 - Writing and Research (4)**

This course emphasizes the process of writing expository and persuasive essays using effective writing skills and a variety of research techniques. Students will also gain skills in critical reading and logical reasoning.

Prerequisite: Qualifying score on writing assessment test OR ENGL0960 with a grade of "C" or better and Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Use the writing process to compose academic essays
- Apply the conventions of academic writing
- Critically evaluate sample essays
- Analyze the needs of different types of audiences
- Select essay content based on audience need and appeal
- Demonstrate effective real-time writing
- Locate academic research sources
- Evaluate sources for accuracy, appropriateness, and relevance
- Synthesize information from various sources with original ideas
- Cite sources using a recognized style
- Identify elements of logical arguments
- Avoid logical fallacies
- Create coherent arguments
- Apply the conventions of Standard Edited American English to all written documents
- Use technology competently in the writing process

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 4

MnTC Goal Areas: 1.

**ENGL 1250 - Short Form Composition and Reporting (4)**

This course emphasizes both process and real-time writing. Students will develop the ability to accurately produce on-the-spot writing for a variety of occasions that call for an accelerated writing process. This may include summary, reaction, analysis, evaluation, and reporting. Students will also develop more extensive pieces that incorporate essential skills of library literacy, source evaluation, and source integration. Throughout the course, students will sharpen their observation skills, awareness of audience and purpose, and critical thinking.

Prerequisite: Qualifying score on writing assessment test OR ENGL0960 with a grade of "C" or better and Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Employ the writing process, both accelerated and extended
- Produce effective real-time writing
- Compose academic paragraphs, short essays, and reports
- Incorporate appropriate information and language based on audience need
- Document information clearly and accurately using concrete description
- Analyze fact versus opinion
- Describe a series of events in clear, precise, and accurate order
- Write in both the active and passive voices
- Locate academic research sources
- Evaluate sources for accuracy, credibility, appropriateness, and relevance
- Synthesize information from various sources

Create APA in-text citations and reference entries  
Utilize technology competently in the writing process  
Apply the conventions of Standard Edited American English to all written documents

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 4

MnTC Goal Areas: 1.

### **ENGL 1300 - Introduction to Creative Writing (3)**

This introductory course will provide a broad overview of creative writing. Students will become familiar with the contemporary conventions of various genres. Emphasis will be on two or more of the following: short stories, creative nonfiction, poetry, and plays. Students will study the work of published authors to learn about techniques employed by experienced writers and will complete short writing assignments that demonstrate a variety of creative writing techniques as well as a revised collection of creative work in the genre of their choice.

Prerequisite: Qualifying score on writing assessment test OR ENGL0960 with a grade of "C" or better and Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify terms associated with creative writing

Recognize creative writing styles

Use figurative language

Use creative writing techniques in multiple genres

Identify similarities among creative writing genres

Identify differences between creative writing genres

Identify effects of creative writing techniques on audiences

Analyze structure in published works

Identify plot through the critical reading of texts

Apply editing techniques

Analyze the meaning of texts

Identify point of view

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 1 & 6.

## ESOL - English for Speakers of Other Languages

### ESOL 0821 - Grammar/Writing II (5)

Develop basic writing skills. Students work on grammar, short paragraphs, and editing, using the standards of written American English. Classes utilize a computer lab to practice basic word processing and other basic computer skills.

Prerequisite: Qualifying score on ESL reading assessment test

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Write short paragraphs with all sentences relevant to the topic

Develop introduction, body and conclusion

Organize writing in a logical sequence

Utilize simple present verb forms

Utilize present progressive verb forms

Utilize simple past verb forms

Compose simple sentences

Utilize basic sentence structure such as subject-verb-direct object

Utilize basic "be" main verb sentence structure

Apply basic punctuation

Develop use of the writing process

Develop basic editing strategies

Apply basic standard mechanics

Demonstrate basic word processing skills

Demonstrate basic computer skills

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 5

### ESOL 0822 - Reading II (4)

This course is for students who need to improve basic reading skills by practicing key reading strategies. It focuses on increasing students' ability to comprehend a variety of written material. Context clues and dictionary skills will also be covered to increase

vocabulary.

Prerequisite: Qualifying score on ESL reading assessment test

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify key words in a text
- Utilize pre-reading strategies to enhance comprehension
- Identify the part of speech and application of a word using context
- Apply context clues to determine word meaning
- Utilize scanning as a reading strategy
- Utilize skimming to develop a context
- Utilize skimming to find main ideas
- Identify main ideas in a variety of text types
- Develop individualized strategies for learning vocabulary words
- Develop individual learning strategies
- Apply text marking techniques
- Develop basic dictionary skills

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 4

### **ESOL 0823 - College Communication Skills II (3)**

Communication skills are critical for success in college. This course provides the knowledge and practice necessary to improve basic listening comprehension, speaking, and pronunciation skills in American English. Students work on these skills through activities such as listening to lectures, podcasts, and videos, taking notes, doing dictations, participating in discussions, interviewing, and giving presentations.

Prerequisite: Qualifying score on ESL reading assessment test

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Take notes from orally presented material
- Identify main ideas within orally presented material
- Identify key details within orally presented material
- Discuss topics relevant to the level of the material
- Develop vocabulary
- Demonstrate the ability to bring real-life communication into the classroom
- Present orally
- Demonstrate an awareness of pronunciation rules in American English
- Develop strategies to improve pronunciation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

[bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html)

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

**Credit Details:** lecture: 3

### **ESOL 0831 - Grammar/Writing III (5)**

Develop college writing skills. Students work on grammar, paragraphs, and editing, using the standards of written American English. Classes utilize a computer lab to practice writing, word processing, editing, and other basic computer skills.

**Prerequisite:** Qualifying score on ESL reading assessment test OR ESOL0821 and ESOL0822 and ESOL0823 with a grade of "C" or better

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Write unified paragraphs with clear introduction, body, and conclusion

Apply a variety of cohesive devices (transitions, pronouns, etc.) within paragraphs

Produce various types of writing such as descriptive and expository

Develop basic real-time writing skills

Utilize simple present verb forms

Utilize present progressive verb forms

Utilize simple past verb forms

Write grammatically correct sentences of varying patterns

Correct sentences that contain grammatical errors

Develop effective use of the writing process

Develop strategies to improve editing skills

Apply basic standard mechanics

Develop basic word processing skills

Demonstrate basic email skills

Demonstrate basic computer skills

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

**Credit Details:** lecture: 5

### **ESOL 0832 - Reading III (4)**

This course is for students who need to improve basic reading skills necessary for success in college course work. Reading III focuses on the development of vocabulary strategies and literal comprehension techniques.

Prerequisite: Qualifying score on ESL reading assessment test OR ESOL0821 and ESOL0822 and ESOL0823 with a grade of "C" or better

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Manage the college reading process
- Develop test taking skills for objective tests in the college setting
- Apply text marking techniques to academic and technical readings
- Develop skimming and scanning techniques for academic and technical readings
- Determine word meaning from context clues in academic readings
- Detect academic word meaning from word parts
- Identify dictionary meaning that matches context within readings
- Expand general and academic vocabulary including figurative and connotative meanings
- Identify implied and stated main ideas in readings
- Identify details in academic and technical readings
- Identify patterns of organization in academic and technical readings
- Categorize transitions in academic and technical readings
- Summarize a passage

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 4

### **ESOL 0833 - College Communication Skills III (3)**

Communication skills are critical for success in college. This course provides the knowledge and practice necessary to improve listening comprehension, speaking, and pronunciation skills in college-level American English. Students work on these skills through activities such as listening to lectures, podcasts, and videos, taking notes, doing dictations, participating in discussions, interviewing, and giving presentations.

Prerequisite: Qualifying score on ESL reading assessment test OR ESOL0821 and ESOL0822 and ESOL0823 with a grade of "C" or better

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate basic note-taking skills
- Identify main ideas within an oral presentation
- Identify key details within an oral presentation
- Discuss college level academic topics
- Develop academic vocabulary

Demonstrate the ability to bring real-life communication into the classroom

Present orally

Demonstrate an awareness of pronunciation rules in American English

Develop strategies to improve pronunciation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Credit Details: lecture: 3

### **ESOL 0841 - Grammar/Writing IV (5)**

Develop college writing skills. Students work on more complex grammar, editing, and academic writing, using the standards of written American English. Classes utilize a computer lab to practice writing, word processing, editing, and other basic computer skills.

Prerequisite: Qualifying score on ESL reading assessment test OR ESOL0831 and ESOL0832 and ESOL0833 with a grade of "C" or better

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Write at the essay level

Write in response to readings

Produce various types of writing such as descriptive, expository, and persuasive

Demonstrate effective real-time writing

Produce writing with clear introduction, body, and conclusion

Utilize a variety of cohesive devices (transitions, pronouns, etc.) within and between paragraphs

Write grammatically correct sentences of varying patterns

Edit written work

Demonstrate effective use of the writing process

Demonstrate use of auxiliary resources such as dictionary, thesaurus, and computer tools in the writing process

Apply standard mechanics

Demonstrate basic word processing skills

Demonstrate effective email skills

Apply standard formatting

Demonstrate basic computer skills

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 5

### **ESOL 0842 - Reading IV (4)**

This course gives students an opportunity to apply the basic vocabulary and comprehension skills learned in Reading III. In addition, the course focuses on higher level thinking skills including drawing inferences and reading critically.

Prerequisite: Qualifying score on ESL reading assessment test OR ESOL0831 and ESOL0832 and ESOL0833 with a grade of "C" or better

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Manage reading and studying of college textbook material

Summarize academic/technical readings

Paraphrase academic/technical readings

Adapt college reading process to task

Apply word recognition strategies to college level vocabulary

Acquire college level vocabulary

Infer meaning from explicit and implied college level text

Draw conclusions from explicit and implied college level text

Apply college reading strategies to informational text

Apply college reading strategies to expository text

Apply critical reading skills to college level text

Construct meaning from college level text

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 4

### **ESOL 0843 - College Communication Skills IV (3)**

Communication skills are critical for success in college. This course provides the knowledge and practice necessary to further improve listening comprehension, speaking, and pronunciation skills in college-level American English. Students work on these skills through activities such as listening to lectures, podcasts, and videos, taking notes, doing dictations, participating in discussions, interviewing, and giving presentations.

Prerequisite: Qualifying score on ESL reading assessment test OR ESOL0831 and ESOL0832 and ESOL0833 with a grade of "C" or better

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Take notes from academic lectures
- Identify main ideas within an oral presentation
- Identify key details within an oral presentation
- Discuss college level academic topics
- Develop academic vocabulary
- Demonstrate the ability to bring real-life communication into the college classroom
- Present orally
- Demonstrate an awareness of pronunciation rules in American English
- Develop strategies to improve pronunciation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 3

#### **ESOL 0850 - ESOL Skills Workshop (4)**

This course will increase students' skills in grammar, writing, and academic communication needed for success in college and the workplace. This course is designed for students who need to complete the required ESOL credits outside of their regular cohort. At the beginning of the course, each student will meet with the instructor to develop a study plan.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Write unified paragraphs with clear introduction, body, and conclusion
- Use a variety of cohesive devices (transitions, pronouns, etc.) within paragraphs
- Develop basic real-time writing skills
- Develop basic word processing skills
- Demonstrate basic email skills
- Demonstrate basic computer skills
- Demonstrate basic note-taking skills
- Discuss college level academic topics
- Develop academic vocabulary
- Present orally
- Demonstrate an awareness of pronunciation rules in American English
- Develop strategies to improve pronunciation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 4

## FDAS - Ford Automotive Student Service Educational Training Program (ASSET)

### FDAS 1250 - Ford Gasoline Engine Performance I (2)

The purpose of this course is to provide the student with the knowledge and experience necessary to properly service today's computer controlled and conventional ignition systems as used on late model Ford vehicles.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Summarize four-stroke gasoline engine operation

Explain valve-train operation

Describe upper engine components

Interpret ignition system related wiring diagrams

Research electronic engine control components

Use electronic service equipment

Diagnose electronic engine control components

Evaluate Ford ignition systems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### FDAS 1260 - Ford Gasoline Engine Performance II (3)

This course is designed to teach the student how the engine systems work together to provide superb engine performance while maintaining fuel economy and reducing emission.

Prerequisite: FDAS1250

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and

evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Explain the purpose of the basic elements of electronic systems
- Identify the function of basic electronic components
- Define reference voltage
- Identify types of electronic switches
- Define the purpose of voltage divider circuits and identify the various types
- Define the purpose of voltage producing sensors and identify the various types
- Define integrated circuits
- Identify various types of output signals
- Analyze module diagnostic capabilities
- Determine the module programming methods
- Describe the operation of a PCM controlled charging system
- Evaluate the Electronic Throttle Control system (ETC) operation

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

**FDAS 1420 - Ford Driveline (3)**

This course will detail the fundamentals, operation and repair of clutches, differentials, transfer cases, manual transmissions and transaxles used on Ford vehicles.

**Prerequisite:** None

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Evaluate system components using precision measuring equipment
- Interpret electronic service information
- Differentiate clutch systems
- Diagnose differential components
- Explain operation of transfer cases
- Perform powertrain repair procedures
- Calculate gear ratios
- Examine synchronizer operation
- Apply principles of mechanical concepts

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **FDAS 1500 - Engine Repair (3)**

This hands-on course teaches proper disassemble, assembly, repair, and diagnostic techniques for Ford engines. This course also includes how to identify and measure critical clearances.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Diagnose engine concerns

Isolate engine noise problems

Perform precision engine measurements

Research engine disassembly and assembly procedures

Identify engine cooling sub-systems

Perform engine overhaul procedures

Identify proper gasket sealing procedure

Interpret scan tool results

Describe the diagnostic procedures for identifying the root cause of engine failures

Perform specific engine diagnostic tests

Diagnose the front end accessory drive

Generate an engine cost factor analysis

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **FDAS 1550 - Engine Operation (2)**

This will consist of basic engine theory of operation, types of engines, and preventative maintenance service used in Ford vehicles.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Identify four-stroke cycle engine operation
- Describe engine bearing construction
- Compare short blocks and long blocks
- Describe the process for shipping a replaced engine
- Perform engine oil leak tests
- Categorize engine types
- Explain engine cooling system
- Describe engine sub-systems
- Utilize electronic service publications
- Evaluate system components using precision measuring equipment
- Use electronic service equipment

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

**FDAS 1611 - Noise Vibration Harshness (NVH) (3)**

This course will provide the student with the skills and knowledge to pinpoint a NVH concern on a Ford motor company vehicle.

**Prerequisite:** None

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Apply principles of mechanical concepts
- Evaluate NVH concerns using precision measuring equipment
- Identify common NVH concerns
- Perform driveline angle measurements
- Discriminate wind noise concerns
- Interpret electronic service information
- Perform match mount tire diagnostic procedures
- Identify the frequency of different noise concerns
- Describe the function of NVH diagnostic tools
- Demonstrate safe service and repair principles
- Inspect driveline angles

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or

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Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **FDAS 1701 - Ford Climate Control (3)**

The purpose of this course is to provide the student with the knowledge and skills to diagnose and repair heating and air-conditioning systems used on Ford and Lincoln-Mercury vehicles. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify air conditioning system types

Use electronic service equipment

Apply principles of mechanical concepts

Demonstrate safe service procedures

Interpret air conditioning system wiring diagrams

Explain the refrigerant cycle

Perform air conditioning system tests

Diagnose cooling problems

Identify heating concerns

Complete refrigerant recovery certification

Explain heat theory principles

Access on-board diagnostic information

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **FDAS 1750 - Ford Fuel Systems (2)**

This course will detail the fundamentals, operation and repair of Ford fuel and air inlet controls.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Perform Fuel Pressure Tests
- Identify type of fuel delivery system
- Evaluate Parameter Identifiers (PIDS) test results
- Perform manifold pressure tests
- Identify the type of controlled air inlet system
- Describe air/fuel mixing
- Explain the Powertrain Control System (PCM) strategies
- Explain the theory and operation of the fuel delivery system
- Discriminate between the fuel system and the air system
- Explain the safety procedures that must be followed when servicing a flex fuel vehicle
- Identify the various alternative fueled vehicles

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **FDAS 2030 - Ford Dealership Internship III (6)**

This course will provide the student on-the-job training in a Ford or Lincoln-Mercury dealership. The student will use knowledge learned during previous courses and put into practice the technical skills learned on customers' vehicles.

Prerequisite: Successful completion of FDAS1250, FDAS1400, FDAS1410, and FDAS1701 or equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Diagnose customer concerns
- Repair vehicles to manufacture specifications
- Demonstrate safe service repairs
- Determine customer needs from repair order information
- Evaluate vehicle prior service history
- Demonstrate professional integrity
- Practice ethical vehicle repair procedures
- Practice environmentally safe working habits
- Work independently
- Cooperate with co-workers
- Perform maintenance work on customer vehicles
- Demonstrate commitment to the automotive profession
- Manage change while balancing work and other areas of life
- Recognize and value others
- Follow supervisor's direction
- Apply communication skills
- Evaluate system components using precision measuring equipment

Make repair decisions using the Ford SSCC problem solving techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: SOE: 6

### **FDAS 2040 - Ford Dealership Internship IV (6)**

This course will provide the student on-the-job training in a Ford or Lincoln-Mercury dealership. The student will use knowledge learned during previous courses and put into practice the technical skills learned on customers` vehicles.

Prerequisite: Successful completion of FDAS1260, FDAS2230, and FDAS2240 or equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Diagnose customer concerns

Repair vehicles to manufacture specifications

Demonstrate safe service repairs

Determine customer needs from repair order information

Evaluate vehicle prior service history

Demonstrate professional integrity

Practice ethical vehicle repair procedures

Practice environmentally safe working habits

Work independently

Cooperate with co-workers

Perform maintenance work on customer vehicles

Demonstrate commitment to the automotive profession

Manage change while balancing work and other areas of life

Recognize and value others

Follow supervisor's direction

Apply communication skills

Evaluate system components using precision measuring equipment

Make repair decisions using the Ford SSCC problem solving techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: SOE: 6

#### **FDAS 2055 - Ford Dealership Summer Internship I (4)**

This course will provide the student on-the-job training in a Ford or Lincoln-Mercury dealership. The student will use knowledge learned during previous courses and put into practice the technical skills learned on customers` vehicles.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Diagnose customer concerns
- Demonstrate safe service repairs
- Determine customer needs from repair order information
- Evaluate vehicle prior service history
- Demonstrate professionalism
- Perform ethical vehicle repair procedures
- Exhibit environmentally safe working habits
- Work independently
- Cooperate with co-workers
- Perform maintenance work on customer vehicles
- Demonstrate commitment to the automotive profession
- Prioritize work schedules

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: SOE: 4

#### **FDAS 2060 - Ford Dealership Summer Internship II (4)**

This course will provide the student on-the-job training in a Ford or Lincoln-Mercury dealership. The student will use knowledge learned during previous courses and put into practice the technical skills learned on customers` vehicles.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Diagnose customer concerns
- Manage change while balancing work and other areas of life
- Apply communication skills
- Evaluate system components using precision measuring equipment

Demonstrate professionalism  
Perform ethical vehicle repair procedures  
Exhibit environmentally safe working habits  
Demonstrate professional integrity  
Practice environmentally safe working habits  
Work independently  
Repair vehicles to manufacture specifications  
Prioritize work schedules

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: SOE: 4

### **FDAS 2230 - Ford Car Transmissions (3)**

This course will detail the fundamentals, operation and repair of automatic transmissions used on current Ford passenger cars.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify the normal [hydraulic-mechanical] operation of an automatic transaxles  
Identify the function, construction, location, and operation of each major component of selected Ford automatic transaxles  
Describe power flow through a typical automatic transaxle  
Explain hydraulic system theory for an automatic transaxle  
Identify transaxle fluid characteristics  
Identify typical symptoms found in automatic transaxle with hydraulic or mechanical causes  
Identify the normal [electronic] operation of an automatic transaxle  
Explain electronic control system theory for an automatic transaxle  
Identify typical symptoms found in automatic transaxle with electronic faults  
Identify the recommended diagnostic process for Ford automatic transaxle  
Apply Symptom-System-Component-Cause to isolate automatic transaxle concerns in a simulated environment  
Interpret transaxle test results to indicate whether or not results are within specification  
Explain how a malfunctioning component could impact the operation of the transaxle  
Perform external transaxle pressure checks

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **FDAS 2240 - Ford Truck Transmissions (3)**

This course will detail the fundamentals, operation and repair of the automatic transmissions used on current Ford light trucks.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify the normal [hydraulic-mechanical] operation of an automatic transmission

Identify the function, construction, location, and operation of each major component of selected Ford automatic transmissions

Describe power flow through a typical automatic transmission

Explain hydraulic system theory for an automatic transmission

Identify transmission fluid characteristics

Identify typical symptoms found in automatic transmissions with hydraulic or mechanical causes

Identify the normal [electronic] operation of an automatic transmission

Apply Symptom-System-Component-Cause (SSCC) to isolate automatic transmission concerns in a simulated environment

Interpret transmission test results to indicate whether or not results are within specification

Identify the normal operation of the TorqShift automatic transmission

Explain electronic control systems theory for the TorqShift automatic transmission

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **FDAS 2502 - Ford Advanced Engine Performance (3)**

This course is designed to provide the student with hands-on application of guided diagnosis and testing of driveability concerns. The course emphasizes the Symptom-to-System-to-Component-to-Cause (SSCC) process as well as critical thinking skills while performing engine performance concerns.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify problem-solving techniques used in Ford service repair

Use electronic service equipment

Demonstrate safe service repair procedures

Identify engine monitoring drive cycles  
Evaluate DTC-driven concerns  
Interpret WDS PIDS to isolate driveability concerns  
Research system generated diagnostic trouble codes  
Sequence multiple diagnostic trouble codes  
Interpret reference values  
Interpret captured emission related data  
Evaluate symptom-driven concerns

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

#### **FDAS 2552 - Ford Diesel (4)**

This hands-on classroom training will cover diesel engine performance concerns. This course will also include the use of necessary service publications, diagnosis of code and no-code generated concerns and the performance of diagnostic tests and procedures.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe unique design features of the current production diesel engines  
Identify the location and function of the components of the 6.0L diesel engine  
Identify the steps of specific test procedures including air tests checks  
Describe the four stroke combustion process of a diesel engine  
Describe the operation of the fuel supply and fuel injection systems  
Describe the operation of the low and high systems oil pressure  
Differentiate the various starting aids  
Identify components that comprise the fuel management system  
Identify components that comprise the high oil pressure system  
Describe the purpose of the lube oil system  
Differentiate the types of seals used on the different diesel engines  
Identify the location and function of the components of the 6.7L diesel engine

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 2

### **FDAS 2650 - Ford New Technology (2)**

This course will consist of the latest Ford Service Technician Specialty (STST) training and new technology that Ford Motor Company has released after the student completes the required Ford ASSET courses and allows for up to date training prior to graduation.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Interpret technical data to isolate driveability concerns

Demonstrate safe service repair procedures

Sequence multiple diagnostic trouble codes

Use electronic service equipment

Analyze module diagnostic capabilities

Identify the function of basic electronic components

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

# **FLPW - Fluid Power Engineering and Motion Control Technology**

### **FLPW 1075 - Careers in Manufacturing (2)**

This course introduces students to the skills, technology, work environment, potential salary, and job placement for occupations in the fields of Machine Tool Technology, Mechatronics (Automation Robotics, Electronics, Fluid Power), Welding and Metal Fabrication, Plastics Engineering Technology, and Engineering CAD (Computer-Aided Design) Technology. This dynamic course includes industry-specific tours, as well as hands-on projects that familiarize students with field practices and shop safety. A technical aptitude assessment will be administered to assist students in determining if a career in manufacturing fits with their interests and abilities. The steps for enrolling in a program at HTC will be reviewed.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the characteristics of a career in Machine Tool Technology

Describe the characteristics of a career in Mechatronics

Describe the characteristics of a career in Welding and Metal Fabrication

Describe the characteristics of a career in Plastics Manufacturing Technology

Describe the characteristics of a career in Engineering CAD Technology

Apply shop safety principles

Determine the manufacturing career fields best suited to individual attributes and interests

Text and References: A list of textbooks required for this course is available at the <https://www.hennepintech.edu/finance-operations/campus-store.html> bookstore.

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **FLPW 1101 - Fluid Power Technology I (3)**

This course considers the basic fundamentals of hydraulics and pneumatics. The operating principles of basic systems used in industry today will be emphasized. Persons involved with machine maintenance, production automation, packaging, plastics, mechanical drafting and engineering technologies should consider this course.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course.

Define fluid power.

Explain energy laws.

Describe work principles.

Describe force principles.

Describe power principles.

Explain force/work/power relationships.

Define force units.

Define work units.

Define power units.

Describe hydrostatic principles.

Describe hydrodynamic principles.

Explain volume-area-speed relationships.

Explain linear actuators.

Describe mechanical torque.

Describe displacement.

Describe horsepower.

Describe horsepower.

Describe accumulators.

Describe air-oil boosters/intensifiers.

Explain pressure control operation.

Explain directional control valve operation.  
 Explain volume control valve operation.  
 Explain hydraulic circuit operation.  
 Identify graphic symbols.  
 Draw hydraulic circuits.  
 Explain pneumatic energy transmission.  
 Define pneumatic terminology.  
 Explain positive displacement compressors.  
 Explain non-positive displacement compressors.  
 Explain pneumatic pressure control valves.  
 Explain pneumatic directional control valves.  
 Explain pneumatic speed control techniques.  
 Identify pneumatic graphic symbols.  
 Determine pneumatic circuit operation.  
 Determine basic troubleshooting techniques.  
 Draw pneumatic circuits.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **FLPW 1106 - Fluid Power Technology II (4)**

This course considers the principles of hydraulics and pneumatics. The operating principles of basic systems used in industry will be emphasized. Fluid power terms, definitions, symbols and liquid principles will be discussed. Standards, engineering specifications and interchangeability will also be discussed in-depth. Persons involved with machine design, drafting, maintenance, production, automation, packaging, plastics and engineering technologies should consider this course.

Prerequisite: FLPW1101 or concurrent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course.

Calculate linear forces.  
 Calculate cylinder volume.  
 Calculate cylinder speed.  
 Calculate adjusted flow rate.  
 Calculate cylinder time.  
 Size cylinder.  
 Size cylinder ports.  
 Calculate intensifier problems.  
 Describe horsepower.  
 Define rotary actuator specifications.  
 Describe limited rotation actuators.  
 Determine actuator specifications.  
 Identify actuator standards.

Identify actuator graphic symbols.  
Identify graphic symbols.  
Draw hydraulic actuator circuits.  
Solve surface area problems.  
Solve cylindrical area problems.  
Solve volume problems.  
Calculate cylinder speeds.  
Calculate pump G.P.M.  
Calculate volumetric efficiency.  
Calculate mechanical efficiency.  
Calculate overall efficiency.  
Service reservoirs.  
Service heat exchangers.  
Describe liquid flow principles.  
Describe liquid properties.  
Compare specific gravities.  
Compare liquid viscosity's.  
Compare liquid characteristics.  
Identify contaminant types.  
Flush a hydraulic system.  
Describe Beta ratio.  
Describe filter.  
Describe specific weight principles.  
Describe Bernoulli's theorem.  
Describe laminar flow.  
Describe turbulent flow.  
Describe Reynolds number.  
Describe test procedures.  
Charge accumulators.  
Demonstrate shop safety practices.  
Describe various hose types.  
Describe various hose fittings.  
Describe permanent hose assemblies.  
Describe reusable hose assemblies.  
Explain hose test procedures.  
Describe tubing types.  
Describe tube fittings.  
Describe tube assembly.  
Describe tube applications.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

### **FLPW 1150 - Pneumatic Components (4)**

This course is the study of the function and application of air compressors, vacuum pumps, air motors, cylinders, limited rotation

actuators, directional valves, pressure and flow control valves used in industrial systems today. Various compressor designs will be discussed and inspected for wear. Students will use precision measuring tools and identify overhaul procedures for various components. The pneumatic power circuit and the how to test an operating system will be covered. Persons involved with machine design, drafting, maintenance, production, automation, packaging, plastics and engineering technologies should consider this course.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Convert metric units.
- Calculate absolute pressure problems.
- Calculate absolute temperature problems.
- Solve hydraulic system problems.
- Solve pneumatic system problems.
- Define Charles law.
- Define Boyles law.
- Calculate Charles law.
- Calculate Boyles law.
- Demonstrate shop safety practices.
- Use precision measuring tools.
- Use manufacturer's catalog.
- Review pneumatic principles.
- Describe positive displacement compressors.
- Describe non-positive displacement compressors.
- Determine positive displacement compressor characteristics.
- Determine compressor control characteristics.
- Determine safety control characteristics.
- Describe compressor failures.
- Test compressor performance.
- Describe air distribution systems.
- Service air compressor system.
- Explain vacuum principles.
- Describe vacuum measurement.
- Explain vacuum system applications.
- List vacuum systems hazards.
- Describe mechanical vacuum pumps.
- Describe diffusion vacuum pumps.
- Determine vacuum pump characteristics.
- Test vacuum pumps.
- Describe vacuum safety equipment.
- Describe vacuum distribution system.
- Determine system selection factors.
- Service vacuum system.
- Describe linear actuator forces.
- Determine cylinder selection factors.
- Describe torque.
- Determine rotary motor selection factors.
- Determine rotary motor horsepower.
- Size linear cylinder.
- Size rotary motor.
- Determine rodless cylinder applications.
- Determine limited rotation applications.
- Determine actuator failures.
- Determine actuator repair practices.
- Test pneumatic actuators.
- Identify pneumatic valve symbols.
- Apply pneumatic monitoring devices.
- Describe directional control valves.
- Explain Cv factors.

Determine directional control valve characteristics.  
Test various directional control valves.  
Determine directional control valve selection factors.  
Describe flow control valves.  
Determine flow control valve characteristics.  
Determine flow control valve selection factors.  
Describe pressure control valves.  
Determine pressure control valve characteristics.  
Determine pressure control valve selection factors.  
Review air distribution systems.  
Describe pneumatic principles.  
Describe water cooled aftercoolers.  
Service water cooled aftercoolers.  
Describe refrigerated dryers.  
Describe chemical dryers.  
Service chemical dryers.  
Describe heatless regenerative dryer.  
Describe air filter characteristics.  
Describe air lubrication characteristics.  
Service air preparation equipment.  
Select air preparation devices.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

#### **FLPW 1181 - Pumps, Actuators, and Conductors (4)**

This course is a study of the function and application of hydraulic pumps, motors, cylinder and hydraulic accessories. Industrial hydraulic components and their application will be emphasized. Persons involved with machine maintenance, production automation, packaging, plastics, mechanical drafting and engineering technologies should consider this course. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: FLPW1101

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course.

Demonstrate shop safety practices.  
Use common hand tools.  
Use precision measuring tools.  
Use manufacturer`s catalog.  
Explain positive displacement.  
Explain non-positive displacement.  
Describe vane pump characteristics.  
Describe gear pump characteristics.  
Describe piston pump characteristics.

Describe gerotor pump characteristics.  
 Determine pump tolerances.  
 Describe pump failures.  
 Identify allowable wear.  
 Demonstrate test stand operation.  
 Align shaft coupling.  
 Determine test parameters.  
 Size pump lines.  
 Run operational test.  
 Run performance test.  
 Determine pump volumetric efficiency.  
 Determine pump mechanical efficiency.  
 Determine overall efficiency.  
 Identify various motors.  
 Identify motor standards.  
 Describe torque.  
 Determine motor horsepower.  
 Describe vane motor characteristics.  
 Describe gear motor characteristics.  
 Describe piston motor characteristics.  
 Describe gerotor motor characteristics.  
 Determine motor efficiencies.  
 Identify cylinder standards.  
 Describe cylinder parts.  
 Calculate cylinder forces.  
 Determine cylinder repair practices.  
 Perform cylinder operational tests.  
 Describe cylinder accessories.  
 Explain hose applications.  
 Describe hose installation.  
 Fabricate permanent hose assembly.  
 Test permanent hose assembly.  
 Fabricate reusable hose assembly.  
 Test reusable hose assembly.  
 Explain tube bending techniques.  
 Describe tube installation techniques.  
 Operate fabrication equipment.  
 Fabricate flared tube assemblies.  
 Fabricate permanent tube assemblies.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

### **FLPW 1191 - Hydraulic Components (3)**

This course is an in-depth study of hydraulic components. Troubleshooting, repairing and testing of pressure control, direction

control and flow control valves will be covered. Persons involved in maintenance, manufacturing or engineering technologies should consider this course. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: FLPW1101

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course.

- Identify pressure control valve symbols.
- Describe simple pressure controls.
- Describe compound relief valve.
- Describe sequence valve.
- Describe unloading valve.
- Describe counterbalance valve.
- Describe pressure reducing valve.
- Describe remote controlled valves.
- Describe pressure control valve failures.
- Identify allowable wear.
- Draw pressure control valve circuits.
- List pressure control valve applications.
- Determine simple relief valve characteristics.
- Determine compound relief valve characteristics.
- Test relief valves.
- Determine sequence valve characteristics.
- Test sequence valves.
- Determine unloading valve characteristics.
- Test unloading valves.
- Determine counterbalance valve characteristics.
- Test counterbalance valves.
- Determine reducing valve characteristics.
- Test reducing valves.
- Describe check valve.
- Describe two way valve.
- Describe three way valve.
- Describe four way valve.
- Describe solenoid controlled pilot operated valve.
- Describe mobile valves.
- Describe directional control valve options.
- Describe directional valve relief options.
- Describe directional valve flow control options.
- Describe directional valve check options.
- Draw directional valve circuits.
- Determine check valve characteristics.
- Test check valves.
- Determine two-way valve characteristics.
- Test two-way valves.
- Determine three-way valve characteristics.
- Test three-way valves.
- Determine four-way valve characteristics.
- Test four-way valves.
- Determine solenoid valve characteristics.
- Test solenoid valves.
- Determine mobile valve characteristics.
- Test mobile valves.
- Identify various flow controls.
- Describe in-line valves.
- Describe restrictor flow control valves.
- Describe bypass flow control valves.
- Describe non-compensated control valves.
- Describe pressure compensated control valves.

Describe temperature compensated flow control valves.  
 Identify restrictor type characteristics.  
 Identify bypass type flow valve characteristics.  
 Run operational tests.  
 Run pressure drop test.  
 Compare various flow controls.  
 Describe flow control circuits.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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 Brooklyn Park Campus - 763-488-2477  
 Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **FLPW 1231 - Industrial Electricity I (3)**

This course is a study of the terms, symbols, definitions and safety practices related to industrial electricity. The student will calculate volts, ohms, watts and power in industrial electricity. The student will be able to wire simple AC circuits, utilize volt-ohm meter. Diagnose circuit problems and determine circuit operations from a two-line diagram. Persons involved with machine design, drafting, maintenance, production, automation, packaging, plastics and fluid power engineering technologies should consider this course.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course.

Identify electrical terms.  
 Explain alternating current.  
 Explain direct current.  
 Explain series circuits.  
 Explain parallel circuits.  
 Explain series-parallel circuits.  
 Identify abbreviations.  
 Identify electrical symbols.  
 Demonstrate voltmeter.  
 Demonstrate ammeter.  
 Demonstrate ohmmeter.  
 Demonstrate wattmeter.  
 Demonstrate safe electric testing.  
 Describe wiring materials.  
 Explain protective devices.  
 Explain conductor sizing.  
 Explain coils/solenoids.  
 Explain pressure switches.  
 Explain limit switches.  
 Explain DC motor operation.  
 Explain AC motor operation.  
 Explain temperature control devices.

- Explain relay controls.
- Read ladder diagrams.
- Read machine diagrams.
- Draw circuits with electrical devices.
- Calculate volts.
- Calculate ohms.
- Calculate current.
- Calculate watts.
- Measure voltage.
- Measure current.
- Measure resistance.
- Measure power.
- Connect series circuits.
- Connect parallel circuits.
- Connect series-parallel circuits.
- Wire electrical circuits.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **FLPW 1236 - Industrial Electricity II (3)**

This course is designed for the individual working in plant maintenance, machine upgrading, automated packaging, hydraulics or pneumatics. The student will wire electrical circuits using transformers, control relays, pressure switches, timers, motor starters and contractors. The student will practice troubleshooting techniques on electrical panels. Upon completion the student will be able to test and diagnose basic industrial electrical circuits.

Prerequisite: FLPW1231

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course.

- Demonstrate safe work habits.
- Explain electrical standards.
- Identify electrical hardware.
- Determine component ratings.
- Read ladder diagrams.
- Connect three-way circuits.
- Connect four-way circuits.
- Connect simple relay circuits.
- Connect time delay circuits.
- Connect repeat cycle circuits.
- Connect count down circuits.
- Connect machine sequence circuit.
- Identify protective devices.
- Identify disconnect applications.

Explain transformer operation.  
 Explain single-phase power.  
 Explain three-phase power.  
 Explain single-phase motor operation.  
 Explain three-phase motor operation.  
 Connect transformer control circuits.  
 Connect manual starter circuits.  
 Connect single-phase manual starter.  
 Connect three-phase manual starter.  
 Connect single-phase magnetic starter.  
 Connect single-phase reduced voltage starter.  
 Analyze electrical diagram.  
 Determine machine sequence.  
 Describe numeric cross reference system.  
 Determine electrical values.  
 Measure electrical values.  
 Troubleshoot manual switching circuits.  
 Troubleshoot relay circuits.  
 Troubleshoot motor control circuits.  
 Troubleshoot time delay circuits.  
 Troubleshoot electro-hydraulic circuits.  
 Troubleshoot electro-pneumatic circuits.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **FLPW 1320 - Hydraulic Circuits (2)**

This course will cover setup and testing of industrial and mobile circuits from a given schematic. The construction and operation of circuits will provide experience in troubleshooting electro-hydraulic machines and construction equipment. Routine maintenance will also be discussed. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: FLPW1101

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe hydraulic power supplies.

Describe pump control circuits.

Describe single-pump unloading circuits.

Write service reports.

Describe double-pump unloading circuits.

Describe pressure-control circuits.

Describe speed-control circuits.

Describe directional valve circuits.

Describe regenerative circuits.  
Describe negative load circuits.  
Describe braking circuits.  
Describe fluid conditioning circuits.  
Describe electro-hydraulic circuits.  
Draw specified industrial circuits.  
Describe non load reactive power steering.  
Describe load reactive power steering circuits.  
Describe open center drive circuits.  
Describe closed loop drive circuits.  
Describe replenishing circuits.  
Describe high pressure relief circuits.  
Describe directional valve circuits.  
Describe flow divider circuits.  
Describe priority divider circuits.  
Describe fluid conditioning circuits.  
Draw specified mobile circuits.  
Demonstrate safe troubleshooting practices.  
Troubleshoot industrial pump control circuit.  
Troubleshoot industrial pressure control circuit.  
Troubleshoot industrial speed control circuit.  
Troubleshoot electro-hydraulic circuits.  
Repair industrial circuits.  
Troubleshoot power steering circuits.  
Troubleshoot accessory circuits.  
Troubleshoot open loop drive circuits.  
Troubleshoot closed loop drive circuits.  
Determine replacement components.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

#### **FLPW 1340 - Pneumatic Circuits and Air Logic (4)**

Students will construct pneumatic circuits which will provide practical knowledge of component identification and circuit construction. The student will gain experience connecting, troubleshooting and maintaining pneumatic components and circuits.

Prerequisite: FLPW1101 or concurrent and FLPW1150

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Recall pneumatic gas laws.

Identify pneumatic symbols.

Describe manual controlled circuits.

Describe pressure sequenced circuits.

Describe position controlled circuits.  
Describe speed control circuits.  
Describe proportional circuits.  
Describe two hand safety circuits.  
Describe air-oil circuits.  
Draw position circuits.  
Draw sequencing circuits.  
Draw combination circuits.  
Draw specified industrial circuits.  
Operate spring return DCV circuits.  
Operate momentary impulse DCV circuits.  
Operate spring centered DCV circuits.  
Operate reciprocating circuits.  
Operate speed control circuits.  
Operate position control circuits.  
Operate time control circuits.  
Operate dual pressure control circuits.  
Operate air-oil intensifier circuits.  
Operate two hand safety circuits.  
Evaluate circuit performance.  
Recall electrical terminology.  
Recall ladder diagrams.  
Describe electro-pneumatic applications.  
Describe pressure switch sequencing circuit.  
Describe position sequencing circuits.  
Describe time controlled circuits.  
Describe count controlled circuits.  
Describe reciprocating circuits.  
Describe combination circuits.  
Draw electro-pneumatic position circuits.  
Draw electro-pneumatic time circuits.  
Write machine sequence.  
Demonstrate safe shop procedures.  
Demonstrate wiring techniques.  
Interface electro-pneumatic components.  
Operate pressure switch sequencing circuit.  
Operate position sequenced circuit.  
Operate time controlled circuit.  
Operate count controlled circuit.  
Operate reciprocating circuit.  
Operate combination circuit.  
Operate safety circuit.  
Evaluate electro-pneumatic circuit performance.  
Define air logic terms.  
Describe air logic components.  
Identify air logic symbols.  
Compare air logic symbols.  
Determine air preparation requirements.  
Describe air logic circuit construction.  
Determine mechanical operations.  
Draw power circuit.  
Draw air logic circuit.  
Operate air logic circuit.  
Evaluate air logic circuit performance.  
Demonstrate safe troubleshooting practices.  
Isolate system problems.  
Troubleshoot pneumatic pressure control circuit.  
Troubleshoot pneumatic speed control circuit.  
Troubleshoot electro-pneumatic circuits.  
Troubleshoot air logic circuits.  
Troubleshoot accessory circuits.

Troubleshoot power valve circuits.  
Troubleshoot programmable logic circuits.  
Determine replacement components.  
Write service reports.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

#### **FLPW 1400 - Engineering Drawings and Schematics (4)**

This course is an introduction to the essential methods and techniques needed to design, produce and interpret engineering drawings and circuit schematics. Topics covered include drawing standards, layout and dimensioning practices, schematics, symbols and terminology. Utilizing manual techniques and CAD software, the student will apply their knowledge to the creation of mechanical, construction and facility drawings. The student will also generate hydraulic, pneumatic and electrical schematics and develop various symbol libraries. The student will obtain knowledge and skill sets that will be reinforced by other courses within the manufacturing programs.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Lay out various circuit schematics
- Comply with drafting protocol
- Identify uniform schematic symbols
- Illustrate dimensioning and layout practices
- Conform to drawing standards
- Compare blueprint standards
- Use manual drawing methods
- Demonstrate CAD software operation
- Construct schematic and drawing documentation packages
- Create drawing templates
- Generate symbol libraries
- Document drawing changes
- Manage computer files effectively

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477  
Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 4

### **FLPW 1500 - Fluid Power Process Lab (1 - 4)**

This course is designed for students who desire to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that are beyond the current scope of existing courses. This course will cover the basic accepted practices of safety in the fluid power lab environment. Dependent on the needs of each individual class, the specific areas of focus will change to meet the needs of the class.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Adhere to safe working techniques and practices

Integrate previous knowledge and skills

Operate hydraulic or pneumatic equipment

Operate industrial electrical equipment

Operate motion control equipment

Additional course goals addressed by this course will be dependent on the area and type of specialization that the class chooses to focus on

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 0 lab: 1-4

### **FLPW 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A 'Specialized Lab Training Agreement' must be signed by the student and the instructor and submitted to the registrar at the time of registration.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Work independently.

Organize work schedules.  
Follow prescribed procedures.  
Demonstrate safety.  
Demonstrate initiative.  
Integrate previously acquired skills.  
Integrate previously acquired knowledge.  
Display good judgment.  
Demonstrate dependability.  
Exhibit professionalism.  
Organize work area.  
Demonstrate cooperation.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.  
Brooklyn Park Campus - 763-488-2477  
Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lab: 1-4

### **FLPW 2000 - Programmable Logic Controllers (3)**

This is an introduction to the world of programmable logic controllers. The student will learn the basics of how to program and set up a PLC. The student will also learn the different addressing and programming styles and be challenged to write a program for a simple machine. Various PLCs will be discussed. Persons involved with fluid power, automated machinery, electronics, machine design and modifications should consider this course.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe ladder logic.  
Determine programming techniques.  
Compare PLC/mechanical relays.  
Describe input signals.  
Describe output signals.  
Describe programmable logic controller usage.  
Describe scan.  
Describe current flow.  
Describe memory.  
Describe central processing unit.  
Describe addressing/numbering systems used.  
Compare hardware to PLC wiring.  
Compare various PLC's.  
Program clear memory instruction.  
Program store/load instructions.  
Program out/write instructions.  
Program series circuits (and)  
Program parallel circuits (or)  
Program series/parallel circuits (and store or store/and load or load) circuits.

Program sealing/retentive/special logic functions.  
 Program timer circuits/counters circuits/high speed counter.  
 Program sequencer circuits/drum timers.  
 Program master control start/reset/interlock.  
 Program shift registers.  
 Edit.  
 Configure PLC hardware.  
 Determine slot addressing.  
 Determine I/O point address.  
 Identify chassis.  
 Identify power supply.  
 Identify CPU/placement.  
 Identify I/O modules.  
 Compare PLC/computer usage.  
 Enter developed programs.  
 Test programming sequence.  
 Run programs.  
 Interpret error codes.  
 Edit program (insert/delete/search and replace).  
 Interface PLC to motor starter/control circuitry.  
 Wire and run various circuits.  
 Program D&A and A&D.  
 Run computer software and interface to PLC.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **FLPW 2020 - Advanced Programmable Logic Controllers (3)**

This course is a continuation of Programmable Logic Controllers (PLC) and is designed to give the student a more in-depth working knowledge of the PLC. Advanced programming, troubleshooting and application techniques will be covered. Students will take projects from the design process to the implementation of their design. The projects include: software generated programs, various use of digital and analog input and output devices, field wiring diagrams, machine sequence diagrams and PLC component selection. Students will interface the Allen Bradley PLC with various types of machine and motor controllers including AC and DC devices.

Prerequisite: FLPW2000 or equivalent or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course.

Utilize troubleshooting techniques

Determine automation sequence

Interrupt field-wiring diagrams

Differentiate between relay and PLC logic

Investigate PLC and HMI peripheral requirements

#### Network PLC, HMI and AC-VFD

Operate fluid power components with a PLC

Calculate with various numeric bases

Construct analog input/output programs

Construct HMI programs

Interface discrete input and output devices with a PLC, HMI and AC-VFD

Interface analog input and output devices with a PLC, HMI and AC-VFD

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

#### Special Accommodations:

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#### Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **FLPW 2112 - Instrumentation of Fluid Power Systems (3)**

This course will cover the skills needed to instrument and test a fluid power system. Instrumentation measurement will include pressure, flow, torque, force, RPM, velocity, vibration and sound. The student will use a volt-ohm meter to set excitation voltage, determine null and output levels of each type of transducer used to instrument an industrial or automated machine. The student will set and calibrate instruments such as strain gauges, thermocouples and temperature measuring devices, RPM and GPM transducers. The signal conditioning/amplifier devices for digital and analog will be covered in this course. Persons involved with machine design, maintenance, packaging, beverage and food processing and fluid power engineering should consider this course.

Prerequisite: FLPW1231 should be taken prior to or concurrent with this course

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

#### Learning Outcomes:

The following outcomes will be addressed in the course.

Identify analog sensors

Identify digital sensors

Identify digital and analog sound measuring devices

Operate various strain gage transducers

Operate various digital transducers

Demonstrate Digital Volt-Ohm meter usage, signal generator, frequency counters, & frequency to DC convertors

Calibrate various digital and analog readouts

Operate digital and analog instrumentation

Program Labview data acquisition instrumentation

Record data using Labview equipment

Analyze data

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

**FLPW 2180 - Circuit Design (3)**

This course will introduce the student to basics in the selection of hydraulic components, proper circuit design techniques and tools to help solve common application problems. Common hydraulic components such as pumps, motors and valves will be thoroughly explained, along with proper applications and sizing techniques. Circuits and components related to both mobile and industrial applications will be discussed. Upon completion of this course, the student will be able to design and plumb simple hydraulic circuits involving fixed and variable pumps, pressure control circuits and speed control circuits. The student will also have a better understanding of systems which will increase the ability to troubleshoot existing equipment and determine solutions to problems. This course is intended for hydraulic sales personnel, plant engineers, design engineers, service technicians and drafting and fluid power students.

Prerequisite: FLPW1106

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Calculate volumetric efficiency.
- Calculate mechanical efficiency.
- Calculate overall efficiency.
- Calculate electric motor efficiency.
- Calculate line sizes.
- Size actuators.
- Size valves.
- Size pumps.
- Size motors.
- Size accessories.
- Calculate input horsepower.
- Calculate output horsepower.
- Design simple relief valve circuit.
- Design compound relief valve circuit.
- Design vented compound relief valve circuit.
- Design sequence valve circuit.
- Design vented sequence valve circuit.
- Design unloading valve circuit.
- Design vented unloading valve circuit.
- Design counterbalance valve circuit.
- Design brake valve circuit.
- Design pressure reducing valve circuit.
- Design vented pressure reducing valve circuit.
- Design non-pressure compensated meter-in fixed disp. circuit.
- Design non-pressure compensated meter-in variable disp. circuit.
- Design pressure compensated meter-in circuit.
- Design non-pressure compensated meter-out circuit.
- Design pressure compensated meter-out circuit.
- Design non-pressure compensated bleed-off circuit.
- Design pressure compensated bleed-off circuit.
- Design priority valve circuit.
- Design flow divider valve circuit.
- Design gear type proportionator circuit.
- Design load-sensing speed control circuit.

Calculate previous circuit efficiencies.  
Design open center industrial valve circuit.  
Design closed center industrial valve circuit.  
Design tandem center industrial valve circuit.  
Design regenerative valve circuit.  
Design open center float industrial valve circuit.  
Design closed center float industrial valve circuit.  
Design open center mobile valve cylinder circuit.  
Design open center mobile valve motor circuit.  
Design closed center mobile valve cylinder circuit.  
Design closed center mobile valve motor circuit.  
Design parallel valve circuit.  
Design series-parallel valve circuit.  
Design load sensing valve circuit.  
Design open loop pump control circuit.  
Design closed loop pump control circuit.  
Design pressure compensated indirect circuit.  
Design dual pressure compensated circuit.  
Design horsepower limiting circuit.  
Design press controlled variable disp pump circuit.  
Design solenoid controlled variable disp pump.  
Design servo controlled variable disp pump circuit.  
Design single line sensing port load sensing circuit.  
Design dual line sensing ports load sensing circuit.  
Design minimum volume stop hi/low circuit.  
Design maximum volume stop circuit.  
Set up and operate the previous circuits per instructor.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **FLPW 2191 - Industrial Circuit Design (3)**

This course combines all the curricula in the Fluid Power Technology program. A complete industrial circuit will be developed. A complete schematic will be developed for the hydraulic, pneumatic, electrical and mechanical systems. You will select, pump and actuators will be sized and valves will be specified. A Bill of Materials is developed. Creativity will be utilized to design efficient, safe and economical circuits. This course is intended for individuals involved with design of production machines, automated systems, food processing or harvesting equipment. Individuals involved in the specifications of hydraulic and pneumatic components should consider this course.

Prerequisite: FLPW1106 and FLPW1231

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course.  
Design production machine.

Size cylinders.  
 Size valving.  
 Size pump.  
 Size prime mover.  
 Size accessory components.  
 Specify hydraulic pneumatic electrical components.  
 Specify accessory components.  
 Operate production machine.  
 Evaluate system.  
 Draw ladder diagram circuits.  
 Design sequencing circuits.  
 Design position circuits.  
 Design on-delay timing circuits.  
 Design off-delay timing circuits.  
 Design speed control circuits.  
 Design counting circuits.  
 Design sensing circuits.  
 Troubleshoot circuits.  
 Evaluate air logic circuits.  
 Design accumulator circuit.  
 Design closed loop hydrostatic circuits.  
 Design intensifier circuit.  
 Design compression/decompression circuit.  
 Design filter conditioning circuit.  
 Design temperature conditioning circuit.  
 Design safety circuit.  
 Design series circuit.  
 Design parallel circuit.  
 Design open center master/slave valve circuit.  
 Design a winch circuit.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **FLPW 2250 - Proportional and Servo Controls (Robotics Application) (3)**

This course will include setting up and operating various types of open loop and closed loop servo systems. Emphasis will be placed on control and feedback devices as they are used in automated and robotics applications.

Prerequisite: FLPW1106

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe servo valve terminology.

Describe analog command signal.  
Describe digital command signal.  
Describe dither.  
Describe feedback sensors.  
Describe analog feedback transducers.  
Describe digital feedback transducers.  
Describe gain.  
Describe summing amplifier.  
Describe power amplifier.  
Describe error detector.  
Design open loop hydraulic servo system.  
Design closed loop hydraulic servo system.  
Specify open loop hydraulic servo system.  
Specify closed loop hydraulic servo system.  
Set up open loop hydraulic servo system.  
Set up closed loop hydraulic servo system.  
Operate open loop hydraulic servo system.  
Operate closed loop hydraulic servo system.  
Evaluate open loop hydraulic servo system.  
Evaluate closed loop hydraulic servo system.  
Compare mechanical to electro-hydraulic servo system.  
Design non-feedback proportional system.  
Design internal feedback proportional system.  
Design external feedback proportional system.  
Specify non-feedback proportional system.  
Specify internal feedback proportional system.  
Specify external feedback proportional system.  
Adjust non-feedback proportional system.  
Adjust internal feedback proportional system.  
Adjust external feedback proportional system.  
Operate non-feedback proportional system.  
Operate internal feedback proportional system.  
Operate external feedback proportional system.  
Operate non feedback electro-hydraulic servo system.  
Condition feedback signals.  
Adjust gain control.  
Operate potentiometer feedback servo system.  
Operate LVDT feedback servo system.  
Operate strain gage feedback servo system.  
Operate tach generator feedback servo system.  
Operate control valve type servo system.  
Operate power valve type servo system.  
Operate position feedback servo system.  
Operate speed feedback servo system.  
Operate summing amp/comparison servo system.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **FLPW 2301 - Mobile Circuit Design (3)**

This course combines the Fluid Power curricula dealing with components and circuits used on mobile equipment. The various power steering circuits will be discussed. The current state-of-art hydrostatic drives will be investigated and developed as part of a system design. A complete schematic will be developed for the hydraulic drives circuit, power steering and accessories. You will determine engineering specifications, select the components, pump and actuators. A Bill of Materials is developed. This course is intended for individuals involved with service and design of off road mobile equipment.

Prerequisite: FLPW1320

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course.

Determine power steering engineering specifications.

Size power steering cylinder/cylinders.

Size power steering pump.

Size power steering valve.

Size power steering conductors.

Specify power steering cylinder/cylinders.

Specify power steering pump.

Specify power steering valve.

Set up power steering system.

Evaluate power steering system.

List complete power steering nomenclature.

Design open center mobile valve cylinder circuit.

Design open center mobile valve motor circuit.

Design closed center mobile valve cylinder circuit.

Design closed center mobile valve motor circuit.

Design parallel valve circuit.

Determine winch engineering specifications.

Size winch motor.

Size winch pump.

Size winch valving.

Size winch conductor.

Specify winch motor.

Specify winch pump.

Specify winch valving.

Specify winch prime mover.

Set up winch system.

Calculate winch system efficiency.

Determine hydrostatic engineering specification.

Size hydrostatic system cylinders.

Size hydrostatic motors.

Size hydrostatic pump.

Size piggy back pump.

Size hydrostatic system valving.

Size hydrostatic conductors.

Specify hydrostatic motors.

Specify hydrostatic pumps.

Evaluate hydrostatic system.

Calculate hydrostatic system efficiency.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit

Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **FLPW 2321 - System Engineering Portfolio (3)**

This course is designed to allow the student to practice all of the principles learned in the fluid power curricula. The student will work with the instructor and industry to design a project integrating electrical, mechanical, hydraulic, and pneumatics. The student will develop a concept, the schematics, bill of materials and operating manuals for a major portfolio project. The students may work in teams with other manufacturing majors. Communication skills verbal, written and electronic will be emphasized. Teams will evaluate merits of projects and decide which projects should be further explored and fabricated. Hydraulic, pneumatic, electrical, mechanical and electronic systems will be interfaced.

Prerequisite: FLPW1231, FLPW1340, FLPW2112, FLPW2180, FLPW2191, and FLPW2301 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course.

Determine project criteria.

Determine output actuator.

Determine valving type.

Determine pump type.

Determine prime mover type.

Design hydraulic/mechanical system.

Size output actuator.

Size proper valving.

Size prime mover.

Specify components.

Calculate system efficiency.

Evaluate system.

Determine control criteria.

Design system controls.

Determine command control type.

Determine feedback control type.

Determine summing amp type.

Coordinate controls.

Specify controls.

Set up potentiometer type controls.

Set up joystick type controls.

Set PLC type controls.

Set up various feedback types.

Evaluate system control types.

Determine power supply characteristics.

Select power supply.

Set up mechanical hardware.

Set up hydraulic hardware.

Set up pneumatic hardware.

Set up electrical hardware.

Set up control hardware.

Set up feedback hardware.

Operate robot.

Adjust robot controls.

Evaluate robot.  
Calculate cost.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lab: 3

### **FLPW 2350 - Hydraulic Specialist Certification Review (2)**

This two-credit course is designed to prepare and review for the national Fluid Power Specialist Certification test. There will be a study guide with many practice problems to solve along with lecture time. It is intended for an individual who has two years of technical training or adequate industrial experience. Areas to be covered will include individual hydraulic and pneumatic components, air logic, proportional and servo valves, physics, circuit design, troubleshooting, instrumentation, sound measurement, electricity and conductors.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Review individual hydraulic components.
- Review individual pneumatic components.
- Review air logic circuitry.
- Review proportional control valves.
- Review servo control valves.
- Review physics problems.
- Review circuit design problems.
- Review instrumentation components.
- Review sound measurement.
- Review electrical components/circuitry.
- Review troubleshooting procedures.
- Review basic English terms.
- Solve hydraulic component problems.
- Solve pneumatic component problems.
- Solve air logic circuit problems.
- Solve proportional/servo circuit problems.
- Solve physics problems.
- Solve circuit design problems.
- Solve electrical circuit problems.
- Solve electrical strength problems.
- Solve material strength problems.
- Review basic technical writing concepts.
- Review fluid power formulas.
- Review conductor sizing.
- Solve related math problems.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

**Credit Details:** lecture: 2

### **FLPW 2360 - Pneumatic Specialist Certification Review (2)**

This course is designed to prepare and review for the national Pneumatic Specialist Certification test. There will be a study guide with many practice problems to solve along with lecture time. It is intended for an individual who has two years of technical training or adequate industrial experience and/or mechanical engineering background. Areas to be covered will include individual hydraulic and pneumatic components, air logic, proportional and servo valves, physics, circuit design, troubleshooting, instrumentation, sound measurement, electricity and conductors.

**Prerequisite:** None

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course.

Solves horsepower formulas for torque, speed, and horsepower of air motor connected through a reduction system to a conveyor.

Solves for bending moment on a cylinder bushing from stroke, mechanical advantage, and side load on the rod.

Computes bore diameter and pressure for a cylinder to move loads with a friction factor.

Computes cylinder bore diameter and pressure to operate various applications.

Solves for pressure and suction area to provide required lifting force using vacuum cups.

Converts pressure readings between inches of water (H<sub>2</sub>O) and inches of mercury (in. Hg).

Uses manufacturer's graphs and formulas to determine CFM requirements for an air motor.

Predicts operation of a pneumatic system by tracing path of air flowing through circuits when various commands are given.

Selects appropriate solution to control air cylinder velocity.

Selects location of various components in a circuit to achieve cylinder sequence and deceleration functions.

Selects conductor sizes from application charts given pressure, flow delivery, and line length.

Uses formulas to size air receivers to perform various functions.

Identifies most and least important safety considerations in the design of an air circuit.

Recognizes advantages and disadvantages of single-acting and double-acting cylinders.

Computes CFM and SCFM air flow to power an air cylinder with extension and retraction forces and times specified.

Calculates oil flow rate and pressure from a pneumatic intensifier.

Calculates kinetic energy to stop a load with a shock absorber.

Recognizes characteristics of stop tubes and cushioning devices.

Calculates Cv for an air valve from pressure, flow, and temperature conditions to size a directional control valve for a cylinder or motor circuit.

Recognizes that the critical (sonic) velocity through an orifice is reached when the downstream pressure is 53% of the upstream pressure, and at the critical velocity, increasing p<sub>1</sub>, will not increase air flow.

Calculates compressor delivery capacity from system requirement, pressure, and duty cycle.

Recognizes operational characteristics of relieving and non-relieving regulators.

Recognizes operational characteristics of various types of vacuum generators.

Computes operational characteristics of a position feedback circuit.

Uses Ohm's Law and Kirchoff's Law to solve series-parallel circuits for voltage, current, and resistance.

Determines cycle characteristics for Pulse Width Modulated (PWM) pressure control valve.

Analyzes logic control circuit for output signal.

Computes current output from pressure transducer signal and transducer characteristics.

Computes resolution for digital linear transducers from characteristics of signal input.

Matches appropriate wiring arrangements between PLC`s and directional control valves.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2

### **FLPW 2375 - Fluid Power Internship (1 - 4)**

This course allows the student to gain on-the-job experience in the Fluid Power industry. The student is responsible for locating and arranging the internship site. One (1) to four (4) credits can be taken, with each credit requiring 40 hours of time spent on the job. Student performance will be monitored by the instructor and evaluated by the employer. This will be a cooperative training program between Hennepin Technical College and a company. The student will apply competencies learned in the program to an employment-like work experience. Tasks and course goals will be determined by the instructor and the job site supervisor on an individual student basis. All industry internships require you be registered at the college for the internship and have instructor approval.

Prerequisite: Instructor approval and completion of at least 50% of your degree or diploma

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

The specific goals of this course will be defined in the 'Internship Agreement' signed by the student, employer and instructor and will be tailored to the experiences available at the internship site

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: SOE: 1-4

### **FLPW 2450 - Hydraulic Specialist Certification Exam (0)**

Students who pass the national Hydraulic Specialist Exam are certified as Hydraulic Specialists. Students who pass both the national Hydraulic Specialist Exam and the national Pneumatic Specialist Exam are certified as Fluid Power Specialists. Students must pay a separate fee for both exams to the Fluid Power Society.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course.

No Outcomes Required.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

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### **FLPW 2460 - Pneumatic Specialist Certification Exam (0)**

Students who pass the national Pneumatic Specialist Exam are certified as Pneumatic Specialists. Students who pass both the national Pneumatic Specialist Exam and the national Hydraulic Specialist Exam are certified as Fluid Power Specialists. Students must pay a separate fee for both exams to the Fluid Power Society.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course.

No Outcomes Required.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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# FMLR - Ford Automotive Student Service Educational Training Program (ASSET)

## FMLR 1200 - Ford Electrical Systems (3)

This course is designed to introduce the student to basic electrical theory and Ford electrical systems. Included in the course will be Ohm's law and an in-depth study of Ford electrical systems.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Explain Ohm's Law
- Interpret wiring diagrams
- Perform battery tests
- Test charging systems
- Measure starter draw
- Diagnose electrical circuits
- Identify battery safety procedures
- Construct series/parallel circuits
- Evaluate DMM readings
- Diagnose parasitic drain concerns
- Perform voltage drop test
- Identify PIDS
- Construct relay circuits
- Research repair procedures
- Compare direct and alternating currents

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

## FMLR 1301 - Related Mechanical Skills (2)

This course provides the student with a fundamental understanding of the automotive industry. It will also give students a working knowledge of various service procedures for routine maintenance of today's automobile. Furthermore, students will set-up and use their Ford Web-course training modules. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Interpret Ford Motor Company (FMC) dealer website
- Explain oasis
- Perform bolt extraction procedures
- Interpret bolt markings
- Research hazardous waste procedures
- Outline safety inspections on Ford vehicles
- Operate gas welding equipment
- Perform tire repair procedures

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **FMLR 1601 - Ford Suspension and Alignment (3)**

This course will detail different types of suspension systems used on late model vehicles. Furthermore, the student will learn to perform two and four wheel alignment procedures.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Analyze suspension systems
- Identify suspension systems
- Contrast front and rear wheel drive suspension systems
- Perform strut replacement procedures
- Explain how alignment angle affects vehicle handling
- Perform vehicle alignment
- Identify four wheel alignment angles
- Interpret electronic alignment equipment readouts
- Demonstrate safe service and repair procedures
- Use electronic service equipment

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **FMLR 1650 - Ford Steering and Balance (2)**

In this course the student will analyze the steering systems used on Ford vehicles. The student will learn to troubleshoot, diagnose and repair steering systems using a hands-on approach with late model Ford vehicles. It also includes tire construction and repair, wheel vibration diagnosis, and electronic balance procedures.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain p/s pump operation

Diagnose rack and pinion steering systems

Check steering system component integrity

Explain steering gear operation

Identify electronic steering systems

Perform tire repair

Measure wheel run-out

Identify tire construction

Perform off car wheel balance

Compare static balance vs. dynamic balance

Explain tire ratings

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 1

### **FMLR 1810 - Ford Dealership Internship I (6)**

This course will provide the student on-the-job training in the automotive industry. The student will use the knowledge learned during classroom instruction and put into practice the technical skills on customers' vehicles.

Prerequisite: Successful completion of FDAS1200, FDAS1300, FDAS1650, and FDAS2600 or equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Diagnose customer concerns

Repair vehicles to manufacture specifications

- Demonstrate safe service repairs
- Determine customer needs from repair order information
- Evaluate vehicle prior service history
- Demonstrate professional integrity
- Practice ethical vehicle repair procedures
- Practice environmentally safe working habits
- Work independently
- Cooperate with co-workers
- Perform maintenance work on customer vehicles
- Demonstrate commitment to the automotive profession
- Manage change while balancing work and other areas of life
- Recognize and value others
- Follow supervisor's direction
- Apply communication skills
- Evaluate system components using precision measuring equipment
- Make repair decisions using the Ford SSCC problem solving techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: SOE: 6

### **FMLR 1820 - Ford Dealership Internship II (6)**

This course will provide the student on-the-job training in the automotive industry. The student will use the knowledge learned during previous classroom instruction and put into practice the technical skills on customers' vehicles.

Prerequisite: Successful completion of FDAS1500, FDAS1550, FDAS1600, and FDAS1750 or equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Diagnose customer concerns
- Repair vehicles to manufacture specifications
- Demonstrate safe service repairs
- Determine customer needs from repair order information
- Evaluate vehicle prior service history
- Demonstrate professional integrity
- Practice ethical vehicle repair procedures
- Practice environmentally safe working
- Work independently
- Cooperate with co-workers
- Perform maintenance work on customer vehicles
- Demonstrate commitment to the automotive profession
- Manage change while balancing work and other areas of life
- Recognize and value others

Follow supervisor's direction  
 Apply communication skills  
 Evaluate system components using precision measuring equipment  
 Make repair decisions using the SSCC problem solving techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: SOE: 6

### **FMLR 2600 - Ford Braking Systems (3)**

This course will detail the brake systems of Ford Motor Company cars and light trucks. It includes ABS operation, hydraulic components, machining, and repair of drums and disc brake systems.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Explain drum brake systems
- Explain disc brake systems
- Operate brake machining equipment
- Analyze ABS service faults
- Explain hydro-boost brake operation
- Create brake flares on hydraulic lines
- Perform precision brake-related measurement
- Research machining specifications
- Research brake repair techniques
- Contrast different brake system designs
- Interpret ABS wiring diagrams
- Evaluate brake concerns
- Demonstrate safe service and repair procedures
- Use electronic service equipment

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

## FRPT - Fire Protection

### FRPT 1061 - Occupational Safety and Health for Emergency Services (3)

This course introduces the basic concepts of occupational health and safety as it relates to emergency service organizations. Topics include risk and hazard evaluation and control procedures for emergency service organizations.

Prerequisite: FRPT1265 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the history of occupational health and safety

Identify occupational health and safety programs for industry and emergency services today

Compare the difference between standards and regulations

Describe the components of risk identification, risk evaluation, and incident management

Describe the relevance for safety in the work place, including the importance of personal protective equipment

Apply the knowledge of an effective safety plan to pre-incident planning, response, and training activities

Explain the components of an accountability system in emergency service operations

Discuss the need for, and the process used for, post-incident analysis

Describe the components and value of critical incident management programs

Describe the responsibilities of individual responders, supervisors, safety officers, incident Commanders, safety program managers, safety committees, and fire department managers as they relate to health and safety programs

Describe the components of a wellness/fitness plan

Analyze the major causes involved in line-of-duty firefighter deaths related to health, wellness, fitness, and vehicle operations

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

### FRPT 1101 - Fire Fighter I (4)

This course is designed to teach the student the necessary skills to perform the base duties of firefighting including the thought process used to decide the operations to do. This will include the duties of rescue, exposure protection, confinement of the fire, extinguishment of the fire, overhaul, salvage and ventilation.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Explain the recognition process
- Identify fire service safety practices
- Size up the different types of fire behavior
- Summarize the different fire control techniques
- Select the proper fire control technique for each type of fire behavior
- Identify the components of rescue procedures
- Construct ventilation procedures
- Select types of forcible entry
- Determine proper protection measures
- Identify the components of a water supply system
- Determine proper overhaul procedures
- Explain salvage procedures
- Select appropriate ladder for the incident
- Identify the components of a fire alarm system
- Explain the use of fire extinguishers

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 2.5 Lab: 1.5

**FRPT 1105 - Fire Fighter II (2)**

This course is designed to teach the student the skills necessary to perform the basic duties of fire fighting, including the thought process used to decide on appropriate operations. This will include specialized rescue, building construction and fire cause determination.

Prerequisite: FRPT1101 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Illustrate auto extrication procedures
- Determine rescue tool needs at incidents
- Contrast building construction principles
- Evaluate common causes of fire and their prevention
- Incorporate information to determine fire cause

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1.5 lab: .5

### **FRPT 1110 - Fire Instructor I (2)**

Instructor I is an intensive instructional methodology program. It addresses the job performance requirements of the National Fire Protection Agency, 1041 Standard for Fire Service Instructor Professional Qualifications. Instructor I focuses on planning and providing instruction.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explore teaching styles

Outline the instructor's planning process

Write a performance objective

Explore learning styles

Write a written evaluation

Demonstrate a lecture

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 2

### **FRPT 1120 - Fire Officer I (2)**

Fire Officer I administrative duties covered will include record keeping, managing projects, preparing budget requests, initiating and completing station maintenance requisitions, and conducting preliminary accident investigations. Supervisory duties that will be covered will include making work assignments, conducting performance appraisals, and ensuring that health and safety procedures are followed. This course is designed to meet the needs of the company officer as outlined in the National Fire Protection Standard 1021.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Assign tasks or responsibilities to unit members

Apply human resource policies and procedures  
 Initiate action to a citizen's concern  
 Execute administrative functions  
 Evaluate fire cause information  
 Apply safety regulations

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2

### **FRPT 1126 - Introduction to Fire Investigation (3)**

This course is intended to provide the student with the basic fundamentals and technical knowledge needed for proper fire scene interpretations, including recognizing origin and cause, preservation of evidence and documentation, scene security, motives of the fire setter, and types of fire causes.

Prerequisite: FRPT1101 or FRPT1137 or Instructor Approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate the importance of documentation, evidence collection, and scene security process needed for successful resolution
- Demonstrate the process of conducting fire origin and cause investigation
- Identify the responsibilities of a firefighter when responding to the scene of a fire, including scene security and evidence preservation
- Identify the professional development process for fire investigators
- Describe the implications of constitutional amendments as they apply to fire investigations to include case law decisions that have affected fire investigations
- Define the common terms used in fire investigations
- Determine methods of heat transfer
- Explain the basic elements of fire dynamics, construction, and fire protection systems as to how they affect origin and cause determination
- Discuss the basic principles to identify the cause and origin of fires
- Recognize potential health and safety hazards

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477  
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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

### **FRPT 1130 - Fire Inspector I (2)**

This course is designed to teach the student the basic skills needed to conduct fire inspections. The student will learn basic code usage, basic inspection practices and insights on how to work with the public on fire prevention activities.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify products of combustion

Differentiate flammable and combustible liquids

Analyze present fire problems

Demonstrate local/state fire code uses

Identify means of egress requirements for various occupancies

Demonstrate pre-inspection and post-inspection techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2

### **FRPT 1137 - Introduction to Fire and Emergency Services (3)**

This course provides a broad overview of fire protection and emergency services. Topics include: career opportunities in fire protection and related fields, culture and history of emergency services, organization and function of public and private fire protection services, fire departments as part of local government; laws and regulations affecting the fire service, fire service equipment; specific fire protection functions; basic fire chemistry and physics, fire protection systems; introduction to fire strategy and tactics, and life safety initiatives.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Illustrate the history and culture of the fire service

Analyze the basic components of fire as a chemical chain reaction, as well as the major phases of fire

Examine the main factors that influence fire spread and fire behavior

List the major organizations that provide emergency response service, and how they interrelate

Explain the scope, purpose, and organizational structure of fire and emergency services  
 Differentiate between fire service training and education  
 Explain the value of higher education to the professionalization of the fire service  
 Define the role of national, state, and local support organizations in fire and emergency services  
 Describe the common types of fire and emergency service facilities, equipment, and apparatus  
 Compare and contrast effective management concepts for various emergency situations  
 Identify fire protection and emergency-service careers in both the public and private sector  
 Explain the primary responsibilities of fire prevention personnel, including code enforcement, public information, and public and private protection systems  
 Develop the components of career preparation and goal setting  
 Demonstrate the importance of wellness and fitness as it relates to emergency services

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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 Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

### **FRPT 1156 - Fire Protection Systems (3)**

This course examines design features and operation of fire protection systems. Topics will include portable extinguishers, fire alarm systems, fixed special agent systems, water supply and sprinkler systems.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain the different types of fire protection systems found in various types of structures  
 Analyze the uses and benefits of fire protection systems found in various types of structures  
 Summarize the elements of public water supply systems as they relate to fire protection systems  
 Explain the operation for different types of portable fire protection systems  
 Identify the different types and components of fire suppression systems  
 Discuss residential and commercial sprinkler legislation  
 Compare the components in a fire alarm system  
 Describe the hazards of smoke  
 Discuss the factors that influence smoke and fire movement in a structure

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.  
 Brooklyn Park Campus - 763-488-2477  
 Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

### **FRPT 1161 - Building Construction for Emergency Services (3)**

This course provides an overview to fire protection and emergency services; career opportunities in fire protection and related fields; culture and history of emergency services; fire loss analysis; organization and function of public and private fire protection services; fire departments as part of local government; laws and regulations affecting the fire service; fire service nomenclature; specific fire protection functions; basic fire chemistry and physics; introduction to fire protection systems; introduction to fire strategy and tactics; life safety initiatives.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe building construction as it relates to firefighter safety, buildings codes, fire prevention, code inspection, firefighting strategy, and tactics

Classify major types of building construction in accordance with a local/model building code

Analyze the hazards and tactical considerations associated with the various types of building construction

Explain the different loads and stresses that are placed on a building and their interrelationships

Identify the function of each principle structural component in typical building design

Describe the difference between fire resistance and flame spread

Classify occupancy designations of the building code

Identify the indicators of potential structural failure as they relate to firefighter safety

Identify the role of geographic information systems as it relates to building construction

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-993-1300

Credit Details: Lecture: 3

### **FRPT 1166 - Apparatus Operator (1)**

This course is designed to provide working knowledge of pumping apparatus and provide students an opportunity to apply water hydraulic principles. Fire pump operation and associated accessories will be covered. It will introduce the student to apparatus maintenance and necessary record keeping. Students are encouraged to develop attitudes and skills necessary for safe driving and operation of a pumper. This course follows the NFPA 1002 Standard for apparatus operators.

Prerequisite: Completed or taking concurrently with FRPT1285 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Examine the principles of pump operating systems

Predict conditions that may result in pump damage

Demonstrate various driving skills  
 Calculate types of fluid pressures  
 Determine types of hydrants  
 Calculate available water flow  
 Produce fire streams  
 Calculate friction loss  
 Identify the principles of drafting water

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: .5 Lab: .5

### **FRPT 1176 - Hazardous Materials First Responder Operational (2)**

This course is designed to teach the necessary skills to protect yourself, your fellow responders and the public from exposure in a hazardous materials incident. The course meets the requirements of the OSHA 1910.120 for the First Responder Operation level. The student will learn how to recognize and identify the presence of hazardous materials, the proper protective clothing to use, how to decontaminate properly, how to establish an Incident Command System and the proper standard operating procedures to maintain safety at the incident scene. The course follows the NFPA Standard 472 requirements for the First Responder Operational level.

Prerequisite: FRPT1101

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Examine DOT/UN (Department of Transportation/United Nations) hazard classifications

Determine an events analysis

Illustrate physical properties of hazardous materials

Show the components of a MSDS (Materials Safety Data Sheet)

Classify types of chemical protective clothing

Ascertain the level of decontamination needed

Show the set up of a decontamination station

Construct an incident action plan

Practice defensive actions

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1.5 Lab: .5

### **FRPT 1181 - Hazardous Materials Technician (1)**

This course is designed to teach the necessary skills to protect yourself, your fellow responder and the public from exposure in a hazardous materials incident. The course meets the requirements of the Occupational Safety and Health Administration 1910.120 standard for the level of Technician. Students will be shown how to identify the presence of hazardous materials, the proper protective clothing to use, how to decontaminate properly, how to establish an Incident Command System and the proper standard operating procedures to maintain safety at the incident scene. Student will also be introduced to physical mitigation activities. The course follows the National Fire Protection Association Standard 472 requirements for Technician.

Prerequisite: Required: FRPT1176 and Recommended: FRPT1280

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate site control measures

Demonstrate mitigation

Describe the necessary record keeping

Describe the necessary termination procedures

Select and use proper specialized personal protective equipment

Implement decontamination procedures

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: .5 Lab: .5

### **FRPT 1240 - Emergency Response Operations (1)**

This course is to supplement the material and skills learned in Firefighter I, Apparatus Operator and Hazardous Materials classes and give the student hands on experience by simulating the job in the field. This will give the student experience in working a fire department shift and an opportunity to exercise their skills and decision-making abilities through various controlled scenarios including different types of fires, fire alarms, vehicle accidents, rescues, hazardous materials release and other emergency calls.

Prerequisite: FRPT1101, FRPT1105 or Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate the ability to work with other entities within the emergency response

Analyze various situations found in the field

Mitigate various emergencies

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 0 lab: 1

### **FRPT 1250 - Incident Command for Emergency Services (3)**

This course explores basic emergency management principles for public safety personnel. Topics such as incident command systems (ICS) and The National Incident Management System (NIMS) will be covered and will meet requirements for professional licensure in various areas of public safety including the Minnesota Emergency Medical Services Regulatory Board, the Minnesota Board of Peace Officer Standards and Training, and the Minnesota Fire Service Certification Board. This course also satisfies various prerequisites to attended training at the national level through the National Domestic Preparedness Consortium.

Additionally, students will also cover topics included as part of the Federal Emergency Management Agencies' (FEMA) Professional Development Series that provide a well-rounded set of fundamentals for those in the emergency management profession. Many students build on this foundation to develop their careers. Upon completion of the Professional Development Series, students will earn a certificate from FEMA.

Prerequisite: Basic computer skills and understanding of Internet strongly recommended for successful course completion

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain the principles and basic structure of the Incident Command System (ICS)

Describe how the National Incident Management (NIMS) Characteristics relate to Incident Command and Unified Command

Identify ICS organizational components, the Command Staff, the General Staff, and ICS tools

Explain Emergency Operations Center (EOC) functions, common models for staff organization, and activation levels

Describe the purpose, scope, organization, and underlying doctrine of the National Response Framework

Describe the roles and responsibilities of first responders and partner organizations

Describe how the stabilization of the seven Community Lifelines reduces threats to public health and safety, or economic security

Develop a baseline knowledge of exercise fundamentals

Explain how different partners contribute to emergency management in your community

Explain the steps and resources necessary for developing a comprehensive emergency operations plan

Explain how to plan, manage, and coordinate resources for an efficient and effective emergency response

Explain the functions of emergency management in emergency and day-to-day situations

Describe crisis decision making strategies for applying the problem-solving model.

Describe ethical decision making

Identify strategies for communicating effectively in emergency situations

Identify situations in which volunteers can be a useful addition to response and recovery operations

Identify individual actions for preventing and deterring terrorism

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab

credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

**FRPT 1255 - Introduction to Emergency Management (3)**

This course explores the needs of public safety officials who have responsibility for emergency preparedness planning and response. Emergency planning concepts such as legal and jurisdictional contexts, planning and response responsibilities, planning approaches for different types of emergencies will be covered. This course addresses specific issues associated with the planning process, including the role of the manager, the necessity for multi-agency involvement, various analytical techniques employed in planning, different levels of emergency planning, and different elements of the plan. This course examines the history and perspectives of emergency management, hazards, concepts and taxonomies, all-hazards approach, phases of emergency management, risk assessment, risk communication and emergency management functions.

Prerequisite: Concurrently enrolled or completed FRPT1250

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Explain the connection between disaster areas and personnel charged with responding and how each is influenced by multi-jurisdictional agencies

Describe the principles of effective disaster planning

Identify the problems of stimulating adoption of mitigation and preparedness plans within communities

Describe the principles and authorities that are the foundation of emergency management

Explain how the different partners contribute to emergency management in their community

Explain how the core capabilities support the mission areas to ensure preparedness

Describe the roles of each partner in emergency management

Explain the steps and resources necessary for developing a comprehensive emergency operations plan

Describe how to plan, manage, and coordinate resources for an efficient and effective response

Explain the functions of emergency management in emergency and day-today situations

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

**FRPT 1260 - Fire Behavior and Combustion (3)**

This course explores the theories and fundamentals of how and why fires start, spread, and are controlled. Provides an understanding of the basic principles of fire chemistry, the process of fire combustion, fire behavior, and examination of the effects of fire behavior on the safety of individual firefighters. The course also categorizes the components of fire and explains the physical and chemical properties of fire.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify physical properties of the three states of matter

Categorize the components of fire

Explain the physical and chemical properties of fire

Describe the process of burning

Define basic terms and concepts associated with the chemistry and dynamics of fire

Explain the effect and dangers of air movement on the combustion process

Discuss various materials and their relationship to fires as fuel

Demonstrate knowledge of the characteristics of water as a fire suppression agent

Articulate other suppression agents and strategies

Compare other methods and techniques of fire extinguishments

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

### **FRPT 1265 - Principles of Emergency Services Safety and Survival (3)**

This course introduces the basic principles and history related to national firefighter life safety initiatives, focusing on the need for cultural and behavior change throughout the emergency services.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Illustrate how technological advancements produce higher levels of emergency service safety and survival

Explain concepts of risk management and mitigation as it pertains to emergency services, including strategic and tactical decision-making and planning responsibilities

Discuss the importance of standards in design of apparatus and equipment, including personal protective equipment and enforcement of codes

Define the need for cultural and behavioral change within emergency services related to safety

Identify support services for emergency services personnel

Explain the vital role of local departments in national research and data collection systems

Explain the need for enhancements of personal and organizational accountability for health and safety

Describe the importance of public education as a resource to life safety programs.

Identify the 16 Life Safety Initiatives

Adopt standardized policies for responding to emergency scenes

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

### **FRPT 1270 - Introduction to Fire Prevention (3)**

This course provides fundamental knowledge relating to the field of fire prevention. Topics include: history and philosophy of fire prevention, organization and operation of a fire prevention bureau, use and application of codes and standards, plans review, fire inspections, fire and life safety education, and fire investigation.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain the role of fire prevention in accordance with the national fire problem

Describe fire prevention organizations and associations

Relate fire prevention governance to jurisdiction authority

Define laws, rules, regulations, ordinances, and codes, as they relate to fire prevention

Define the functions of a fire prevention division

Describe inspection practices and procedures

Explain the standards for professional qualifications for personnel within the fire prevention division

Summarize opportunities in professional development for fire prevention personnel

Describe the historical development of fire prevention

Explain how code enforcement impacts life and property loss

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: Lecture: 3

### **FRPT 1275 - Introduction to Emergency Communication Systems (3)**

This course will introduce students to emergency communication systems and the role of public safety telecommunicators, more commonly known as 9-1-1, dispatchers. All facets of emergency services (law enforcement, fire, emergency medical services)

will be explored as they relate to emergency communications. Students will be introduced to each segment and their specific needs as it relates to communication. Other topics include interpersonal communication, telephone communication skills, communication technology, computer aided dispatch, and call classification and prioritization.

Prerequisite: Qualifying score on writing assessment test OR ENGL0930 with a grade of "C" or better and Qualifying score on keyboarding assessment test OR CPLT1000

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain the duties of a public safety tele-communicator within emergency services

Identify the needs of the incident command system (ICS) in an emergency situation

Explain the enhanced 9-1-1 system as it pertains to city, county and cell phone calls for service

Gather factual information and apply it to a given problem in a manner that is relevant, clear, and comprehensive

Identify possible bias in the information given and selected

Differentiate between the role of call taker and dispatcher

Describe the information required to dispatch medical, police, and fire units to the many different calls they respond to

Draw an organizational matrix that is representative of the anatomy of emergency services communications

Identify the common terminology used in the emergency communication system

Evaluate the role of geographic information system (GIS) mapping and enhanced 911 systems

List the various State and Federal regulations that affect the emergency communications

Describe techniques for relaying clear, effective communications

Identify the technical aspect of how basic radio systems work for use in the public radio system and how they are licensed

Articulate the foundational security concepts and best practice principles of analog and digital public radio systems

Compare and contrast "right to know" information and protected personal and personally-identifiable information

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

### **FRPT 1280 - Hazardous Materials Chemistry (3)**

This course provides basic chemistry relating to the categories of hazardous materials including recognition, identification, reactivity, and health hazards encountered by emergency services.

Prerequisite: FRPT1176 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the common elements of the Periodic Table

Distinguish between elements, compounds, and mixtures

Explain the difference between ionic and covalent bonding

Define the basic chemistry involved with common hydrocarbon derivatives

Describe the basic chemical and physical properties of gases, liquids, and solids

Discuss the nine U.S. Department of Transportation hazard classes and their respective divisions

Demonstrate the utilization of guidebooks, Material Safety Data Sheets, and other reference materials to determine an initial

course of action

Predict the hazards/reactivity of a chemical based on chemical family

Explain explosives, compressed gases, flammable materials, poisons, toxic materials, and radiation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

### **FRPT 1285 - Fire Protection Hydraulics and Water Supply (2)**

This course provides a foundation of theoretical knowledge in order to understand the principles of the use of water in fire protection and to apply hydraulic principles to analyze and solve water supply problems.

Prerequisite: FRPT1101 or FRPT1137 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply the application of mathematics and physics to the movement of water in fire suppression activities

Identify the design principles of fire service pumping apparatus

Analyze community fire flow demand criteria

Demonstrate, through problem solving, a thorough understanding of the principles of forces that affect water, both at rest and in motion

Describe the various types of water distribution systems

Discuss the various types of fire pumps

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 2

### **FRPT 1290 - Emergency Services Instructor (4)**

This course is designed for individuals conducting, or overseeing, instruction within the emergency services field. Students will explore how to work in, and manage, classroom and practical settings. Topics covered include: learning styles and barriers to

learning, developing instructional goals and outcomes, creating curriculum and lesson plans, types and uses of learning aids including technology, education evaluation tool development, concepts of program administration, and legal aspects of instruction. This course follows the United States Department of Transportation/National Highway Traffic Safety Administration's National Guidelines for Education of EMS Instructors as well as National Fire Protection Association (NFPA) 1041 Standard for Fire and Emergency Services Instructor.

Prerequisite: EMSV1100 Emergency Medical Technician or FRPT1101 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe principles of ethics, standards, and legal considerations in emergency services education

Identify the traits and needs of learners

Define the psychology of learning

Describe strategies for educational planning and curriculum development

Describe strategies for determining and communicating educational needs

Differentiate between instructional goals and learning outcomes

Define instructional goals and competencies

Discuss how to evaluate an emergency services education program

Describe principles of educational measurement

Describe principles of student evaluation and remediation

Discuss how to use educational materials and media

Identify teaching styles

Describe principles of instructional strategies and methodology

Describe strategies for classroom management

Describe strategies for classroom, laboratory, fire ground, clinical, and field internship instruction

Explain the importance of professional development

Evaluate accountability in education as it relates to program administration, accreditation, risk, and liability

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 4

### **FRPT 2105 - Fire Instructor II (2)**

This course is designed to provide individuals entering into situations which require planning for teaching or instructing with some of the advanced skills necessary to oversee a classroom or drill ground setting. The student will learn the role of the instructor, to identify various learning styles and develop instructional materials, and will demonstrate the ability to deliver instruction and evaluate student learning.

Prerequisite: FRPT1110

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Coordinate training sessions

Formulate budget needs

Conduct a class  
Develop instructional materials  
Create a lesson plan  
Modify a lesson plan  
Develop instructor evaluation instruments  
Analyze student evaluations to determine test validity

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 2

### **FRPT 2111 - Strategy and Tactics (3)**

This course provides the principles of fire ground control through utilization of personnel, systems, equipment, and extinguishing agents. Function and components of command will also be explored.

Prerequisite: FRPT1101 or FRPT1137 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Discuss fire behavior and environment as they relate to strategy and tactics

Explain the main components of pre-fire planning

Identify the basics of building construction and how they interrelate to pre-fire planning, strategy, and tactics

Describe the steps taken during initial scene size-up

Examine the significance of fire ground communications

Determine the importance of delegation

Identify the roles of the National Incident Management System (NIMS) and Incident Management System (ICS) as it relates to strategy and tactics

Demonstrate the various roles and responsibilities in ICS/NIMS

Create a tactical strategy

Identify appropriate tactics

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

### **FRPT 2115 - Fire Officer II (2)**

The Fire Officer II is a mid-level supervisor who performs both supervisory and first-line managerial functions and who has met the requirements for Fire Officer I. Study will focus in the area of Human Resource Management, Community and Government Relations, Inspection and Investigation, Emergency Service Delivery, Health and Safety.

Prerequisite: FRPT1110 and FRPT1120

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply actions to maximize member performance

Develop a policy or procedure

Prepare a project or divisional budget

Administer the procedures for conducting fire inspections

Determine the point of origin

Analyze an accident

Evaluate job performances

Produce operational plans

Prepare a concise report

Conduct a post-incident analysis

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 2

### **FRPT 2121 - Advanced Fire Investigation (3)**

This course is intended to provide the student with advanced technical knowledge on the rule of law, fire scene analysis, fire behavior, evidence collection and preservation, scene documentation, case preparation, and courtroom testimony.

Prerequisite: FRPT1126 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain the need for the use of the scientific method for investigations

Analyze the role of the fire investigator within the criminal and civil legal process

Explain the rule of law as it pertains to arrest, search, and seizure  
Describe the nature and behavior of fire as it relates to fire dynamics  
Analyze the causes of fires and contributing factors  
Evaluate the use of incendiary devices, explosives, and bombs  
List the procedures for fire scene documentation  
Identify sources and technology available for fire investigations  
Explain the role of the fire investigator in the trial process

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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Eden Prairie Campus – 952-995-1544

**Campus:**

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

**FRPT 2125 - Fire Inspector II (2)**

This course is designed to give the student an understanding of modern fire prevention activities. The student will learn advanced code usage and advanced inspection practices, and gain insight on how to work with the public.

Prerequisite: FRPT1130 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Ascertain the need for fire prevention and fire codes  
Predict future fire protection concerns  
Determine the origin of local and state building codes  
Demonstrate code writing procedures  
Examine methods to reduce inspector liability  
Evaluate past, present, and future inspection and enforcement activities  
Confirm the origin of local, state and national fire codes

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

**Special Accommodations:**

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**Campus:**

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2

**FRPT 2130 - Fire Officer III (2)**

This course is designed to give student the skills necessary to organize and manage a municipal fire department. The student will understand interdepartmental relationships, city government, and fire department organization, and will learn basic administrative skills.

Prerequisite: FRPT2115 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate written and oral communication procedures
- Determine the fire chief's role in personnel management
- Evaluate the organizational management model
- Compare the position of volunteer, paid-on-call and full time fire fighter
- Examine hiring constraints
- Convey liability issues facing a fire chief
- Relate the need for job entry qualifications

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2

**FRPT 2140 - Personnel Management for Fire Department Services (3)**

This course will give the student skills in personnel practices and management procedures. The student will learn concepts of collective bargaining, binding arbitration, promotional procedures and career incentive plans.

Prerequisite: FRPT2115 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Interpret the roles of human resources
- Determine the role of city council
- Demonstrate the process of problem solving
- Demonstrate the process of decision making
- Apply problem solving and decision making skills
- Interpret the role of arbitrator
- Apply delegation of authority
- Demonstrate the communication process
- Discover the role of city attorney

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

**Special Accommodations:**

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**Campus:**

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**Credit Details:** lecture: 3

### **FRPT 2250 - Incident Command for Emergency Managers (3)**

This course expands on the Incident Command System (ICS) and the National Incident Management System (NIMS), the relationship between the two, and the history, features, concepts, principles, and organizational structure of both. This course will address how all levels of government, nongovernmental organizations (NGO), and the private sector work together seamlessly to prevent, protect against, mitigate, respond to, and recover from the effects of incidents. Students will explore topics such as emergency operations centers, continuity of operations, resource management, public alerting, weather emergencies, damage assessment, and debris removal.

After successfully completing this course, students will have completed the required prerequisite training for the Minnesota Emergency Manager certifications through the Minnesota Department of Homeland Security.

**Prerequisite:** FRPT1250 or Instructor Approval.

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Identify the actions that initiate the Integrated Public Alert and Warning System (IPAWS) alert or message process

Explain the basic processes that cause and/or signal hazardous weather

Identify the National Weather Service forecast information that is appropriate in various situations

Analyze various sources of information about hazards that could threaten your community

Define hazard mitigation and the importance of hazard mitigation in sustainable communities

List the main components of each phase of the local hazard mitigation planning process

Describe basic operations of local damage assessment

Explain strategies for debris removal

Describe the use of mutual aid in incidents

Describe the importance of continuity planning for organizations and communities

Describe the role of the emergency operations center in overall multi-agency coordination

Describe the unique strengths that voluntary agencies bring to the emergency management community

Identify the roles and services that voluntary agencies provide throughout each phase of the emergency management cycle

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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Credit Details: Lecture: 3

### **FRPT 2255 - Introduction to Homeland Security (3)**

This course provides an overview of the concept of Homeland Security and the relationship to the Department of Homeland Security. This course builds on emergency concepts and explores the need to balance terrorism threats, natural disasters, and other hazards. Topics include homeland security organizations, public-private partnerships, intelligence and counterterrorism, border security and immigration, transportation safety and security, communications, cybersecurity, and critical infrastructure protection; identification of vulnerabilities, mitigation, prevention, and preparedness; all-hazards response and recovery; statutory actions, critical guidance documents, directives, and legislation; and the various programs and actions undertaken by government agencies, community organizations, and the private sector in support of homeland security.

After successfully completing this course, students will have completed the required prerequisite training for the Critical Infrastructure Planner certification through the Minnesota Department of Homeland Security.

Prerequisite: FRPT1255 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain the evolution, structure, and future of the Department of Homeland Security (DHS)

Describe the response, recovery, mitigation, prevention, and preparedness capabilities of an all-emergency response

Discuss the roles and responsibilities of intelligence, security and counterterrorism organizations, and state, local, and private organizations

Evaluate the strengths and weaknesses of the cybersecurity and critical infrastructure protection efforts

Explain the roles and effects the government, media, and social media have had on crisis communications and hazard preparedness

Describe the importance of public-private partnerships to emergency preparedness and planning

Describe the core tenets and the values and assumptions considered when planning for critical infrastructure security and resilience

Determine the actions to take in response to a security situation

Identify actions that you can take to detect potential adversarial surveillance incidents

Identify potential targets of adversarial surveillance

Describe the threat that malicious insiders pose to critical infrastructure

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

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Credit Details: Lecture: 3

### **FRPT 2260 - Legal Aspects of Emergency Services (3)**

This course will address the federal, state, and local laws that regulate emergency services and include a review of national standards, regulations, and consensus standards.

Prerequisite: FRPT1137 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Define laws, rules, regulations, ordinances, and codes, as they relate to emergency services

Analyze the sources of law

Apply federal, state, and local laws and liabilities applicable to emergency services

Define the purpose of national codes and standards

Discuss applicable court decisions that have influenced emergency services

Recognize the legal issues and concerns affecting emergency services

Analyze contracts, labor law and employment issues

Evaluate employee rights and discrimination including sexual harassment and hostile work environments

Explain the federal FMLA and Whistleblower statutes and how they apply to the fire service

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

### **FRPT 2265 - Principles of Fire and Emergency Service Administration (3)**

This course introduces the student to the organization and management of a fire and emergency services department and the relationship of government agencies to the fire service. Emphasis is placed on fire and emergency service ethics and leadership from the perspective of the company officer.

Prerequisite: FRPT1137 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the basic theories of public sector management

Recognize the importance of ethics and communication skills

Articulate the importance of the public policy process, responsibility, and authority

Acknowledge career development opportunities and strategies for success

Recognize the need for effective communication skills, both written and verbal

Explain the concepts of span and control, effective delegation, and division of labor

Select the appropriate disciplinary action based upon an employee's conduct

Explain the history of management and supervision methods and procedures

Discuss the various levels of leadership, roles, and responsibilities within the organization

Describe the traits of effective versus ineffective management styles

Identify the importance of ethics as it relates to fire and emergency services

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

### **FRPT 2270 - Fire and Life Safety Education (4)**

The course prepares students to develop and deliver fire and life safety education programs. Topics include: a history of fire prevention education, learning styles, methods for effective teaching, public relations, high-risk populations, youth fire setters, professionalism, developing life safety curricula, evaluation and assessment, and identifying future trends.

Prerequisite: FRPT1270 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Differentiate between public education, public information and public relations/marketing

Demonstrate the need for establishing fire and life safety education as a value within the fire service culture

Identify fire safety stakeholders

Identify a process to develop partnerships and coalitions to work on fire and life safety education activities

Identify local, regional, and national sources of data for fire and injury prevention programs

Explain how to disseminate information to appropriate groups

Identify budget needs for program delivery and the process for requesting funds

Select appropriate instructional materials.

Design a fire and life safety education programs that address specific community risk issues

Administer an evaluation instrument

Develop an accountability system to measure program

Explain how to implement strategies to establish and maintain a youth fire setting prevention program

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: Lecture: 4

### **FRPT 2275 - Fire Inspection and Code Enforcement (3)**

This course is designed to teach the student the fundamental knowledge needed to conduct fire inspections. Topics in the course include in-depth instruction into: basic code usage, inspection procedures, fire hazard recognition, installed systems, means of egress, plan review and emergency planning and preparedness.

Prerequisite: FRPT1156 and FRPT1270 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Explain the code enforcement system and the fire inspector's role in that system
- Describe the codes and standards development and adoption processes
- Describe the difference between prescriptive and performance-based codes
- Describe the legal authority and limitations relevant to fire code inspections
- Describe the importance of thorough documentation
- Recognize ethical practices for the code enforcement officer
- Explain the applications, and interrelationship of codes, standards, recommended practices and guides
- Describe the differences in how codes apply to new and existing structures
- Identify appropriate codes and their relationship to other requirements for the built environment
- Describe the political, business, and other interests that influence the code enforcement process
- Identify the professional development process for code enforcement practitioners

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: Lecture: 3

### **FRPT 2280 - Emergency Services Internship (1)**

This course is an individualized internship that focuses on the student's emphasis within public safety, emergency management, or related fields. Each credit equates to 40 hours of hands-on experiential learning and is normally taken during the last semester of a student's major. Students participate on-site with professionals and are evaluated by predetermined curriculum objectives that have been agreed upon by the employer, instructor and student. This course provides the student with valuable on-the-job experience, interaction with industry professionals, and preparation for job entry. Students are responsible for arranging their own internship site.

Prerequisite: FRPT1105 or FRPT1137 or FRPT1255 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Outline career/internship goals
- Identify internship plan and site
- Complete internship paperwork
- Project professional image according to industry standards
- Demonstrate responsibility for internship
- Exercise dependability
- Demonstrate technical competence
- Ascertain working environment guidelines
- Demonstrate competence in performing assigned tasks
- Handle constructive directives
- Show mature attitude
- Demonstrate cooperation
- Recognize successful working relationships
- Demonstrate effective communication skills
- Complete follow-up for internship completion

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

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**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

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Eden Prairie Campus – 952-995-1544

**Campus:**

Eden Prairie Campus: 952-995-1300

SOE: 1-6

## HCCC - Health Care Core Curriculum

### **HCCC 1030 - Behaviors for Success in the Healthcare Industry (0.5)**

This course focuses on the behavioral requirements needed by healthcare workers to effectively work in a variety of health care settings. Accountability and responsibility, standards of dress, workplace behavior, approaches needed to assist clients and expectations of teams and team members will also be included. Students will explore how to apply for employment, healthcare facility policies and procedures and selected medical and departmental abbreviations. Emphasis will be placed on how health care workers can impact the quality of health care and balance their work and personal life to maintain personal wellness. Must be taken Pass/Fail.

**Prerequisite:** Qualifying score on reading assessment test OR ENGL0901

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Describe ways healthcare personnel can balance work and personal life to maintain personal wellness

Describe the expectations employers have of healthcare personnel

Identify quality issues in healthcare facilities relating to how they impact workers and delivery of care

Describe the common policies and requirements for various healthcare facilities

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

**Credit Details:** lecture: 0.5

### **HCCC 1040 - Awareness and Sensitivity to Client's Needs (0.5)**

This course presents challenges and issues related to the awareness and sensitivity needed to understand the healthcare needs

of clients. This includes the impact disease has on individuals, the emotional, spiritual, and social needs of clients, and the type of care needed by different age groups. Also included is the process of death and dying and how it affects clients and their families. Must be taken Pass/Fail

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the major stages of human development to include basic health needs

Explain the needs of clients of different age groups and how those needs can affect behaviors, attitudes and service strategies for quality of care

Describe the types of emotional, spiritual and social needs of clients and their families

Explain how different diseases can influence the functioning, behaviors and attitudes of individuals

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

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Credit Details: lecture: 0.5

### **HCCC 1050 - Respect for Client and Staff Diversity (0.5)**

This course provides a framework for dealing with diverse residents, clients and staff. Included are belief systems, cultural practices, and respect and sensitivity to cultural and gender issues. Emphasis is placed on awareness and use of effective strategies to appropriately deal with diversity in the workplace. Must be taken Pass/Fail.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Compare one's personal belief system and practices with those of other cultures

Identify personal responsibilities to respect people as individuals

Describe workplace expectations for interaction between team members, clients and individuals from diverse cultures, gender, age and sexualities

Describe how healthcare employees can respect client and staff members

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 0.5

### **HCCC 1060 - Communication in Healthcare (1)**

This course emphasizes the importance of effective communication between and among healthcare workers and their clients. Included are verbal and nonverbal communication, listening skills, interpersonal communication, team communication, documentation and reporting, and the use of electronic communication skills to support quality client care. Must be taken Pass/Fail.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe components of effective verbal and non-verbal communication

Explain how active listening skills can improve communication

Identify the use of a variety of communication techniques to achieve effective interpersonal and team communication

Apply a problem solving process in healthcare situations

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1

### **HCCC 1070 - Healthcare Safety and Standard Precautions (0.5)**

This course focuses on the rules and standards related to regulatory policies required of healthcare facilities, as well as personal safety standards and requirements to work in healthcare settings. Included are the principles and standards of infection control, standard precautions and healthcare facility safety policies. Strategies to ensure personal, client and resident safety, and procedures to respond to emergencies will also be addressed. Must be taken Pass/Fail.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the principles and standards of infection control

Identify agencies with requirements for safety standards in healthcare facilities, their employees, clients and individuals

Describe the process that healthcare facilities use to achieve safety in various areas

Identify the ways in which healthcare workers can demonstrate personal and client safety

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 0.5

### **HCCC 1080 - Legal Issues in Healthcare (0.5)**

This course focuses on the legal issues related to clients and healthcare workers. Areas such as healthcare laws, client rights and responsibilities, confidentiality, liability, documentation, and regulations are explored. The relationship between ethics and legal issues is discussed, as well as the impact laws and regulations have on healthcare systems. Must be taken Pass/Fail.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Define the Vulnerable Adult Law and how it relates to abuse, neglect, and exploitation

Explain the laws related to healthcare and their influences on the healthcare delivery system

Describe confidentiality and its impact on all concerned

Describe the obligation of the healthcare providers to ensure clients and workers' rights

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 0.5

### **HCCC 1090 - Healthcare Ethics (0.5)**

This course emphasizes the use of sound ethical practices in healthcare. Included are ethical principles and standards as they relate to the care of clients and interactions with peers, colleagues, and team members. Ethical frameworks are provided for discussion on understanding the types of ethical challenges in healthcare and the difficult decisions that need to be made. Must be taken Pass/Fail.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Describe basic principles of professional relationships
- Identify ethical decision making models applied to healthcare
- Identify aspects of ethical decision making in healthcare
- Describe dimension of values as they impact healthcare

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

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Credit Details: lecture: 0.5

**HCCC 1100 - Nursing Assistant Skills (2)**

This course focuses on the skills needed to successfully care for residents in a multitude of health care settings. This course includes, but is not limited to, the following skills for providing a resident care: personal hygiene, effective communication, safety in transferring and moving, feeding and hydration needs, and monitoring of vital signs. Additional skills in how to recognize resident concerns/problems and report these issues to the charge nurse, and the ability to correctly document cares provided for the resident are included in this course. There are 64 hours of skills training in this course, 40 hours will be in the lab and 24 hours will be at a Minnesota Department of Health (MDH) approved facility. Completion of the seven HCCC courses, plus this Nursing Assistant (NA) skills course prepares the student to take the Nursing Assistant Test Out (NATO) written and skills certification exams. This course must be taken Pass/Fail.

Prerequisite: HCCC1030, HCCC1040, HCCC1050, HCCC1060, HCCC1070, HCCC1080, and HCCC1090

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Demonstrate ability to effectively communicate with residents
- Demonstrate ability to safely transfer residents
- Demonstrate ability to perform personal hygiene cares for residents
- Demonstrate ability to correctly don and doff personal protective equipment
- Measure and record intake of hydration and output of body fluids of a resident
- Measure and record vital signs of a resident

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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lab: 2

## HIST - History

### HIST 1400 - Contemporary World History (3)

This course explores topics of modern history from World War II to present. Topics covered will include the following: the Cold War, social and economic patterns, peace initiatives, global terrorism, neo-imperialism, and decolonization.

Prerequisite: Qualifying score on writing assessment test OR ENGL0960 and Qualifying score on reading assessment test OR ENGL0921. Basic computer skills recommended.

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain the significance of major events, people, movements, and ideas in world history from 1945 to the early 21st century

Evaluate various perspectives on historical inquiry by engaging critically with both primary and secondary sources

Use historical evidence and methods when writing about history

Demonstrate historical thinking by examining historical context, change and continuity, contingency, and complexity

Analyze the diversity of people in their appropriate historical contexts

Compare and contrast major historical events, people, movements, and ideas of the last century with those of the present

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

MnTC Goal Areas: 5 & 8.

## HLTH -

### HLTH 1000 - Introduction to Health Careers (3)

This course is designed to serve as an exploration and orientation to various fields in the healthcare industry, such as medical assisting, medical office careers, nursing, pharmacy technician, emergency medical services, and health unit coordinator. It is intended to be survey of the healthcare industry in the United States. This course provides students with an opportunity to learn more about various careers in healthcare, the job outlook, career pathways, and what is needed to be successful in healthcare.

Prerequisite: Recommended: Qualifying score on reading assessment test OR ENGL0921

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Examine professionalism and the factors that are involved in becoming a professional within the health care industry
- Compare potential healthcare careers with respect to personal values, knowledge skills, attitudes, educational requirements, program offerings and employment opportunities in order to define and structure career goals
- Investigate the requirements for entry into a variety of healthcare professions degree programs, certification/licensure, and prior experience
- Investigate the educational background methods of credentialing and licensing requirements of healthcare professions on a state and national level
- Identify legal and ethical responsibilities affecting the practice of health care professionals
- Describe the current health care systems and their trends
- Assess professional goals to the best-fit healthcare field and determine the educational path necessary to achieve this professional goal
- Analyze attitudes, values and behaviors to promote positive human relationships and appropriate communication both verbal and non-verbal in a health care setting
- Assess critical thinking skills through case studies, which include problem solving, communication, and decision making skills that will be utilized in a healthcare setting

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 0

### **HLTH 1010 - Anatomy and Physiology (4)**

This course assists the student to understand the basics of anatomy and physiology of the human body. This course will span the entire organizational format of the body, starting with the basic cell and including all of the body systems to form the complex human being. In addition, students will learn the basics of medical terminology associated with anatomy and physiology.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- List the levels of organization of the human body
- Describe the eleven major organ systems using proper medical terminology
- Differentiate between types of cellular movement
- Explain the four different functions of intact skin
- Identify the major structures of the skeletal system
- Demonstrate the actions of the major muscle groups
- Compare functions of the structures located in the nervous system
- Categorize the major endocrine organs based on the type of hormones they secrete
- Trace the blood flow through the body
- Identify the organs included in the digestive process
- Explain how oxygen and carbon dioxide are exchanged in the respiratory system
- Describe the events in urine formation
- List structures required to produce and transport the gametes

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

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**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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**Campus:**

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**Credit Details:** lecture: 4

### **HLTH 1020 - Disease Conditions (3)**

This course introduces the student to important concepts related to human diseases. The most common disease and disorders of each body system are presented along with a review of the anatomy and physiology pertinent to the content. Additionally, the effects of aging throughout the lifespan on the body systems and the relationship to the disease are presented.

**Prerequisite:** HLTH1010 or BIOL1400 and HLUC1020 or MAST1010

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Define disease

Explore concepts related to human disease

Explore manifestations of diseases

Investigate mechanisms associated with human diseases

Define key terminology relevant to human diseases

Identify signs of diseases

Identify symptoms of disease

Investigate diagnostic tests for common human diseases

Investigate diagnostic tests for common human disorders

Discover etiology related to human diseases

Convey disease prevention to age specific population

Describe common human diseases

Investigate the effects of aging on specific body systems

Investigate nutritional considerations related to disease process

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Credit Details:** lecture: 3

**HLTH 2001 - Nutrition and Health (2)**

This course provides information concerning the relationships between health, food and nutrients. The student will be able to identify the nutritional requirements across the lifespan. Connections between nutrition and health promotion, in addition to cultural, ethnic and religious diversity will be discussed.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Analyze the basic nutrients needed for a healthy diet
- Apply basic nutrition for healthy living
- Illustrate the nutritional challenges faced when adapting to a new culture
- Analyze nutritional needs throughout the life span
- Formulate dietary plans throughout the life span
- Investigate eating disorders
- Develop a plan to prevent foodborne illnesses

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2

## HLUC - Health Unit Coordinator

**HLUC 1002 - Health Unit Coordinator Fundamentals (4)**

This course is an introduction to Health Unit Coordinator nursing unit procedures, routines and communication devices. The student will learn the importance of using critical thinking, problem solving and effective communication skills in the health care environment. An introduction to the roles of the health care team members, admission, discharge and transfer procedures will be covered as well as employment seeking strategies.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Outline national standards for Health Unit Coordinators
- Examine Health Unit Coordinator's routine tasks
- Break down the Health Unit Coordinator's employment responsibilities
- Analyze health care team member responsibilities
- Explore unit communication devices
- Model effective communication strategies

Use health care facility forms  
Explore customer service strategies  
Differentiate between patient movement procedures  
Characterize hospital departments  
Summarize legal and ethical standards in health care  
Examine safety requirements for health care facilities  
Apply employment seeking strategies

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 4

### **HLUC 1020 - Medical Terminology (2)**

This blended online course is designed to acquaint the student with medical terms and abbreviations used in health care settings. Students will be introduced to terms related to basic human anatomy, common diseases and related terminology. Medical abbreviations used by the Health Unit Coordinator and other members of the health care team will be introduced.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Formulate medical terms  
Use word parts to understand medical terms  
Figure out medical abbreviations  
Transform medical symbols to words  
Analyze human body system terminology  
Specify terminology for common diseases

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 2

**HLUC 1061 - Diagnostic and Therapeutic Procedures (3)**

This course is designed to acquaint the student with diagnostic tests and procedures, medication types and terminology, therapies and nursing procedures. The student will become familiar with the terminology necessary to transcribe physician orders. Beginning transcription skills will be taught.

Prerequisite: Successful completion in HLUC1002 and HLUC1020

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate beginning transcription
- Use transcription tools
- Use hospital forms
- Translate abbreviations
- Analyze related medical terms
- Differentiate between nursing order categories
- Break down the steps for scheduling diagnostic procedures
- Categorize therapeutic procedures
- Examine support departments
- Correlate knowledge of order components to order types

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

**HLUC 1101 - Processing Physician's Orders (2)**

This course is designed to give the student the skills needed in transcribing physician's orders. Opportunities will be provided for the student gain experiences transcribing medication orders, diagnostic studies orders, treatment orders, diet orders and activity orders. The student will become acquainted with specialty orders such as admission orders, preoperative orders and postoperative orders. Computer transcription will also be introduced. In addition, the student will gain experience reading hand written physician orders.

Prerequisite: Successful completion in HLUC1002, HLUC1020, and HLUC1061

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Process physician orders
- Critique orders
- Categorize types of physician orders
- Execute computer applications for order transcription
- Figure out handwritten orders
- Break down specialty orders
- Incorporate unit specific competencies

### Summarize Health Unit Coordinator Internship requirements

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

#### Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

#### Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lab: 2

### **HLUC 1200 - Health Unit Coordinator Internship (3)**

This is a cooperative training program between Hennepin Technical College and local health care facilities which allows the student to apply competencies learned in the program to an actual work experience. The student will be assigned to a specific nursing unit in a hospital or nursing home and will be expected to perform various HUC duties.

Prerequisite: Instructor approval and Successful completion of the Health Unit Coordinator courses

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

#### Learning Outcomes:

The following outcomes will be addressed in the course:

Practice HUC duties in a health care facility

Model professional communication and interpersonal skills

Coordinate activities on the nursing unit

Use communication devices

Subscribe to health care facilities policies and procedures

Utilize procedures for processing physician orders

Utilize patient records

Model professional standards for Health Unit Coordinators

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

#### Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

#### Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: SOE: 3

# HVAC - Heating, Ventilation, Air Conditioning and Refrigeration

## HVAC 1000 - Electrical Circuits (3)

This course is designed to introduce the student to the fundamentals of direct current and alternating current circuits. Meter usage, circuit computations, and troubleshooting will also be covered.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Interpret electrical symbols
- Identify electrical construction materials
- Calculate wire sizes
- Create simple lighting circuit
- Calculate simple circuit properties
- Measure simple circuit electrical properties
- Troubleshoot simple electrical circuit
- Troubleshoot electrical components
- Repair individual electrical components
- Create complex wiring circuits
- Calculate complex circuit electrical properties
- Measure complex circuit electrical properties
- Troubleshoot complex electrical circuit
- Assemble a three way switching circuit
- Assemble a fan/blower electrical circuit
- Troubleshoot fan/blower electrical circuit

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

## HVAC 1005 - OSHA 30-Hour Construction Safety Training (2)

This course is designed to meet the requirements of the Occupational Safety and Health Administration (OSHA) 30-Hour Construction Safety Training requirements. The OSHA course will introduce various OSHA policies, standards, and procedures as they apply to the construction industry. Hazards associated with the construction industry will be brought to the student's attention. The OSHA safety and health principles will be applied to the work place in order to minimize the effects these hazards may have. Students must complete the OSHA 30-Hour Construction Safety Training at HTC. Transfer courses will not be accepted.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and

evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Identify OSHA regulations pertaining to the construction industry
- Demonstrate the proper use of personal protective equipment
- Prepare OSHA record keeping forms
- Recognize fall hazards
- Recognize electrical safety requirements
- Define requirements for a competent person(s)
- Demonstrate proper use of hand and power tools
- Recognize excavation hazards
- Recognize ladder and stairway hazards

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 0

### **HVAC 1010 - 1PH Motors and Auxiliary Controls (2)**

This course covers the basic fundamentals of motors. This course will also teach the student to maintain, operate and service motors and auxiliary controls. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: HVAC1000

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Identify electromagnetism
- Identify electromagnetism as it applies to inductance
- Identify electromagnetism as it applies to motors
- Identify electromagnetism as it applies to relays/contactors
- Identify electromagnetism as it applies to start relays
- Troubleshoot electromagnetic components
- Repair electromagnetic components
- Identify single speed motors
- Identify multi-speed motors
- Identify adjustable speed drives
- Identify dual voltage motors
- Troubleshoot electrical motors
- Repair electrical motors

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab

credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **HVAC 1015 - Residential Heat Load Calculation (1)**

This course will explore the factors that influence the size and performance needs of residential heating and cooling equipment.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify factors affecting heat load in a residential structure

Identify factors affecting cooling load in a residential structure

Calculate heat and cooling load requirements for a simulated structure

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 1 lab: 0

### **HVAC 1020 - Tube and Pipe Fabrication (2)**

This course will introduce the student to the basic techniques involved in tube and pipe fabrication. This course also introduces the student to industrial safety practices.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify HVAC tube/pipe materials

Identify tube/pipe fabrication tools

Use tubing tools

Operate gas torches

Solder tubing

Create solder project  
Create brazed project  
Calculate iron pipe lengths  
Identify pipe fabrication tools  
Use piping tools  
Create pipe project

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 1

### **HVAC 1025 - Mini-Split Air Conditioners (1)**

This course explores the installation and service concerns for residential Mini – Split Air Conditioners.

Prerequisite: HVAC1040 or Industry Experience

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Perform various troubleshooting methods used on Mini-Splits

Examine diagnostic techniques to service Mini-Splits

Identify Mini-Split installation practices

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 0

### **HVAC 1030 - Sheet Metal (2)**

This course will introduce the skills required to assemble duct work for air distribution in heating and air conditioning systems.

Prerequisite: HVAC1000 and HVAC1020

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Use hand tools
- Use manual fabrication machines
- Use electric fabrication machines
- Construct metal ducts
- Calculate Air flows
- Construct furnace plenum
- Construct furnace plenum extension
- Construct A-coil pan
- Construct isolation collar
- Manufacture slips and drives
- Manufacture seams and edges
- Select vent pipes

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **HVAC 1035 - National Electrical Outcome Assessment (0)**

This HVAC Excellence Electrical examination is given by Hennepin Technical College and is a nationally recognized student outcome assessment.

Prerequisite: HVAC1000, HVAC1010, and HVAC1110

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Pass the examination with 70% or better score

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

#### **HVAC 1040 - Basic Refrigeration (4)**

This course will expose the student to the basic physical laws relating to refrigeration systems components, refrigeration theory, the refrigeration cycle and system operation. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: HVAC1000 and HVAC1020

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Analyze sensible heat
- Analyze latent heat
- Calculate heat quantity
- Differentiate pressure scales
- Differentiate refrigerants
- Compare refrigerant pressure/temperature scales
- Solve gas law problems
- Analyze refrigerant cycle
- Analyze compressor operation
- Analyze condenser operation
- Analyze evaporator operation
- Analyze metering device operation
- Operate refrigerant system
- Access refrigerant system using manifold gages
- Measure refrigerant pressures
- Measure refrigerant temperatures
- Measure air temperatures
- Calculate subcooling
- Calculate superheat
- Install refrigerant
- Remove refrigerant
- Test for refrigerant leaks
- Operate pump down

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus Eden Prairie Campus 952-995-1300

Credit Details: lecture: 3 lab: 1

#### **HVAC 1045 - National Residential Air Conditioning Assessment (0)**

This HVAC Excellence Residential Air Conditioning examination is given by Hennepin Technical College and is a nationally recognized student outcome assessment.

Prerequisite: HVAC1140

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Pass the examination with 70% or better score

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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### **HVAC 1050 - Refrigerant Transition and Recovery (1)**

This course provides the information required to prepare students for EPA Refrigerant Transition and Recovery Certification. The certification examination will be administered upon completion of this training. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: An understanding of a Refrigeration System operation

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Analyze refrigerant chemistry

Evaluate Montreal Protocol

Distinguish recovery of refrigerants

Distinguish recycle of refrigerants

Distinguish reclaim of refrigerants

Apply refrigerant conservation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 0

### **HVAC 1055 - Refrigeration Certification Exam (0)**

This examination is certified by the EPA and packaged by ESCO Institute.

Prerequisite: HVAC1050 or knowledge of HVAC systems operations

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Solve questions on section 1 Environmental Protection Agency test

Solve questions on section 2 Environmental Protection Agency test

Solve questions on section 3 Environmental Protection Agency test

Solve questions on section 4 Environmental Protection Agency test

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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### **HVAC 1060 - Low Global Warming Potential (GWP) Refrigerant Certification (1)**

This course will prepare the student for the different procedures needed to work with A2L (low GWP) refrigerants that are being used in the HVAC/R industry.

Prerequisite: HVAC1040 and HVAC1050

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Compare the different classifications of refrigerants

Compare the flammability classes of refrigerants

Identify characteristics of blended refrigerants

Analyze refrigerant/oil compatibility

Determine new safety/service procedure requirements for A2L refrigerants

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 1

### **HVAC 1065 - National Gas Heat Outcome Assessment (0)**

This HVAC Excellence Gas Heat examination is given by Hennepin Technical College and is a nationally recognized student outcome assessment.

Prerequisite: HVAC1071

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Pass the examination with 70% or better score

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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### **HVAC 1071 - Gas Heat Systems (4)**

This course will provide the student with the skills needed for combustion and efficiency testing, troubleshooting, and good ventilation practices involved with warm air heating systems. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: HVAC1110

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Clean burners

Select orifices

Compare LP/Natural gas pressures

Adjust gas pressures

Calculate combustion efficiency

Identify electrical components

Adjust limit controls

Draw electrical circuits

Measure voltages

Measure flame sensing circuit

Measure air properties

Calculate furnace heat using air flow

Compare vent systems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 2

### **HVAC 1075 - National Commercial Refrigeration Outcome Assessment (0)**

This HVAC Excellence Commercial Refrigeration examination is given by Hennepin Technical College and is a nationally recognized student outcome assessment.

Prerequisite: HVAC2121 and HVAC2130

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Pass the examination with 70% or better score

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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### **HVAC 1081 - Oil Heat Systems (1)**

This course will aid the student in developing skills for troubleshooting and servicing high pressure gun type burners, primary controls and warm air system operation.

Prerequisite: HVAC1000, HVAC1071 and HVAC1110

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Compare oil furnace burners

Diagram fuel oil systems

Diagram electrical systems

Test oil pressures  
 Test combustion  
 Identify vent system  
 Diagnose oil system problems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1

### **HVAC 1085 - National Commercial Air Conditioning Outcome Assessment (0)**

This HVAC Excellence Commercial Air Conditioning examination is given by Hennepin Technical College and is a nationally recognized student outcome assessment.

Prerequisite: HVAC2001

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Pass the examination with 70% or better score

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

### **HVAC 1090 - Low Global Warming Potential (GWP) Refrigerant Certification Exam (0)**

The Low GWP Refrigerant Safety Certification Exam from ESCO Institute will be administered through the ESCO Institute.

Prerequisite: HVAC1040 and HVAC1050

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Solve the questions to the Low GWP Refrigerant Safety Certification Exam

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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### **HVAC 1095 - North American Technician Excellence (NATE) (0)**

The NATE tests given to students are a nationally recognized outcome assessment for technicians in the HVAC field.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Pass the exam with 70% or better

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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### **HVAC 1100 - Service Call Completion (1)**

This course will prepare the student to successfully complete a residential HVAC service call.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify customer needs

Communicate with the customer their HVAC service options

Complete service call

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1

### **HVAC 1110 - Electrical Diagrams (2)**

This course is designed to introduce the student to the fundamentals of electrical control circuitry, including the development of schematic and ladder diagrams and point-to-point wiring exercises.

Prerequisite: HVAC1000 and HVAC1010

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify ladder diagrams
- Identify schematic diagrams
- Draw diagram power source
- Draw transformer connections
- Draw switching device wiring
- Draw terminal strip wiring
- Draw motor wiring
- Draw thermostat connections
- Draw gas valve wiring
- Draw electrical diagrams
- Connect wire diagrams

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

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Credit Details: lecture: 1 lab: 1

### **HVAC 1120 - Psychrometrics (1)**

This course will introduce the student to the fundamentals of air properties.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify air conditions

Plot air properties

Determine air conditions in a given space

Determine air conditions leaving a cooling machine

Determine air conditions leaving a heating machine

Determine mixed air conditions

Advise methods to change conditions

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1

## **HVAC 1130 - Room Air Conditioners (2)**

This course will introduce the skills for troubleshooting and servicing room air conditioners.

Prerequisite: HVAC1000, HVAC1020, HVAC1040 and HVAC1110

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify hermetic compressors

Identify refrigerant system components

Identify electrical system components

Test refrigerant system components

Test electrical system components

Repair refrigerant system components

Repair electrical system components

Analyze refrigerant pressures

Troubleshoot refrigerant system problems

Troubleshoot electrical system problems

Analyze air flows

Troubleshoot air flow problems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477

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**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

**HVAC 1140 - Central Air Conditioners (3)**

This course will assist the student in developing skills for installing, troubleshooting and servicing central air conditioners.

Prerequisite: HVAC1000, HVAC1040 and HVAC1110

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Compare condensing unit locations

Compare refrigerants

Diagram refrigerant components

Identify evaporator installation criteria

Identify lineset installation criteria

Examine air distribution system

Diagram electrical wiring

Identify thermostat location

Identify start-up procedures

Calculate total air flow

Calculate air balancing

Repair mechanical system

Repair electrical system

Repair air flow system

Compare SEER ratings

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

**HVAC 1146 - Residential Heat Pumps (2)**

This course will assist the student in developing skills for installing, troubleshooting and servicing heat pumps.

Prerequisite: HVAC1000, HVAC1040, and HVAC1110

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Diagram refrigeration system
- Identify reversing valve
- Identify defrost system
- Identify thermostats
- Explain auxiliary heat
- Show sequence of operation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **HVAC 1151 - Hydronic Heat Systems (2)**

This course is designed to teach the safety concerns and operation of hydronic heating systems. The student will learn troubleshooting, installation concerns, and repair of hydronic heating systems.

Prerequisite: HVAC1110

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Calculate water flows
- Compare water boilers
- Diagnose air problems
- Diagram water piping
- Identify zone controls
- Identify installation concerns

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

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Credit Details: lecture: 1 lab: 1

### **HVAC 1155 - Radiant Heat Systems (1)**

This course will expose the student to in-floor/ceiling radiant heat concepts that include sizing, application, and servicing.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify components and materials used in radiant heat systems.

List advantages of radiant in-floor and ceiling heat.

Demonstrate how radiant heat tubing is constructed.

Observe radiant heat floor and ceiling construction methods.

Design a radiant in-floor heating system.

Identify commercial radiant heating applications.

List control strategies.

Design boiler piping schematics.

Interpret radiant heat wiring schematics.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1

### **HVAC 1160 - Air Quality Systems (1)**

This course will introduce the student to the skills necessary to service air filtration systems, heat recovery ventilators and humidifiers.

Prerequisite: HVAC1071 and HVAC1110

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify indoor air quality issues

Identify air filtration systems

Identify humidification systems

Identify heat recovery ventilation systems

Integrate systems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit

Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1

### **HVAC 1175 - R-410A Certification Training (1)**

These newly manufactured R-410A air conditioning systems will require contractors and technicians to shift to different tools and equipment, safety standards and fundamentals when installing, changing out (retrofitting) older split A/C systems, and repairing systems in the field. R-410A operates at significantly higher pressures and refrigeration capacity. This course will prepare you for these new challenges, and with successful completion of the certification exam, show evidence of your professional ability to safely handle and work with this new generation of refrigerants and air conditioners.

Prerequisite: An understanding of the operation of a Refrigeration/ Air Conditioning system

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Compare refrigerants

Compare refrigerant pressures

Identify R410A tools

Identify safety requirements

Study for R410A test

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1

### **HVAC 1181 - MN Class CBoiler Operator License (3)**

Whether you are at the entry level or an experienced operator, this course covers the information needed to take you to the next level.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe boiler operating principles  
 Identify boiler fittings  
 Describe feedwater systems  
 Identify steam system components  
 Identify draft systems  
 Identify safe operating conditions  
 Locate boiler safety controls  
 Describe boiler operation safety  
 Discuss Minnesota Special Boiler License requirements

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

### **HVAC 1185 - R-410A Certification Exam (0)**

This examination is certified by the AC/R Safety Coalition and Packaged by ESCO institute.

Prerequisite: HVAC1175

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Take R410A examination

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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### **HVAC 1190 - MN Special Boilers License (1)**

This course covers the information needed to take the Minnesota State Special Boilers License Examination.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify water boiler components
- Identify steam boiler components
- Identify requirements for Minnesota Special Boiler License
- Identify safe operating conditions
- Test boiler safety controls

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477  
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Campus:

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Credit Details: lecture: 1 lab: 0

### **HVAC 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A 'Specialized Lab Training Agreement' must be signed by the student and the instructor and submitted to the registrar at the time of registration.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Course goals addressed will depend on the area and type of specialization the student wishes to study, and will be defined in the "Specialized Lab Training Agreement"

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lab: 1-4

**HVAC 2001 - Packaged Heating and Cooling Equipment (4)**

In this course, students will learn heating and cooling principles relating to commercial machines. Students will learn about and work on rooftop machines, computer room units and make up air systems.

Prerequisite: HVAC1040, HVAC1071 and HVAC1110

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Analyze electrical diagrams
- Perform refrigerant charging
- Adjust safety controls
- Adjust economizers
- Test draft
- Adjust gas pressure
- Adjust burners
- Perform combustion checks
- Troubleshoot electrical problems
- Test ignition system
- Test smoke detectors
- Analyze refrigerant system

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 2

**HVAC 2005 - Commercial HVAC/R Safety and Servicing Procedures (2)**

This course is designed to instruct the student on safety and troubleshooting skills when repairing Commercial HVAC/R equipment.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901 and HVAC1000, HVAC1010, HVAC1040, HVAC1050, HVAC1071 & HVAC1110

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Utilize personal safety equipment
- Perform lock out/tag out procedure
- List commercial heating equipment sequence of operation
- List commercial cooling equipment sequence of operation
- Test compressor oil for acid and/or moisture
- Add oil to compressors
- Analyze commercial HVAC/R electrical components

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

[bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html)

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Eden Prairie Campus – 952-995-1544

**Campus:**

Eden Prairie Campus: 952-995-1300

**Credit Details:** lecture: 2

### **HVAC 2010 - Commercial Heat Pump Systems (2)**

In this course the student will learn the installation, operation and service techniques needed to understand heat pumps. The auxiliary equipment relating to water source heat pumps will also be covered.

**Prerequisite:** Residential HVAC Diploma or equivalent industry experience

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Troubleshoot electrical, refrigeration, air, and water flow systems

Analyze air flow, water flow and electrical systems

Calculate cooling and heating cfm (cubic feet per minute)

Adjust temperature differences

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Eden Prairie Campus: 952-995-1300

**Credit Details:** lecture: 1 lab: 1

### **HVAC 2020 - Pneumatic Controls (2)**

In this course students will be introduced to pneumatic controls. Content will contain the various pneumatic controllers, sensors and related devices. Theory of operation will also be covered.

**Prerequisite:** HVAC1040

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Adjust air regulators  
 Calibrate thermostats  
 Install pneumatic relays and switches  
 Install sensors and restrictors  
 Install thermostats, receiver controllers, and EP switches  
 Calibrate receiver/controllers

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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 Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **HVAC 2030 - Commercial Ice Making Machines (3)**

Students in this course will learn about the machines that make ice for commercial applications. Cube and flake processes will be covered. This course involves advanced electrical and refrigerant troubleshooting procedures.

Prerequisite: HVAC1040 and HVAC1110

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Analyze refrigerant pressures  
 Analyze Ice production times  
 Analyze Ice cube quality  
 Adjust floats  
 Troubleshoot mechanical and electrical components  
 Troubleshoot air and water flow problems  
 Troubleshoot freeze cycle  
 Troubleshoot termination controls  
 Recharge or replace refrigerant

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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 Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **HVAC 2041 - Gas/Refrigeration (Mechanical) Code (1)**

This lecture course is designed to assist the student in becoming familiar with the Uniform Mechanical Code. Students will use the Uniform Mechanical Code book and the Minnesota Amendments in this course.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Size fuel gas piping

Size refrigerant piping

Size venting

Calculate ventilation air, exhaust air, and combustion air sizes

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1

### **HVAC 2045 - Hydrocarbon Refrigerant Certification (1)**

This course will prepare the student for the different procedures needed to work with Hydrocarbon refrigerants that are being used in the HVAC/R industry.

Prerequisite: HVAC1040 and HVAC1050

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Compare the different classifications of refrigerants

Compare the flammability classes of refrigerants

Determine new safety/service requirements and procedures for Hydrocarbon refrigerants

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 1

### **HVAC 2050 - Electrical for Commercial HVAC&R Equipment (2)**

This course introduces the concepts and principles of three phase power and line voltage control and the controllers. Motor wiring techniques are also included in this primarily lecture course.

Prerequisite: HVAC1010 and HVAC1040

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Draw control circuits and three phase circuits

Wire control circuits and three phase circuits

Troubleshoot control circuits and three phase circuits

Troubleshoot motor contactors

Troubleshoot overloads

Troubleshoot starters

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2

### **HVAC 2055 - Hydrocarbon Refrigerant Certification Exam (0)**

The Hydrocarbon Certification Exam from ESCO Institute will be administered through the ESCO Institute.

Prerequisite: HVAC1040 and HVAC1050

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Solve the questions to the Hydrocarbon Refrigerant Certification Exam

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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### **HVAC 2060 - Computer Room Air Conditioning (1)**

This course entails heat/cool machines for computer room comfort control. This course will teach the student installation, start up and servicing of computer room heat/cool machines.

Prerequisite: Residential HVAC Diploma or equivalent industry experience

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Analyze electrical diagram

Adjust safety controls

Adjust temperature setpoints

Adjust humidity setpoints

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1

### **HVAC 2100 - Water Chiller Machines (3)**

This lecture course introduces theory and operation of the equipment required to heat and cool water for the environment conditioning of commercial buildings. Repair and operation of pumps, valves and chillers will be explained.

Prerequisite: HVAC1040 and HVAC1110

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Analyze star-delta starting systems

Analyze control wiring

Analyze refrigeration systems

Adjust condenser water gallons per minute

Adjust evaporator chilled water gallons per minute

Maintain and service pumps

Troubleshoot control circuits

Troubleshoot water circuits

Troubleshoot safety controls  
 Troubleshoot operational controls  
 Test cooling tower control

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2 lab: 1

### **HVAC 2111 - Low Pressure Steam and Water Boilers (2)**

This lecture course is designed to provide the student with the knowledge to take and pass the Minnesota Boilers Low Pressure Licensing exams. Students will learn safe and efficient operation of boilers.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Record steam pressures, gas pressures, oil pressures, feed water levels, flame voltage, boiler water level, and condensate water level

Analyze steam traps

Check boiler chemicals

Analyze redundant operating and safety controls

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Campus:

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Credit Details: lecture: 2

### **HVAC 2121 - Refrigerated Coolers and Cases (4)**

In this course students will learn about and work on walk in coolers and meat and dairy cases. Electrical and refrigeration troubleshooting will be stressed. Students will also work with a variety of refrigerants.

Prerequisite: HVAC1040 and HVAC1110

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Analyze electrical diagrams
- Analyze refrigeration diagrams
- Troubleshoot refrigeration problems
- Troubleshoot electrical problems
- Troubleshoot water flow problems
- Troubleshoot air flow problems
- Troubleshoot defrost problems
- Repair electrical components
- Repair refrigeration components
- Replace electrical components
- Replace refrigeration components
- Adjust refrigeration charge and TXV's (Thermostatic Expansion Valves)

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 2

### **HVAC 2130 - Supermarket Refrigeration (3)**

In this course, students will have the opportunity to learn multiple compressor and multiple cooling/freezing case operation. Complex refrigeration controls as well as electrical and refrigeration defrost circuits will be the focus of this course.

Prerequisite: HVAC1040 and HVAC1110

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Analyze electrical systems
- Analyze refrigeration systems
- Explain electrical components
- Explain refrigeration components
- Program microprocessor
- Adjust superheat
- Analyze superheat
- Explain reverse hot gas defrost
- Explain hot gas defrost
- Explain reverse warm gas defrost
- Explain warm gas defrost

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **HVAC 2165 - Air Handling Units (1)**

This course will offer an analysis of different air handling units including face-bypass, hot deck-cold deck, reheat coils, and HRV's (Heat Recovery Ventilators).

Prerequisite: Residential HVAC Diploma or equivalent industry experience

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Analyze AHU's (Air Handling Units) and VAV's (Variable Air Volume)

Analyze RA (Return Air) fans, EA (Exhaust) fans, and SA (Supply Air) fans

Draw operational HVAC AHU

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1

### **HVAC 2170 - HVAC/R Externship (1)**

This course is for the student taking any of the HVAC/R award options and provides an opportunity to further develop skills and experiences in a formal work setting. Students must interview for and acquire their externship site. A minimum of 40 hours of work experience is required.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify informal organizational interrelationships  
Develop industry standard HVAC/R service skills  
Demonstrate professionalism in the workplace  
Examine customer relation skills  
Analyze repair decisions using strategy-based problem-solving techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

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Campus:

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SOE: 1

# IBEM - Industrial Building Engineering and Maintenance

## IBEM 1000 - Welding Maintenance (3)

Introduction to SMAW and GMAW welding processes and plasma, oxy-acetylene, sawing, and abrasive cutting processes. Covers identification and weldability of metals, safety and basic tool practices. Students will learn to layout, fit and weld sheet, plate, round and square shapes of steel, stainless steel and aluminum. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply welding terms, test positions and nomenclature

Examine gas metal arc welding process

Examine shielded metal arc welding process

Produce quality welds

Calculate work area for project development

Execute safe operation of welding equipment

Complete various fabrication projects

Modify metals with various cutting techniques

Demonstrate the lay-out techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2 lab: 1

### **IBEM 1010 - Carpentry Maintenance (3)**

This course introduces students to the basic principles and techniques of maintenance carpentry. Students will have the opportunity to read and interpret blueprints, identify code requirements, operate basic power tools, install/repair doors, casing, cabinetry and drywall.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Analyze portable power tool operations

Discuss safety procedures for building construction

Implement measurement techniques

Analyze layout techniques for wall and floor construction

Construct floors and walls

Execute drywall hanging and repair techniques

Execute installation of window and door trim

Execute cabinet installation techniques

Execute plastic laminate procedures for countertop construction

Execute demolition techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Campus:

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Credit Details: lecture: 2 lab: 1

### **IBEM 1020 - HVAC Maintenance (3)**

This course will expose the student to the basic physical laws relating to refrigeration system components. Refrigeration theory, the refrigeration cycle, system operation and maintenance concerns.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Analyze environment air characteristics
- Calculate environmental air properties
- Differentiate pressure scales
- Differentiate refrigerants
- Compare refrigerant pressure/temperature scales
- Analyze HVAC equipment operation
- Analyze refrigerant properties
- Analyze air properties
- Operate HVAC equipment

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Campus:

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Credit Details: lecture: 2 lab: 1

### **IBEM 1030 - Tube and Pipe Repair (2)**

This course will introduce the student to the basic techniques involved in tube and pipe fabrication. This course also introduces the student to basic industrial safety practices.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify HVAC tube/pipe materials

- Identify tube/pipe fabrication tools

- Use tubing tools

- Operate gas torches

- Create solder project

- Create brazing project

- Calculate pipe lengths

- Identify pipe fabrication tools

- Use piping tools

- Create pipe project

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **IBEM 1040 - Rigging Procedures and Forklift Operations (1)**

This course is designed to introduce students to the safety, equipment and operations used in rigging procedures. Students will also learn safe forklift operation procedures.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Execute proper rigging techniques

Operate fork lift in accordance with O.S.H.A. standards

Determine safe material handling techniques

Demonstrate effective use of material handling equipment

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Campus:

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Credit Details: lecture: 1

### **IBEM 2000 - Industrial Building Engineering and Maintenance Internship (1 - 4)**

This course allows the student to gain on-the-job experience in the Industrial Building Engineering and Maintenance industry. The student is responsible for locating and arranging the internship site. One (1) to four (4) credits can be taken, with each credit requiring 40 hours of time spent on the job. Student performance will be monitored by the instructor and evaluated by the employer. This will be a cooperative training program between Hennepin Technical College and a company. The student will apply competencies learned in the program to an employment-like work experience. Tasks and course goals will be determined by the instructor and the job site supervisor on an individual student basis. All industry internships require you be registered at the college for the internship and have instructor approval.

Prerequisite: Instructor approval and completion of at least 50% of your degree or diploma

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

The specific goals of this course will be defined in the 'Internship Agreement' signed by the student, employer and instructor and will be tailored to the experiences available at the internship site

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus: 952-995-1300

Credit Details: SOE: 1-4

## ITEC - Information Technology

### ITEC 1000 - Information Systems (3)

This is a beginning course and will introduce the student to an overview of the IS principles which every business and computer student should understand. This course will present the changing role of the IS professional as well as introduce concepts that will be covered more fully in advanced classes.

**Prerequisite:** Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Define terms

Label computer components

Utilize application software

Describe data communications

Apply business and computer ethics

Identify computer security issues

Characterize database functions

Explore future job opportunities

Compare decision making practices

Explain artificial intelligence technologies

Summarize emerging technologies

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

**ITEC 1005 - Computer Security Awareness (3)**

In this course we will examine the issues surrounding computer security in today's highly technological world. The course is designed to provide an overview of security problems and is intended for end users who use computers at home or in the office. The course covers information about staying secure, including maintaining a secure environment and how to avoid security attacks.

Prerequisite: Recommended: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Define a broad view of Computer Security as information security
- Gain an understanding of the issues and effects surrounding Computer Security
- Understand the types of attacks that can occur
- Apply legal issues in computer security cases
- Apply ethical issues in computer security cases
- Examine elementary cryptography
- Explore the nature of attacks and their economic impact
- Analyze cases to determine solutions for secure systems management
- Develop a personal computing security plan

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

**ITEC 1032 - Microsoft Access (3)**

This course covers the basic functions of a database management package as applied to business applications. These basic functions include how to create and secure a database, import data and maintain records in a table, query a database, produce forms, and generate reports. In addition, students learn how to perform mass changes, export data to other applications, create macros and design a menu system.

Prerequisite: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Create table structure
- Import spreadsheet data
- Query database tables
- Sort and filter records
- Create forms and reports
- Modify existing table structure
- Apply validation rules
- Enforce referential integrity

- Perform mass changes with queries
- Produce multi-page forms
- Customize reports
- Export data to other applications
- Create macros
- Construct a menu system
- Apply database security

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

### **ITEC 1035 - Microsoft Word (3)**

This course will include creating, editing and formatting of business documents. Students will also receive training in features such as merge, sort, tables and other enhancements. It will be necessary to have access to a computer outside of class. A student computer lab is available on each campus.

Prerequisite: Qualifying score on keyboarding assessment test OR CPLT1100 or CPLT1200 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Create single-page and multi-page documents
- Create headers and footers
- Add page numbering
- Use Mail Merge to create documents
- Create text in columns
- Sort text
- Create tables
- Apply formatting to text
- Enhance files with graphic images
- Proofread documents
- Edit documents
- Print documents

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

### **ITEC 1042 - Microsoft PowerPoint ()**

This course is for personnel responsible for creating presentations in a business environment. Using the many features of PowerPoint, the student will learn to produce slides which include diagrams, clipart, charts and graphs. The student will import data from word processing and spreadsheet software to prepare professional presentations.

Prerequisite: Qualifying score on keyboarding assessment test OR CPLT1100 or CPLT1200 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Construct slides

Create SmartArt graphics

Construct tables and charts

Apply transition effects

Insert sound and movie clips

Insert graphics

Utilize animations

Navigate using hyperlinks and action buttons

Prepare a self-running presentation

Identify printout capabilities

Differentiate file formats

Collaborate and deliver a presentation

Publish to the web

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

### **ITEC 1080 - Microsoft Productivity Apps 1 (3)**

This course provides students with training in Microsoft 365 and respective desktop productivity apps. Students will receive instruction in Word, Excel, Access and PowerPoint. It will be necessary to have access to a computer outside of class. A student computer lab is available on each campus.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Create documents in Word

- Apply formatting to Word documents
- Create Excel worksheets and charts
- Format worksheets and charts
- Create tables, forms, queries, reports using Access
- Create PowerPoint presentations
- Format presentations
- Enhance files with graphic images
- Proofread documents
- Edit files
- Print files

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: Lecture: 3

### **ITEC 1090 - Microsoft Productivity Apps 2 (3)**

If there's a task to be done, whether it's personal or for your job, there's a productivity app that will help you do it faster, cheaper, and more efficiently. This course provides students with more training in areas such as Excel, Access, Project, and Visio requiring use of critical thinking and problem-solving skills to create real-life solutions.

Prerequisite: Qualifying score on math assessment test OR MATH0910 or MATH0920 and ITEC1080 OR instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Modify Excel worksheets and charts
- Generate Excel Macros
- Create Pivot Charts
- Perform data analysis
- Modify database table structure
- Perform Database queries
- Import spreadsheet data
- Produce custom database forms and reports
- Sort and filter records
- Create forms and reports
- Navigate Visio to create diagrams and flow charts using stencils
- Enter detailed data into Project and Visio

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

### **ITEC 1095 - Microsoft 365 (2)**

This course introduces students to Microsoft 365 (formerly Outlook). Microsoft 365 is more than a personal information manager; it provides organizations the ability to share documents, spreadsheets, and presentations. Knowledge, skills and abilities covered in this course include e-mail, a calendar, task manager, contact manager, cloud storage drive, note taking, a journal, and web sharing. This course prepares students to become efficient collaborators by giving them skills to use in both their personal and professional lives.

Prerequisite: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify the features of Outlook

Organize and manage the inbox

Utilize calendar features

Apply scheduling basics

Organize contacts

Manage calendar with meetings and events

Create and send a voting poll in an email message

Manage tasks

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 2

### **ITEC 1102 - PC Operating Systems (3)**

Examines the functions of the Windows Operating System and the Linux operating system, including command line interface, and essential open source software concepts. Students will be able to manage their own desktop or laptop computers, including installing and running applications, managing files and using the Internet. This course takes a hands-on approach to exploring the day-to-day operations of operating systems.

Prerequisite: Qualifying score on writing assessment test OR ENGL0930 and Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify the major elements of a computer operating system and explain their functions
- Describe the differences between application and system software
- Identify what user impact the graphical user interface (GUI) has on routine computer work
- Utilize the basic functions of the major Windows 10 and Linux desktop environments
- Utilize System Settings to customize the desktop and computer system
- Identify features of the configuration utilities provided by the desktop environments
- Explain methodologies that can be used to organize data storage
- Utilize Windows application programs
- Examine the features of system maintenance
- Utilize a command line interface
- Utilize current technological tools
- Demonstrate getting troubleshooting help
- Demonstrate a variety of networking and media features
- Create, edit, save and print documents using application programs

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

### **ITEC 1105 - Network Admin 1 (4)**

This course introduces students to networking concepts, technologies, and typical network administration duties found in the workplace. Topics covered include communication models, network protocols, IP addressing and subnetting, physical and logical topologies for local area networks (LAN) and wide area networks (WAN), transmission media, and basic router and switch configuration.

Prerequisite: Recommended: ITEC1102 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Explain the function of each layer of the OSI model
- Align the OSI layers to the TCP/IP model
- Design an addressing and subnetting scheme for a routed IP network
- Describe the relationship between IP and MAC addresses
- Compare IPv4 and IPv6 address formats
- Describe the role and function of routers and switches
- Configure switches and end devices in a LAN
- Configure initial router settings to enable end-to-end connectivity between remote devices
- Identify common connectivity issues
- Contrast WAN and LAN technologies
- Identify standard cable types
- Identify commonly used TCP and UDP ports

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab

credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 4

### **ITEC 1110 - Windows Admin 1 (3)**

This is the first of three courses in network administration using Windows networks. The course will use the latest two versions of Windows operating systems in a `workgroup` or peer-to-peer configuration. Students will learn to both install the operating systems and then to configure the desktop interface for different types of users. This will involve user management, local security groups, policy implementation, printer access, and some remote desktop configuration.

Prerequisite: Recommended: ITEC1105 or concurrent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Install current versions of Windows workstation level operating systems

Assign correct local security permissions to users on a group basis

Utilize Microsoft Management Console snap-ins to administer computers and user accounts

Define security policies that users and computers will comply with

Set up printer access to a network printer

Contrast between permission levels available on shared folders and NTFS security volumes

Operate MS Remote Desktop Connection between a server computer and a client workstation

Adhere to common "best practices" when administering user password controls and management

Troubleshoot configuration problems workstation members

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: Lecture: 3

### **ITEC 1122 - Linux Admin 1 (4)**

This course will introduce students to foundational Linux concepts and core tasks. Students will explore command-line concepts and enterprise-level tools.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and

evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Access the command line
- Manage files
- Manage users and groups
- Manipulate file permissions
- Manage processes
- Control services and daemons
- Analyze log files
- Configure networking
- Manage software
- Access file systems
- Manage remote connections
- Troubleshoot system problems

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

### **ITEC 1301 - HTML/CSS and JavaScript (3)**

This course is an introduction to web development with HTML and CSS. In this course, students will learn about key technologies and standards behind the internet and world wide web. Students will develop website projects that meet current web standards and industry best practices using modern tools and techniques. The focus of this course is on the use of basic HTML, CSS and JavaScript as a technical foundation for later coursework in web application development.

**Prerequisite:** Recommended: ITEC1000 and ITEC1102

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Identify key internet technologies, standards and organizations
- Describe the client/server architecture of the internet, explaining the request-response life-cycle
- Explain the structure of the HTML DOM (Document Object Model), identifying parent-child and sibling relationships
- Build valid HTML pages that use best practices for layout, navigation, tables, forms, images and multimedia
- Write CSS to layout, format, and enhance the display of a web page applying industry best practices
- Learn to add interactivity and dynamic content to webpages using JavaScript
- Develop web pages that alter the visual presentation appropriately for devices of various sizes
- Identify accessibility barriers in website design and development
- Apply a current industry web development framework or library to development of a website
- Use a source code management tool to maintain a website

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or

impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: Lecture: 3

### **ITEC 1310 - Microsoft Publisher (3)**

This course is an introduction to desktop and Web-based publishing using Microsoft Publisher. Students will learn how to create and enhance publications such as brochures, flyers, and newsletters and then convert them to websites. Students will also integrate information and files from Word, Excel, Access, and PowerPoint while working with a variety of clip art and photographs.

Prerequisite: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Construct a flyer

Develop a brochure

Design a newsletter

Import text and images

Demonstrate text and object manipulation

Apply Business Information Sets

Utilize tables

Prepare for commercial printing

Demonstrate advanced features

Convert to a web page

Publish to the web

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

### **ITEC 1421 - Network Admin 2 (4)**

In this course, students explore switching and routing architectures used to support and secure local area networks (LANs) and virtual local area networks (VLANs). Students will configure networks and resolve common issues with protocols in both IPv4 and IPv6 networks.

Prerequisite: ITEC1105

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify the stages of the router boot sequence
- Configure a switch and router with initial settings
- Secure switch and router access
- Configure a router and switch interfaces for IPv4 and IPv6
- Compare store-and-forward and cut-through switching
- Describe the benefits of VLANs
- Configure inter-VLAN routing on Layer 2 and Layer 3 switches
- Implement spanning tree protocol (STP)
- Configure EtherChannel to increase the overall speed of switch-to-switch communications
- Explain how to support network reliability using dynamic addressing and first-hop redundancy protocols
- Configure switch security to mitigate LAN attacks
- Configure DHCP services for IPv4 and IPv6

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 4

### **ITEC 1431 - Network Admin 3 (4)**

In this course, students advance their knowledge of router and switch operations. Students will configure wireless local area networks (WLANs), implement dynamic routing, troubleshoot neighbor adjacencies, filter traffic using access control lists (ACLs), and configure different types of Network Address Translation (NAT) methods.

Prerequisite: ITEC1421

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe WLAN technology and standards
- Implement a WLAN
- Explain how routers determine best path
- Configure IPv4 and IPv6 static and default routes
- Configure single-area OSPFv2 in point-to-point and multiaccess networks
- Design an IP addressing scheme to accommodate subnets of different sizes
- Define route aggregation
- Explain how vulnerabilities, threats, and exploits can be mitigated to enhance network security
- Describe how an ACL filters traffic
- Configure standard, extended, and named ACLs
- Configure NAT services on the edge router to provide IPv4 scalability

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab

credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

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Credit Details: Lecture: 4

### **ITEC 1443 - Network Admin 4 (4)**

This course focuses on enterprise networking, security, network management, virtualization, and automation. Students will configure wide area network (WAN) connections, implement IP security (IPsec) to secure virtual private networks (VPNs), monitor network operations, and prioritize network traffic. Students will explore the virtualization of network devices and the software used to automate enterprise network operations.

Prerequisite: ITEC1431 and ITEC1505

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the goals of WAN design

Contrast packet-switched and circuit-switched WAN technologies

Describe broadband (DSL and cable modem) connectivity basics

Troubleshoot WAN connections

Configure site-to-site VPNs

Explain how data, voice and video are converged using a three-layer hierarchical network design

Describe the different quality of service (QoS) models used to ensure transmission quality

Identify tools and protocols used in network management

Describe different methodologies for network troubleshooting

Describe the virtualization of network devices and services

Explain how network automation is enabled through Application Programming Interfaces (APIs)

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 4

### **ITEC 1480 - CCNA (Cisco Certified Network Associate) Exam Prep (1)**

The focus of this course is to prepare for the CCNA certification exam. Topics covered will include all prior CCNA coursework as it relates to the CCNA certification exam. Students will prepare through simulated practice exams and experiences.

Prerequisite: Recommended: ITEC1443 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe the Cisco certification pathway
- Explain the process of CCNA certification exam registration
- Analyze CCNA practice exam questions
- Complete CCNA practice certification exams

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 1

### **ITEC 1490 - CCNA Specialty Fields (3)**

This course will expose students to three specialty fields associated with the administration of Cisco networks. Topics covered include IPv6 networks, voice networks, and security.

Prerequisite: ITEC1431

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Design addressing schemes for IPv6 networks
- Configure static and EUI-64 IPv6 addresses
- Configure static and dynamic routing for IPv6 networks
- Configure intrusion detection/prevention features on a router
- Implement AAA features on network devices
- Configure remote-access VPNs
- Describe VoIP components and technologies
- Configure a Cisco network to support VoIP
- Configure gateways, voice ports, and dial peers to connect to the PSTN and service provider networks

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

### **ITEC 1505 - Fundamentals of Programming with Python (4)**

This course is the first course for a student planning to study computer programming. The course content introduces the student to both procedural and object-oriented programming. Emphasis will be placed on procedural programming, computational thinking and problem solving. Topics will include flowcharting, pseudocode, program design, data types including arrays and objects, conditional boolean logic, program structures for branching and iteration, functions, and basic data structures.

Prerequisite: Microsoft Windows experience

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply computational thinking concepts such as abstraction, generalization and composition/decomposition

Diagram program logic flow

Solve problems using sequences, decisions and iteration in program flow

Solve problems using arrays and common data structures

Build procedural programs using stateless functions

Develop programs to solve real-world problems

Use appropriate program documentation, programming style and language conventions

Create appropriate test cases with good test data

Apply program debugging techniques and methods

Identify the core features of object-oriented programming

Compare and contrast procedural and object-oriented programming

Apply object-oriented programming techniques in program development

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 4

### **ITEC 1515 - Programming Overview (3)**

This course is for a student planning to study networking, database or other Information Technology (IT) discipline. Emphasis will be placed on procedural programming, computational thinking and problem solving. Topics will include flowcharting, pseudocode, program design, data types including arrays, conditional boolean logic, program structures for branching and iteration, functions, and basic data structures.

Prerequisite: Microsoft Windows experience

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain the relevance of programming skills for careers in IT Operations

Apply computational thinking concepts such as abstraction, generalization and composition/decomposition

Diagram program logic flow  
Solve problems using sequences, decisions and iteration in program flow  
Solve problems using arrays, and data structures such as lists and key-value pairs  
Build procedural programs using stateless functions  
Develop programs to solve real-world problems  
Create appropriate test cases and data  
Apply program debugging techniques and methods in program testing

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

### **ITEC 1900 - Specialized Lab (1-4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A `Specialized Lab Training Agreement` must be signed by the student and the instructor and submitted to the registrar at the time of registration.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Course goals addressed will depend on the area and type of specialization the student wishes to study, and will be defined in the "Specialized Lab Training Agreement"

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Lab: 1-4

**ITEC 2055 - Project Management (3)**

This course will teach students project management skills utilizing Microsoft Project using a group-oriented problem-solving approach. Content covers the basic to intermediate Project skills to include planning a project, creating schedules, communication of information, assigning resources and costs, tracking progress, and closing a project.

Prerequisite: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Define terminology
- Determine project outcomes (goals)
- Formulate project definitions
- Identify stakeholders
- Identify phases
- Manage conflicts
- Generate reports
- Analyze project
- Apply critical thinking skills throughout the project

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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Credit Details: Lecture: 3

**ITEC 2065 - Help Desk/User Support (3)**

This is a capstone course, designed to provide students the broad range of concepts and practices required of an entry-level technology professional. Students will be engaged in activities and projects designed to prepare and provide them with the knowledge, skills, and attitudes (KSA's) required to become technical service providers.

Prerequisite: ITEC1000 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Describe support structures
- Explain the evolution of processes and procedures
- Develop a support philosophy
- Investigate industry support trends
- Plan and produce end-user documentation
- Utilize office applications for decision-support analysis
- Distinguish between call and caller management
- Develop strategies to be a service provider
- Evaluate end-user quality improvement processes
- Prepare and improve upon training materials
- Assess individual contributions to team goals

Judge individual and team performance

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

### **ITEC 2075 - IT Career Readiness (2)**

This course will examine in-demand skills many IT employers seek of their potential candidates such as critical thinking, resilience, creative problem solving, empathy, collaboration, intercultural fluency, oral communication, and initiative. Investigation is facilitated by modules developed by Minnesota State IT Center of Excellence for IT students. Students may earn digital badges as they complete the modules in this course.

Prerequisite: Any ITEC course prior to taking this course

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate oral communication through story telling

Demonstrate initiative to lead without an official "leader" role

Exhibit resilience through ability to adjust and adapt

Incorporate intercultural fluency through diverse perspectives

Collaborate with others to strengthen relationships

Identify creative problem-solving techniques

Demonstrate empathy by recognizing others' needs and values

Identify critical thinking patterns, assumptions, and draw conclusions

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 2

### **ITEC 2090 - Microsoft Integration (3)**

This course provides a practical, project-based capstone for students with an understanding of the Microsoft Productivity Apps.

Students will learn how to integrate Word, Excel, Access, PowerPoint, and Publisher. Students can master the true potential of Productivity Apps by learning how to work with multiple applications together, as in a real-world business environment. In today's fast-moving, mobile environment, this course focuses on the job skills needed to succeed in the workforce. This course prepares students to become more capable software users by requiring them to use critical thinking and problem-solving skills to create real-life solutions giving them skills to use in both their personal and professional lives.

Prerequisite: Recommended: ITEC1032 or ITEC1080 OR instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Explore integration features in Office
- Integrate Word and Excel files
- Integrate Word and PowerPoint files
- Integrate Word and Access files
- Integrate Excel and Access files
- Integrate Excel and PowerPoint files
- Integrate Publisher and Access files
- Integrate Word, Excel, Access and PowerPoint files
- Integrate Office and internet files with One Note
- Utilize Accessibility Checker
- Save documents to OneDrive

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

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Credit Details: Lecture: 3

## **ITEC 2122 - Linux Admin 2 (4)**

This course is the second in sequence after Linux Admin 1. This course goes deeper into core Linux system administration skills in storage configuration and management.

Prerequisite: ITEC1122

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Automate installations
- Write regular expressions
- Manipulate text files
- Schedule future tasks
- Control processes
- Manage access control lists
- Configure system security
- Manage network resources
- Manage disks and partitions
- Manage logical volume management storage

Configure file services  
Configure firewall services

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 4

### **ITEC 2150 - Windows Admin 2 (4)**

This is the second of three courses in network administration using the latest two versions of Windows server operating systems. This course will employ the use of both server and workstation level computers to simulate the configuration of a business class network environment focusing mostly on user management through directory services and file server tier application services. Topics include working in active directory environments, printing, user account management, security management, Internet Protocol-address management, Dynamic Host Configuration Protocol (DHCP), terminal services, and Domain Name System (DNS) services. The course will also utilize virtualization software to simulate client workstations.

Prerequisite: Recommended: ITEC1110

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Install Windows Server operating systems

Ensure correct driver configuration on servers

Upgrade standalone servers to roles of domain controllers using Active Directory

Manage directory based user accounts

Employ various user local and global security group memberships

Compare peer-to-peer networking security to that available using directory services

Follow current "best practices" for configuring users access permissions

Implement security policies administrated on the domain, organizational unit, and local computer levels

Adhere to currently accepted formats in handling user passwords in a secure environment

Set up network printer access for clients

Delegate a DHCP server for your network group

Adjust DNS and Internet Protocol settings to access the campus network and the Internet

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 4

### **ITEC 2162 - Linux Admin 3 (4)**

Students will explore an understanding of Linux services that support enterprise networks.

Prerequisite: ITEC1505 and ITEC2122

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Manage Domain Name System services
- Configure Dynamic Host Configuration Protocol services
- Configure Lightweight Directory Access Protocol services
- Manage File Transfer Protocol services
- Manage web services
- Configure mail services
- Install Linux containers
- Execute Bourne Again Shell scripts
- Configure virtual machines
- Use automation software
- Utilize networking tools
- Analyze machine generated data

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 4

### **ITEC 2270 - Windows Admin 3 (4)**

This course will provide students with hands-on experience in setting up and administering Active Directory, E-mail, Web, and File Transfer Protocol (FTP) services using Exchange Server and Microsoft's Internet Information Server. Students will learn to configure multiple server roles. Students will utilize technology to run virtual machines. Students will gain experience working in a Windows command-line environment PowerShell.

Prerequisite: Recommended: ITEC2150

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Install Windows Server operating systems
- Set up multiple virtual machines into a single networked environment using virtualization software
- Configure multiple server roles
- Configure mail services
- Install web services

Build a static website using web services  
Configure File Transfer Protocol (FTP) services  
Manage network using PowerShell software  
Manage Active Directory users and computers using PowerShell  
Install Windows Server core version  
Configure Active Directory services using Server core version  
Install Windows Deployment Server (WDS) services  
Manage virtual cloud environment

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 4

### **ITEC 2385 - IT Internship (2-8)**

This is a cooperative program between Hennepin Technical College and a participating company to allow the student an employment-like work experience.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Work independently

Organize work schedule

Follow prescribed procedures

Demonstrate safety

Demonstrate initiative

Integrate previously acquired skills

Integrate previously acquired knowledge

Display good judgment

Demonstrate dependability

Exhibit professionalism

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: OJT: 2-8

### **ITEC 2415 - IT Security Management and Compliance (3)**

An information assurance (IA) strategy is key in managing risks relating to the data entry, storage, retrieval and transmission of information within the information technology (IT) infrastructure. This course is designed to provide students and working professionals with the knowledge and capacity to implement best practices in data protection, audit controls, and security monitoring.

Prerequisite: ITEC1005 and ITEC1105

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe best practices for developing a security policy

Discuss how IT introduces risks to large and small businesses

Analyze the relationships between assets, threats, vulnerabilities, risks, and controls

Investigate physical security and environmental controls critical in safeguarding data

Differentiate between physical security, disaster recovery, and business continuity

Identify personnel and key positions within an organization responsible for keeping its information assets safe

List the fundamental concepts of an information assurance (IA) strategy

Define the components of a security audit plan

Summarize key U.S. legislation for information security compliance and how it relates to state, national and international jurisdictions

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

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Credit Details: Lecture: 3

### **ITEC 2422 - CCNA Security (2)**

Students will study and implement security features on Cisco routers to protect computer networks from attacks. The Cisco CCNA Security curriculum provides an introduction to the core security concepts and skills needed for the installation, troubleshooting, and monitoring of network devices to maintain the integrity, confidentiality, and availability of data and devices. This course is a hands-on, career-oriented course with an emphasis on practical experience to help students develop security skills to advance their careers.

Prerequisite: ITEC1431

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe security threats facing modern network infrastructures

Implement Authentication, Authorization and Accounting (AAA) on network devices

Mitigate common Layer 2 attacks

Compare intrusion prevention systems (IPS) and intrusion detection systems (IDS)  
Implement site-to-site Internet Protocol security (IPsec) virtual private networks (VPNs)  
Mitigate threats to networks using access control lists (ACLs)  
Monitor traffic flows through security appliances

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

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Credit Details: Lecture: 2

#### **ITEC 2500 - Mobile Application Development (4)**

The students who take this course will be introduced to creating mobile applications using the Microsoft .NET Framework and the C# programming languages. The course will discuss mobile design considerations including graphical user interface design and managing local and remote application data. The course will also include a discussion of building and porting mobile applications to other platforms.

Prerequisite: ITEC2585

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply .NET programming skills to mobile application development

Design applications appropriately for a mobile environment

Compare and contrast graphical user interface (GUI) design for pc and mobile platforms

Build a simple client application for a mobile device

Access local data and files

Access remote data

Synchronize mobile data

Debug and test mobile device applications

Generate programs that run on Windows pcs, phones, and tablets

Describe options for building and porting applications for use on other mobile platforms

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

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Credit Details: Lecture: 4

### **ITEC 2505 - Cybersecurity Essentials (3)**

The Cybersecurity Essentials course covers foundational knowledge in all aspects of security in the cyber world. Students will identify procedures to implement data confidentiality, integrity, availability and security controls on networks, servers and applications. Using interactive activities, virtual machines and a network simulation and visualization tool, students will build their skills by exploring the tactics, techniques and procedures used by cyber criminals and learn methods to mitigate known threats.

Prerequisite: ITEC1005 and ITEC1105

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Differentiate the roles of criminal actors and security professionals in the cybersecurity domain
- Detail the International Organization for Standardization (ISO) cybersecurity model and related security standards
- Examine the threat identification process
- Discuss the importance of protecting all of the states of data in cyberspace
- Compare encryption methods used to protect confidentiality
- Describe technologies and products used to ensure integrity
- Identify measures to improve availability
- Explain how authentication, authorization, and accountability practices are used to manage access control
- Discuss how obfuscation and steganography are used to accomplish data masking

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture:

### **ITEC 2511 - Software Security and Cryptography (2)**

This course will examine the design and security principles required to identify and mitigate threats. Students will also complete an exploration of ciphers, cryptographic algorithms, integrity checks, message authentication, key management, and hash functions.

Prerequisite: ITEC1005 and ITEC1105

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe common cryptographic uses
- Perform hash functions
- Demonstrate symmetric key management
- Demonstrate public key infrastructure key management
- Describe session management
- Describe secure software design
- Describe software usability
- List security coding principles

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

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Credit Details: Lecture: 2

### **ITEC 2515 - Firewall Essentials (2)**

Through hands-on activities, students will complete the installation, configuration and management of hardware and software firewalls. This course will explore the identification and mitigation of known and unknown exploits threatening data networks. Students will utilize best practice and principles in evaluating the role of firewalls in today's cyber landscape.

Prerequisite: Required: ITEC1431, Recommended: ITEC2422

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Compare industry-leading firewall platforms and architecture related to public cloud security

Describe features of next-generation firewall technologies

Identify security controls needed to secure a network environment

Configure network address translation (NAT) in accordance to security policies

Manage access to web addresses and content

Apply filtering methodologies to protect against known and unknown threats

Configure synchronous and asynchronous encryption, public key infrastructure (PKI) and certificates in firewall configurations

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 2

### **ITEC 2520 - Software Security Assurance (4)**

In this course students will study secure Software Development Life Cycle (secure SDLC) methodologies to integrate security testing across the development cycle. Students will learn to implement secure coding practices that align with software security assurance principles. Topics include secure application design, DevOps (software development and IT operations), cryptography, and secure software testing using an Agile project-based approach.

Prerequisite: ITEC1505

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify the need for secure software development
- Explain software security assurance concepts
- Identify software development methodologies
- Define secure software development life cycle (secure SDLC)
- Develop a software application
- Implement software security requirements
- Apply software security principles to an application
- Explain software testing and Quality Assurance (QA) methods
- Analyze the static code of a software application
- Discover software bugs and software security vulnerabilities
- Test an application to validate software security assurance compliance
- Document and report software defects

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 4

### **ITEC 2525 - Modern Cryptography (1)**

This course will reinforce students understanding of cryptographic encoding and decoding to secure data in transit across private and public networks. Students will complete an in-depth exploration of ciphers, cryptographic algorithms, integrity checks, message authentication, key management and hash functions.

Prerequisite: ITEC2505

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Explain the business and security requirements for cryptography
- Identify strengths and weaknesses of classical encryption techniques
- Utilize cryptographic applications, tools and resources to secure data transmissions
- Manage common cryptographic protocols

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

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Credit Details: Lecture: 1

### **ITEC 2536 - Ethical Hacking (3)**

Students will perform vulnerability scanning and penetration testing. Various attacks and exploits will be studied to identify network-based vulnerabilities and common targets.

Prerequisite: ITEC2122 and ITEC2415

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain security legal issues

Describe security ethical issues

Perform vulnerability scanning

Describe the types of hacking techniques

Perform risk assessments

Utilize hacking tools

Perform a network scan

Describe social engineering

Describe malware types

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

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Credit Details: Lecture: 3

### **ITEC 2575 - .NET Programming I (4)**

The students who take this course will be introduced to creating Microsoft Windows applications using the Microsoft .NET Framework, Visual Basic and C# programming languages. This will include using Windows forms, controls, events, methods, procedures and functions. The student will also learn how to create and manipulate database files, create and use sequential files, as well as a brief introduction to creating WEB applications.

Prerequisite: Recommended: ITEC1505

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply Visual Basic and C# programming syntax

Use simple variables (strings/numbers)

Use complex data structures (arrays)  
 Create program code that makes decisions and uses branching  
 Create program code to use iteration and looping  
 Create program code that performs input data validation and formatting  
 Use sequential files  
 Apply object-oriented programming techniques in writing programs  
 Construct event procedures, subroutines, and functions  
 Generate programs that have graphical user interfaces using Windows controls  
 Generate programs that access relational databases using SQL  
 Utilize programming techniques to perform exception handling and error processing

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

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Credit Details: Lecture: 4

#### **ITEC 2580 - Advanced Programming with Python (4)**

In this course, students will build upon their Python programming skills. Using tools and techniques built and supported by the Python community, students will explore how Python is used to solve real-world problems. Topics include examining essential Python libraries, machine learning, Python and SQL, network programming, and the Agile framework using Python.

Prerequisite: ITEC1505

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply network programming fundamentals

Apply concepts of Test-Driven Development (TDD) using Agile

Demonstrate effective code management

Apply advanced program debugging techniques and methods

Describe practical uses for machine learning

Describe programming languages commonly used for data science

Implement advanced data structures

Describe the role of open source libraries in machine learning and Artificial Intelligence (AI)

Develop applications to interact with SQL databases

Develop applications to interact with NoSQL databases

Develop applications following Agile principles

Describe the requirements for a programming language to support Artificial Intelligence (AI) development

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 4

### **ITEC 2585 - .NET Programming II (4)**

This course is intended as a continuation of the .Net Programming I course. The course content will introduce the student to object-oriented Windows form and web programming with database interaction. The C# and Visual Basic programming languages will be covered, and the student may choose one or both as the language of choice. Topics include software objects, classes, methods, properties, data access, LINQ, array processing, web services, threading, and console applications. Microsoft Visual Studio is used as the development environment.

Prerequisite: Recommended: ITEC2575 and ITEC2701

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Create program code that queries, inserts, updates and deletes from SQL databases using ADO .NET

Construct object classes that are imported and used in other programs

Create web forms using ASP .NET

Create program code that uses complex controls such as datagridview

Use XML file processing techniques

Construct advanced user interfaces using icons, system tray, anchoring and form sizing

Generate programs that include using the built-in LOGIN controls and logic

Generate web services to be used in business applications

Utilize programming techniques that call and/or start Windows processes and threads

Create a console application to process a sequential file

Use LINQ to create and navigate datasets and datatables

Utilize programming techniques to perform exception handling and error processing

Text and References: A list of textbooks required for this course is available at the <https://www.hennepintech.edu/finance-operations/campus-store.html> bookstore.

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 4

### **ITEC 2591 - JavaScript (4)**

This course is an introduction to web development using JavaScript with emphasis on front-end programming using jQuery. Students will develop website projects that meet current web standards and industry best practices using modern tools and techniques. Topics include: core JavaScript syntax and object-oriented programming, DOM traversal, JSON structure, event handling, data validation with regular expressions, local data storage, Ajax, using data from web service APIs.

Prerequisite: Recommended: ITEC1301 and ITEC1505 or ITEC1515 or previous programming experience

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and

evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

#### Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate the use of JavaScript, HTML and CSS to build web applications
- Use core JavaScript language features including objects
- Write code using jQuery for DOM traversal and manipulation
- Validate user input and data using regular expressions
- Process JSON data obtained using Ajax requests
- Detect browser versions and available features
- Read and write to local storage
- Apply appropriate JavaScript coding style and best practices
- Demonstrate use of JavaScript debuggers and browser developer tools
- Demonstrate the use of relevant third party libraries
- Apply common application build and release processes
- Develop real-world applications using available web APIs and public data

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

#### Special Accommodations:

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Credit Details: Lecture: 4

### **ITEC 2595 - Java I (4)**

This course is an introduction to programming in Java. Topics include fundamentals of Java programming, including object-oriented programming, primitive data types, control structures, methods, objects, classes, class inheritance, simple graphical user interface and event-driven programs, using Swing. Object-oriented design using the Unified Modeling Language will also be introduced.

Prerequisite: Recommended: ITEC1301, ITEC1505 and any procedural programming language

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

#### Learning Outcomes:

The following outcomes will be addressed in the course:

- Explain the role of the bytecode compiler
- Compare and contrast if and switch statements
- Use loops for repetitive tasks
- Program using the basic built-in Java objects
- Describe the basic Java packages
- Create programming code using a class that includes objects, methods, and constructors
- Use class variables, instance variables, and local variables in the same application
- Explain the difference between instance and class methods
- Explain the difference between interfaces and abstract classes
- Create programming code using a class that uses command-line parameters
- Create programming code using a graphical user interface using simple Swing components and layout managers
- Write event handlers for common graphical objects
- Explain the benefits of multitasking

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

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**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

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**Credit Details:** Lecture: 4

### **ITEC 2645 - Web Development with ASP.NET (4)**

This course is a basic introduction to Microsoft's .NET Active Server Pages (ASP) technology for students who have a solid fundamental understanding of static web page development. The course will include the implementation of web pages with the Microsoft .NET framework using Visual Studio .NET with either the C# or VisualBasic.NET programming language. Students will develop web pages to create dynamic documents including retrieving data from SQL databases such as Microsoft SQL Server.

**Prerequisite:** Recommended: ITEC1301 and ITEC2585

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Apply ASP .NET programming syntax

Use simple variables (strings/numbers)

Use complex data structures (arrays)

Create program code that makes decisions and uses branching

Create program code to use iteration and looping

Create program code that performs input data validation and formatting

Use sequential files

Apply object-oriented programming techniques in writing programs

Construct event procedures, subroutines, and functions

Generate browser-based software applications

Generate programs that access relational databases using SQL

Utilize programming techniques to perform exception handling and error processing

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Credit Details:** Lecture: 4

### **ITEC 2675 - A+ Hardware Support (3)**

This advanced course will provide practical knowledge of Personal Computer (PC) hardware and printers needed to provide technical support to computer users. Students will acquire many of the hardware skills necessary for the CompTIA A+ certification.

Prerequisite: Recommended: ITEC1102 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Install personal computer (PC) hardware
- Troubleshoot PC hardware problems
- Describe electrical concepts
- Manage hardware device drivers
- Troubleshoot printer issues
- Resolve PC networking issues
- Install end-to-end network cabling
- Perform hardware preventive maintenance tasks

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

### **ITEC 2680 - A+ Software Support (3)**

This advanced course will provide practical knowledge of the Windows Operating System (OS) configuration, software installation and utility management needed to provide technical support to computer users. Students will acquire many of the software skills necessary for the CompTIA A+ certification.

Prerequisite: Recommended: ITEC1102 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Install windows operating system (OS)
- Troubleshoot OS errors
- Use command-line and software utilities
- Manage system performance
- Troubleshoot password issues
- Configure OS for network connectivity
- Perform security and encryption tasks
- Perform remote troubleshooting
- Simulate call center operations

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or

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Special Accommodations:

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Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

### **ITEC 2685 - A+ Exam Prep (1)**

The focus of this course is to prepare for the CompTIA A+ certification exam. Topics covered will include all prior A+ Hardware and A+ Software coursework as it relates to the CompTIA A+ certification exams. Students will prepare through simulated practice exams and experiences.

Prerequisite: Recommended: ITEC2675 and ITEC2680 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the CompTIA A+ certification pathway

Explain the process of CompTIA A+ certification exam registration

Analyze A+ practice exam questions

Complete A+ practice certification exams

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 1

### **ITEC 2701 - SQL/NoSQL Database Design (4)**

This course covers relational databases and the efficient design of these databases. The course will include the definition of tables and indexes, logical and physical design, entity relationships, and transaction management. The use of Structured Query Language (SQL) and NoSQL (nonSQL) databases will be emphasized.

Prerequisite: Recommended: ITEC1000

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe benefits of Database Management Systems

Compare the hierarchical, network, and relational database models

Create relational database tables  
 Manage the relationship between tables using candidate keys, primary keys, and foreign keys  
 Utilize data using the data dictionary  
 Contrast one-to-many, many-to-many, and one-to-one relationships  
 Develop Entity Relationship (ER) models  
 Utilize dependencies  
 Normalize data structures to Third Normal Form (3NF)  
 Develop database designs using the Database Life Cycle  
 Manipulate the database using DML, DDL, and DCL  
 Control concurrency of data using transactions  
 Contrast Data Warehouse with OLTP systems  
 Formulate SQL queries to retrieve data  
 Use relational algebra operators

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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Credit Details: Lecture: 4

**ITEC 2781 - SQL Server - TransactSQL (4)**

This course provides students with the technical skills required to utilize TransactSQL programming solutions within a Microsoft SQL Server client/server database management system.

Prerequisite: Recommended: ITEC1032 and ITEC2701

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Interpret architecture  
 Retrieve data using TSQL  
 Retrieve data from multiple data sources  
 Use aggregate functions  
 Use analytical functions  
 Manipulate the database using DML, DDL, and DCL  
 Create basic store procedure  
 Formulate SQL queries to retrieve data  
 Use relational algebra operators  
 Control error handling using triggers  
 Create transactions and record locking  
 Interpret database and database file

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 4

### **ITEC 2786 - SQL Server - System Administration (4)**

This course provides students with the knowledge and skills required to install, configure, administer, and troubleshoot Microsoft SQL Server client/server database management system.

Prerequisite: Recommended: ITEC1032

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Interpret SQL server data engine and service processes

Interpret relational database architecture

Install SQL server database

Configure SQL server database

Manage file space allocation

Create SQL server database and file structure

Demonstrate database security

Demonstrate database maintenance

Manage user and groups

Perform Bulk Copy of database

Create Data Transformation Services

Create performance monitoring and tuning

Perform database backup and restore

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 4

### **ITEC 2801 - Systems Analysis (4)**

This course presents a practical approach to systems analysis and design using a blend of traditional development methodologies with current technologies. Students will gain an understanding of the activities involved in all phases of the Systems Development Life Cycle. The course will focus on real-world business systems and will help students to understand how information technology supports operational and business requirements in today's fast-changing technology environment.

Prerequisite: Recommended: ITEC1000

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and

evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Explain the roles of various information systems personnel in system development  
 Explain the phases of the Systems Development Life Cycle (SDLC)  
 Describe common activities for each phase of the Systems Development Life Cycle  
 Compare and contrast different Systems Development Life Cycle methodologies  
 Develop system proposals  
 Describe system concepts for object modeling  
 Construct data and process models  
 Analyze input and output design and prototyping  
 Explain systems operation and support requirements  
 Analyze Object-Oriented design techniques

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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Credit Details: Lecture: 4

**ITEC 2841 - Client/Server and Cloud Computing (4)**

This course covers the evolution, impact and services available with Client/Server technology and distributed computing. The characteristics of clients and servers, the role of middleware, and virtualization using Cloud Computing will be discussed. Students will explore the various type of Client/Server implementations: SQL databases, transaction servers, distributed objects, groupware, Cloud Computing, and Web applications.

**Prerequisite:** Recommended: ITEC1105 or ITEC1505 or ITEC2701

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Describe Client/Server configurations  
 Differentiate various types of middleware  
 Describe the major components in a distributed business application  
 Examine the major components and functions of Structured Query Language (SQL) Database clients and servers  
 Examine the major components and functions of Transaction servers and clients  
 Examine the major components and functions of Groupware clients and servers  
 Examine the major components and functions of distributed object servers  
 Examine the fundamental concept and components of Cloud Computing  
 Differentiate between Client/Server architecture and Cloud Computing  
 Describe the standards and techniques used to provide security in client/server environments  
 Examine the major components used in deploying web-based client/server systems  
 Describe the approaches to managing a distributed client/server environment  
 Evaluate the degree of client/server computing that exists in a computing environment  
 Diagram the components that are present at each tier within a client/server environment

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Credit Details:** Lecture: 4

### **ITEC 2875 - Workplace Readiness Skills Assessment (0)**

Job Ready assessments measure technical skills at the occupational level and include items which gauge factual and theoretical knowledge. This 0 credit course will measure the skills of those who are completing a post-secondary technical program and is an HTC graduation requirement for the Organizational Support AAS Degree.

**Prerequisite:** Recommended: 75% completion of the required technical courses in the degree

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following goals will be addressed in the course:

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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### **ITEC 2880 - Network Admin Technical Skills Assessment (0)**

This 0 credit course will measure the skills of those who are completing a post-secondary technical program and is an HTC graduation requirement for the Network Administrator/Analyst AAS degree.

**Prerequisite:** Recommended: 75% completion of the required technical courses in the degree area

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course

Credits section of this course outline for the credit breakdown.

Special Accommodations:

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### **ITEC 2885 - IT Support Skills Assessment (0)**

Job Ready assessments measure technical skills at the occupational level and include items which gauge factual and theoretical knowledge. This 0 credit course will measure the skills of those who are completing a post-secondary technical program and is an HTC graduation requirement for the IT Support AAS Degree.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Schedule exam appointment at HTC Testing Center

Complete designated third-party skill assessment

Submit proof of completion to instructor

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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## **LAWE - Law Enforcement**

### **LAWE 1200 - Equity in Policing (3)**

This course will examine cultural studies related to policing in multi-cultural communities to understand various community's interpretations of police behavior and decisions, and how it affects a police officer's ability to better serve communities. Each student will take an Intercultural Development Inventory (IDI) to help identify and understand personal bias awareness. This course will also examine de-escalation techniques for various situations by reviewing case studies. In addition, this course will examine self-wellness studies for long-term personal health practices for police officers.

Prerequisite: Admission into the Law Enforcement Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain aspects of possible biased style thinking when placed into various situations

Identify personal cultural differences by taking an Intercultural Development Inventory (IDI) exam at the beginning and end of the course

Explain the evolution of police culture and the effects it has on community relations and trust

Identify perceptions and beliefs of being targeted by the police within multi-cultural and diverse communities

Demonstrate techniques for bridging the divide between police and community

Explain the importance of initiating citizen engagement and partnering with community members

Identify positive community relationships for safer communities

Identify community resources for improving community policing

Research healthy lifestyle practices for self-wellness

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

**LAWE 1205 - Physical Fitness for Peace Officers (1)**

This course provides instruction in the concepts and techniques of physical exercise for both on duty and off duty peace officers. Students will be exposed to basic factors of exercise, different types of exercises and the frequency, duration and intensity of the training. This course educates learners in the testing requirements for many law enforcement agencies.

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Assess student fitness level as in the role of a peace officer

Create goals based on fitness level

Analyze concepts and techniques of physical fitness such as cardiovascular, flexibility, agility, strength, and endurance, which are important to peace officer's health

Apply knowledge of nutrition to personal health goals

Articulate the long-term benefits of maintaining mental and physical health for peace officers

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Lab: 1

### **LAWE 2225 - Criminal Investigation (3)**

This course is designed to provide the student with information pertaining to basic duties and responsibilities of a peace officer as they relate to crimes against person and crimes against property. A presentation of the goals for successful crimination investigations will include crime scene considerations, building and establishing elements of a crime, learning to obtain information and evidence and working within the confines and constraints of a legal framework.

Prerequisite: Admission into the Law Enforcement Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate the use of police interview positioning
- Demonstrate understanding and knowledge of interviewing techniques
- Demonstrate the ability to write narrative reports
- Define identified legal terms
- Explain investigative principles
- Outline law enforcement goal setting
- Define chain of custody
- Define constitutional amendments
- Explain report writing elements
- Define elements of an offense
- Explain Minnesota statutes
- Demonstrate methods of crime scene protection
- Demonstrate ability to collect and preserve evidence
- Explain duties of crime scene investigator
- Define types of evidence relevant in a crime scene investigation
- Explain how to question a suspect
- Demonstrate understanding of legal issues regarding Miranda rights
- Explain duties of first responder

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 0

### **LAWE 2230 - Legal Issues (3)**

The course will familiarize students with the principles of criminal procedures, the rules established by the United States Supreme Court relating to stop, frisk, arrest, search interrogation and identification, and the legal process applicable to law enforcement. Students will study the legal concepts involved in the application of the 4th, 5th, and 6th Amendments to policing as well as Minnesota State Constitution and procedural requirements.

Prerequisite: Admission into the Law Enforcement Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Explain key terms and the basic rules governing searches, seizures and interrogations
- Explain the protections and operations of the US and MN constitution
- Explain the effect of the 14th Amendment
- Define the warrant requirements
- Explain the protections available under the 4th Amendment
- Define legal elements of a vehicle and/or pedestrian stop
- Explain when and where an arrest may be made without a warrant
- Explain the proper execution of different types of arrest warrants
- Explain the use and scope of searches incident to arrest
- Describe the scope and authority required to search a vehicle on probable cause
- Describe the Exclusionary rule and its principle exceptions
- Explain the rights provided under the 5th Amendment pursuant to Miranda
- Describe the rules related to Show Ups and Line Ups, including right to counsel
- Describe the requirements for obtaining a search warrant
- Explain key terms and rules governing search, seizure, and interrogation
- Describe the application of the defenses of capacity, self-defense, and entrapment
- Describe the features of liability under state law and civil rights statutes

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 0

### **LAWE 2231 - MN Criminal and Traffic Codes (3)**

This course is an overview of the Minnesota Criminal Code and Minnesota Traffic Laws. Emphasis is on coverage of statutes emphasized in Minnesota Peace Officer Standards and Training (POST) learning objectives. The course combines characteristics of two POST secondary learning attitudes; academic education and vocational-oriented training. The course will enhance both knowledge of criminal and traffic laws the student will use as an officer and understanding of how our laws are affected by case law.

Prerequisite: Admission into the Law Enforcement Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Apply knowledge of criminal and traffic codes in the daily functions of a police officer
- Demonstrate knowledge of MN criminal codes and traffic laws
- Examine key terms defined in criminal and traffic laws of Minnesota
- Justify the appropriate use of discretion by an officer
- Differentiate between the penalty classifications from petty misdemeanors to felonies
- Identify the difference between state statutes and city ordinances and their interrelationship

Select appropriate multiple counts for criminal acts and enhancements for repeat offenders  
 Apply MN Peace Officer mandated duties associated with specific state statutes  
 Identify MN statutes that apply to bias-motivated hate crimes  
 Differentiate between the elements of domestic abuse, assault, harassment and stalking  
 Distinguish between domestic-related court orders  
 Explain mandated reporting of suspected abuse to children and vulnerable adults  
 Discuss criminal liability for police officers  
 Interpret probable cause, criminal statutes and traffic laws  
 Analyze how traffic laws apply to driving conduct in traffic and impaired driving situations  
 Distinguish between types and classes of driver's license, endorsements, permits and exemptions  
 Summarize the different types of vehicle registration and insurance requirements  
 Apply appropriate MN traffic laws to traffic accident investigations

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 3 lab: 0

### **LAWE 2235 - Police Report Writing/Interview (2)**

This course establishes the learner's ability to write police reports in a detailed, chronological order using proper format. Emphasis is placed on spelling, grammar, punctuation, and the ability to get clear and concise meaning throughout the report. Additionally, students will learn the proper techniques in interviewing.

Prerequisite: Admission into the Law Enforcement Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate the differences between factual and opinion type writing

Provide examples of both narrative and bullet point style of writing

Define the elements needed to elicit a legal confession during an interview

Identify the proper techniques needed for a successful interrogation

Identify elements of an effective interview

Write a police report in chronological order utilizing proper grammar, spelling, and punctuation

Define the differences between an interview and an interrogation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 0

### **LAWE 2241 - Crisis Intervention and Human Behavior (3)**

This course is designed to integrate the academic and applied aspects of the basic patrol function for a police patrol officer. Included in this class is the in-depth examination of a patrol officer's duties, functions, and responsibilities, as well as a variety of other practical aspects. These include, but are not limited to, vehicle stops, traffic enforcement, domestics, officer stress, pedestrian contacts, officer safety issues, and other duties as they relate to the basic patrol function.

Prerequisite: Admission into the Law Enforcement Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the impact of human behavior on the interactions between police and communities they serve

Explain law enforcement response strategies to mental health issues, persons in crisis, and critical incident events

Describe the role of law enforcement as it relates, but not limited to, victimization, stalking, predatory offenders, domestic abuse, sexual assault, hate/biased motivated crimes

Explain the role of law enforcement when addressing issues of gangs, drugs, terrorism, and homeland security

Explain basic duties of a first responder to critical incidents involving the use of safety for themselves and others including backup, crime scene management, traffic and crowd control, and post critical incident debriefings

Identify knowledge of police radio techniques and procedures

Explain primary duties and functions of a police officer

Define identified legal terms regarding stop and frisk

Explain the use of police technology

Define command presence

Define different discretions used by a police officer

Describe how a police officer investigates domestic abuse and vulnerable adults

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 3 lab: 0

### **LAWE 2261 - In Progress Response (2)**

This course will include instruction in the areas of Crimes In-Progress.

Prerequisite: Admission into the Law Enforcement Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate the proper and safest methods to approach and apprehend high risk suspects
- Assess dangers responding to crimes in progress
- Identify tactics appropriate to the en-route phase of a crime response
- Demonstrate tactics appropriate to approach and search of a building
- Practice procedures for confronting suspects and placing him/her under control or arrest
- Assess proper procedures for handling barricaded suspects and hostage situations
- Demonstrate proper tactics in dealing with suspects possessing weapons
- Demonstrate knowledge of the 4th amendment search and seizure techniques
- Discuss how peace officers deal with different types of animal complaints
- Demonstrate responses to domestic disturbances and sexual assault reports
- Demonstrate de-escalation tactics when dealing with persons in crisis and those who are mentally impaired
- Demonstrate tactics in how to respond to civil matters
- Identify definitions and familiarity with missing person related laws
- Demonstrate how to work as a team in active shooter situations
- Identify how critical incidents are handled
- Explain procedures for responding to juveniles involved in crime scenes as victims or offenders

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 0 lab: 2

### **LAWE 2262 - In Progress Response (3)**

Students will examine and complete exercises dealing with crimes that are in progress and the tactical responses to situations which may occur in the course of their duties.

Prerequisite: Admission into Law Enforcement Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate the proper and safest methods to approach and apprehend high risk suspects
- Identify dangers in responding to crimes in progress
- Demonstrate appropriate approach and search of a building
- Identify proper procedures for handling barricaded suspects and hostage situations
- Demonstrate de-escalation tactics when dealing with persons in crisis and those who are mentally impaired
- Demonstrate how to work as a team in active shooter situations
- Explain tactics appropriate to use during the in-route phase of responding to crimes
- Demonstrate proper tactics in dealing with individuals possessing weapons
- Identify how critical incidents are addressed

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course

Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: Lecture: 2 Lab: 1

### **LAWE 2265 - Ethics and Communications (3)**

This course explains ethical theories and concepts such as ownership, integrity, accountability, and expectations of professional behavior. The course will examine real-world ethical challenges and methods for setting and maintaining high ethical standards. Students will examine core values, ethics, and implicit biases in reference to personal and professional consequences which include the law enforcement community as a whole. The course examines how resources such as role models, peer-group support, and influence can be utilized.

Prerequisite: Admission into the Law Enforcement Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain professional ethics and values related to law enforcement

Critique the use of police powers

Explain influences and implicit biases which challenge ethical decisions

Describe ethical issues related to police discretion

Demonstrate problem-solving techniques to deal with ethical dilemmas

Determine the crucial role of ethics for police officers

Critique positive and negative aspects of police culture

Demonstrate the effects of positive and negative ethical issues as they relate to community relations.

Explain the need for long-term and continuous ethical training

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

### **LAWE 2275 - Traffic (1)**

This course will include instruction in the areas of Low Risk Traffic Stops, High Risk/Felony Stops, DWI enforcement, Crash Scene Management.

Prerequisite: Admission into the Law Enforcement Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Demonstrate the ability to write factual, concise and complete reports
- Employ the pre-stop preparations in traffic stops
- Execute positioning of a squad car during traffic stops
- Use verbal commands for high risk felony stops
- Demonstrate the methods to approach and apprehend high risk suspects
- Demonstrate guidelines for violator contacts
- Demonstrate ability to perform traffic stop techniques
- Express awareness of driver's license and vehicle registration issues
- Demonstrate proper completion of a MN state traffic citation
- Demonstrate the ability to deal with reactions of violators
- Employ tactics in dealing with suspects possessing weapons
- Demonstrate techniques in dealing with those individuals who have emotional/physical disabilities or conditions

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 0 lab: 1

**LAWE 2276 - Traffic (2)**

This course will include instruction in the areas of low risk traffic stops, high risk/felony stops, driving while impaired (DWI) enforcement, and crash management.

**Prerequisite:** Admission into Law Enforcement Program

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Employ the pre-stop preparations in traffic stops
- Demonstrate the methods to approach and apprehend high risk suspects
- Demonstrate proper completion of Minnesota state traffic citation
- Identify awareness of driver's license and vehicle registration issues
- Demonstrate techniques in dealing with those who have emotional and/or physical disabilities or conditions
- Demonstrate abilities to perform traffic stop techniques
- Demonstrate verbal commands for high risk felony stops
- Execute positioning of a squad car during traffic stops
- Demonstrate the ability to write factual, concise, chronological, and complete reports
- Demonstrate guidelines for violator contacts
- Demonstrate the ability to deal with subjects/suspects with weapons

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course

Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 1 Lab: 1

### **LAWE 2280 - Defensive Tactics (2)**

This course will include instruction in the areas of Defensive Tactics and Active Shooter Response.

Prerequisite: Admission into the Law Enforcement Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply escalation and de-escalation tactics and procedures in the use of force continuum

Describe use of elements of deadly force by peace officers

Demonstrate the ability to write factual, concise reports

Show proper three point search position

Practice procedures for confronting suspects and placing him/her under control or arrest

Demonstrate proper verbal articulations in a variety of control based scenarios

Demonstrate the ability to deal with various reactions of violators

Employ proper tactics in dealing with suspects possessing weapons

Demonstrate weapon retention techniques

Demonstrate weapon disarming techniques

Demonstrate the ability to prioritize missions during active shooter situations

Demonstrate tactics necessary for active shooter situations

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 0 lab: 2

### **LAWE 2281 - Defensive Tactics (3)**

This course provides students with the physical skills and academic knowledge to perform the basic functions of a law enforcement officer when tasked with physically controlling a suspect. This course provides effective guidelines for the student to make defensive decisions in the field regarding the reasonable use of physical force and reinforces past and current case law related to peace officer's use of force in cognitive areas where de-escalation may be needed.

Prerequisite: Admission into the Law Enforcement Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe the use of elements of deadly force by peace officers
- Apply escalation and de-escalation tactics for procedures in the use of force continuum
- Employ proper tactics in dealing with suspects possessing weapons
- Demonstrate weapon retention techniques
- Practice procedures for confronting suspects and placing him/her under control or arrest
- Apply different control techniques to individuals who are resisting
- Demonstrate the use of verbal commands while applying techniques in handcuffing

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: Lecture: 2 Lab: 1

### **LAWE 2285 - Crime Scene and Evidence (1)**

This course will include instruction in the areas of Search and Seizure, Booking and Fingerprinting, Crime Scene Investigations, Latent Prints, Courtroom Testimony, Evidence Collection and Preservation.

Prerequisite: Admission into the Law Enforcement Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate the ability to write factual, concise and complete reports
- Explain overall importance of police reports and their use in the criminal justice system
- Demonstrate the procedures in courtroom testimony
- Demonstrate techniques used in the management of a crash scene
- Demonstrate the ability to process a crime scene
- Demonstrate the ability to collect latent prints
- Demonstrate interview techniques for crime victims and witnesses
- Explain the importance of when to obtain a warrant at crime scenes
- Demonstrate procedures for collecting and preserve different types of evidence

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 0 lab: 1

### **LAWE 2290 - Firearms (2)**

This course will include instruction in the areas of Use of Deadly Force, Simunitions, Firearms and Judgmental Shootings.

Prerequisite: Admission into the Law Enforcement Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Fire ammunition using semiautomatic pistols, rifles and shotguns with accuracy and safe handling

Demonstrate proper use of cover and concealment

Perform shooting exercises under a variety of light levels

Demonstrate proper cleaning techniques for handguns

Apply escalation and de-escalation tactics and procedures in the use of force continuum

Describe deadly force utilization according to MN State Statute(s) and MN case law

Demonstrate the ability to write factual, concise, and complete reports

Demonstrate the most proper and safest methods to approach and apprehend high risk suspects

Demonstrate procedures for confronting suspects and placing him/her under control or arrest

Demonstrate the verbal skills needed to control and de-escalate situations in various scenarios

Demonstrate the ability to make appropriate force decisions under stress

Employ proper tactics in dealing with suspects possessing weapons

Identify appropriate weapon based on assessment of situation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 0 lab: 2

### **LAWE 2291 - Firearms (3)**

This course will examine how critical incidents affect the psychological, physiological, and emotional stress on a peace officer throughout his/her career. After instruction, students will demonstrate proficiency in nomenclature, safe handling, and proper shooting techniques with a handgun. Students will receive an overview and familiarization with shotguns and patrol rifles. Students will complete exercises in critical decision making, active shooter, and live simulated situations involving deadly force encounters. Students will use proper de-escalation techniques to control situations.

Prerequisite: Admission into the Law Enforcement Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Practice using semiautomatic pistols, rifles, and shotguns with accuracy and safe handling  
 Perform shooting exercises under a variety of light levels  
 Apply escalation and de-escalation tactics within the use of force continuum  
 Demonstrate procedures for confronting suspects while placing her/him under arrest  
 Employ established tactics in dealing with suspects possessing weapons  
 Identify the use of appropriate weapons based on assessment of a situation  
 Demonstrate safe methods to approach high risk subjects  
 Demonstrate safe methods to apprehend high risk suspects  
 Describe deadly force utilization according to Minnesota Statue (s) and Minnesota Case Law  
 Demonstrate the ability to write factual, concise, and complete reports  
 Demonstrate the use of cover and concealment  
 Identify self-wellness resources for post critical incidents

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: Lecture: 2 Lab: 1

### **LAWE 2295 - Basic Firearms (1)**

This course introduces the Hennepin Technical College Peace Officer Student to the basic nomenclature, safe handling, and functions of the semi-automatic pistol along with the safety rules of the firing range.

Prerequisite: Admission into the Law Enforcement Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify the required safety range rules  
 Execute how to clear a malfunction of the Glock 9mm semi-automatic pistol  
 Apply proper breakdown and cleaning of the Glock 9mm semi-automatic pistol  
 Apply master grip before firing the pistol in both dominant and non-dominant hands  
 Differentiate the use of the front site from close distances and the extended shooting position

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: Lecture: .5 Lab: .5

### **LAWE 2300 - Tactical Driving for Law Enforcement Students (0)**

This course will introduce Law Enforcement students to basic defensive and emergency driving techniques. The student will be able to demonstrate techniques of operating a Law Enforcement vehicle in both emergency and non-emergency modes while avoiding accidents despite the actions of others. This class will be presented in both lecture and demonstration of skills. Students will demonstrate backing in cornering situations, long distance higher speed backing techniques and tight maneuvering exercises. There will be exercises that show basic evasive and collision avoidance driving techniques. The skid control portion is designed to show the student how to steer out of a skid. It will also emphasize proper recovery techniques with the use of accelerator, steering inputs and use of brakes. This class is taught at a location to be determined; it is a two day, 16 hour program and is graded pass/fail.

Prerequisite: Admission into the Law Enforcement Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following goals will be addressed in the course.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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### **LAWE 2325 - Capstone (1)**

This course allows Peace Officer and Public Safety students to demonstrate the relationship between the foundational knowledge they have gained in communication skills, critical thinking, multicultural understanding, leadership and Minnesota and tribal laws. Students complete this course prior to entering the skills lab classes. Students will participate in a series of justice-centered dialogues with their classmates and complete an action-based research project in the community.

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Analyze how factors such as race, cultural perspectives, socio-economic status and gender relate to their role as a peace officer when working alongside community members

Apply knowledge acquired from previous courses in the Peace Officer and Public Safety program to complete the action-based research project

Apply knowledge acquired from previous courses in the Peace Officer and Public Safety program to participate in justice-centered dialogue

Explain how the knowledge acquired from previous courses in the Peace Officer and Public Safety program will support the student as they continue into the psycho-motor skills coursework

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: Lecture: 1

## LNDC - Landscape and Horticulture Careers

### LNDC 1110 - Introduction to Landscape/Horticulture Careers (1)

This course is designed to introduce the student to the many and varied areas of the landscape industry, the employment opportunities and educational requirements. This course will help students understand the landscape industry and formulate career education goals.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Prepare a resume

Examine HTC Policies and Procedures

Develop a personal goal plan

Conduct an Industry Interview

Identify professional organizations in the landscape horticulture industry

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1

### LNDC 1120 - Woody Plants I - Trees (4)

This course is designed to give the student a comprehensive understanding of shade, ornamental and native deciduous trees and coniferous evergreen trees. Emphasis will be given to identifying characteristics, nomenclature and their use in the landscape.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify deciduous shade trees
- Identify evergreen trees
- Identify native trees
- Identify ornamental trees
- Access plant photos
- Determine use of deciduous shade trees
- Determine use of evergreen trees
- Determine use of ornamental trees
- Determine use of native trees
- Determine use of evergreen trees
- Determine use of deciduous shade trees
- Complete a tree reference book

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 4

### **LNDC 1125 - Introduction to Arboriculture (4)**

This course is designed to give students a fundamental knowledge of the care of woody plants in the landscape. Topics include value and benefits of trees, proper planting, pruning, insect and disease identification, and commercial use of pesticides. The class will also discuss the American Nursery Standards Institute (ANSI) and Minnesota Department of Transportation (MnDOT) industry standards for woody plant material.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Discuss proper planting techniques
- Perform spring planting of bare root woody plant material
- Perform pruning on trees under 12 feet
- Identify symptoms of serious pests in the landscape
- Identify Integrated Pest Management (IPM) measures to control pest problems in the landscape
- Identify proper soil conditions and remediation measures for woody plant material
- Identify nutrient management for existing landscape woody plant material
- Demonstrate knowledge of Compartmentalization of Decay in Trees (CODIT)
- Demonstrate knowledge of species roles in compartmentalization
- Identify structural issues versus health issues
- Access American Nursery Standard Institute (ANSI) and Minnesota Department of Transportation (MnDOT) standards for woody

plant material

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: Lecture: 3 Lab: 1

### **LNDC 1141 - Nursery Propagation and Production (3)**

This course is designed to give the student a fundamental understanding of the production process of the nursery industry. Labs will involve sexual and asexual propagation, which include commercially accepted methods of seed propagation; division, cuttings, layering, grafting and tissue culture.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate sexual propagation techniques

Demonstrate propagation of perennials

Demonstrate propagation of bulbs

Demonstrate cutting techniques

Demonstrate grafting/budding techniques

Demonstrate layering techniques

Describe the tissue culture process

Present an oral presentation on two propagation projects

Record accumulated scientific data from lab experiments

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2 lab: 1

### **LNDC 1145 - Tree Climbing Operations (3)**

This course is a continuation of Arboriculture I with emphasis on tree care via rope, saddle climbing, and ground worker operations. Specialized topics and practices to include: climbing safety, climbing equipment, familiarity with ropes and knots, throw line, foot locking, mechanics of climbing and moving through trees via rope and saddle. The student will also learn how to provide support to climbers aloft through roping and rigging skills, material handling, equipment operation, chainsaw safety and customer service relations. Along with Tree Climbing Operations, Arboriculture and Advanced Arboriculture students can prepare for the International Society of Arboriculture (ISA) Tree Worker Certification, administered by the MN Society of Arboriculture (MSA).

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate knowledge of practical knot tying
- Identify tree climbing equipment
- Maintain climbing equipment
- Conduct different techniques for entering a tree canopy
- Demonstrate knowledge of tree safety equipment
- Perform tree safety inspections
- Demonstrate knowledge of basic ground tools and equipment
- Perform basic equipment maintenance tasks
- Demonstrate safe cutting skills
- Identify site hazards
- Provide communication and support to climbers aloft
- Demonstrate rigging/roping knots/hitches
- Demonstrate running a lowering line according to conditions
- Demonstrate a dropzone

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2 lab: 1

### **LNDC 1151 - Insects and Diseases of Landscape Plants (3)**

This course is designed to give the student a fundamental understanding of insects and diseases of woody plants. Students will examine ways to manage pests by chemical means and/or natural methods.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify the life cycles of diseases
- Identify the life cycles of insects
- Identify the life cycle of arachnids
- Diagnose non-infectious disorders
- Diagnose infectious diseases

Diagnose insect problems  
 Recommend control measures for non-infectious disorders  
 Recommend control measures for infectious diseases  
 Recommend control measures for insect problems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 2 lab: 1

### **LNDC 1155 - Applied Arboriculture Operations (4)**

This course places an emphasis on trees within the urban setting where typical surroundings and conditions will influence best management practices using applied tree care operations. Specialized topics and practices will include tree climbing and ground worker operations, and the identification of hazardous trees and tree defects. The students will receive directions on how to provide support to climbers aloft through roping and rigging skills, material handling, equipment operation, chainsaw safety, and customer service relations. Students can prepare for the International Society of Arboriculture (ISA) Tree Worker Certification, administered by the Minnesota Society of Arboriculture (MSA) and the Minnesota Department of Agriculture (MDA) Tree Inspector Certification process.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate knowledge of basic ground tools and equipment

Demonstrate safe cutting skills

Demonstrate knowledge of practical knot tying, rigging, roping knots and hitches

Identify tree climbing equipment

Perform general maintenance on climbing equipment

Conduct different techniques for entering a tree canopy

Perform tree safety inspection

Demonstrate knowledge and trust of tree safety equipment

Perform basic equipment maintenance tasks

Identify site hazards by recognizing structural issues versus health issues

Provide communication and support to climbers aloft

Demonstrate tree hazards through site inspections

Perform tree value appraisals in the landscape

Demonstrate knowledge of the Minnesota Department of Agriculture (MDA) Tree Inspector Certification process

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

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Campus:

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Credit Details: Lecture: 1 Lab: 3

### **LNDC 1160 - Greenhouse Infrastructure Technology (2)**

This course is designed to give the student an understanding of the greenhouse infrastructure used in the production of ornamental crops and food systems. Technology taught will include greenhouse structures, controlled environments, application of specialized equipment, and alternative growing systems such as High Tunnels.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate knowledge of greenhouse heating systems

Demonstrate greenhouse structure knowledge

Demonstrate knowledge of cooling systems

Demonstrate knowledge of greenhouse equipment

Identify watering systems

Demonstrate knowledge of fertilization systems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2

### **LNDC 1166 - Sustainable Food and Plant Production - Fall (3)**

This course is designed to give the student an understanding of commercial edible and nonedible sustainable crop production practices based on the fall season. Ornamental crops to be grown are chrysanthemums, poinsettias, and other minor crops. Special emphasis will be given to herb and vegetable hydroculture.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Perform crop production using hydroculture

Produce potted crops for seasonal holiday sales

Create a production schedule

Manipulate growth parameters  
 Identify greenhouse pests  
 Provide control measures for insects and diseases  
 Maintain a crop journal  
 Market crops

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1 lab: 2

### **LNDC 1176 - Sustainable Food and Plant Production - Winter (3)**

This course is designed to give the student an understanding of the production, culture and marketing of winter floriculture crops and sustainable food crops. Special emphasis will be given to the production of Easter lilies, geraniums, and other minor potted crops grown in the spring.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Produce crops

Manipulate growth parameters

Create production schedule

Identify greenhouse insects

Diagnose crops diseases

Provide insect and disease control measures

Maintain a crop journal

Market crops

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1 lab: 2

### **LNDC 1187 - Sustainable Food and Plant Production - Summer (2)**

This course is designed to give the student an understanding of the production, culture and marketing of summer floriculture crops as well as the production, harvest and marketing of food crops using sustainable practices. Special emphasis will be given to fall mum production, organic cropping, community supported agriculture, vermiculture practices, mushroom cultivation, permaculture systems, aquaponics, vegetable gardening, strawbale production, microgreen production, outdoor cutflower production and high tunnel food production.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Perform crop production with hydroponics

Create a production schedule for each crop grown

Manipulate growth parameters

Manipulate photoperiods

Determine crop fertilizer programs

Execute crop harvesting procedures

Apply postproduction techniques

Identify crop insects

Diagnose crop diseases

Document crop information in journal

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1 lab: 1

### **LNDC 1190 - Woody Plants II - Shrubs (4)**

This course is designed to give the student a comprehensive understanding of deciduous and evergreen shrubs. Emphasis will be given to identifying characteristics, nomenclature and uses in the landscape.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify deciduous shrubs

Identify evergreen shrubs

Identify vines

Identify shrub roses

Access plant info from internet sites

Recommend uses of deciduous shrubs

Recommend uses of evergreen shrubs

Recommend uses of vines  
 Recommend uses of shrub roses  
 Construct a shrubs scrapbook  
 Identify proper planting techniques  
 Describe flower types and colors

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 4

#### **LNDC 1202 - Herbaceous Plant Materials (4)**

This course is designed to give the student a understanding of herbaceous plants. Areas of study include cultural needs of plants, pest problems, bloom period, and design qualities of plants in the landscape. Included in the plant study are annuals, perennials, ferns, and groundcovers.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Define basic horticultural terminology  
 Demonstrate use of botanical names  
 Demonstrate use of common names  
 Identify annual plants  
 Identify perennial plants  
 Identify ground covers  
 Access plant information from internet sites  
 Describe the maintenance of each plant  
 Identify insects  
 Identify plant disease  
 Identify plants through PowerPoint presentations  
 Describe the role of the plants in a landscape setting

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 4

### **LNDC 1220 - Integrated Pest Management (2)**

This course is a study of the pest problems that affect greenhouse crops, nursery crops and woody plants in the landscape. Along with learning insect life cycles, students will participate in releasing live biological insects in the greenhouses. Special emphasis will be given to understanding how to manage environments using a combination of practices such as cultural, biological and chemical controls. This is a preparatory study for taking the Minnesota Department of Agriculture Pesticide applicators license test for categories A/E.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Determine pest thresholds in HTC greenhouses

Identify greenhouse insects and their life cycles

Determine biocontrol agents for insect populations in greenhouses

Demonstrate the use of application equipment

Read a pesticide label

Demonstrate the proper use of personal protective equipment

Demonstrate the ability of keeping proper pesticide records

Demonstrate knowledge of the A/E Pesticide applicator manuals by successfully passing state examination

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1 lab: 1

### **LNDC 1231 - Nursery Operations (2)**

This course explores the aspects of how a production nursery operates including growing, cultural practices, harvesting, and shipping. Field tries will allow the student opportunities to implement lecture information.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate knowledge of the history of the nursery business in the United States/Minnesota

Demonstrate knowledge of field grown plant systems

Demonstrate knowledge of container grown plant systems

Demonstrate knowledge of machine harvesting nursery plants

Demonstrate knowledge of care and handling methods of nursery stock

Identify grading and sizing standards for United States nursery crops

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 2

### **LNDC 1235 - Landscape Operations (2)**

This course will explore the process of how greenscape and hardscape ideas become completed field projects. Sources of materials, handling, installation procedures, project coordination and problem solving will be covered. Labs will be an important part of students gaining field experience.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe landscape Installation process

Identify landscape installation products

Demonstrate use of landscape tools

Complete site preparation procedures

Demonstrate knowledge of site organization and staging

Explain drainage solutions

Explain the history of the landscape industry

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Credit Details: lecture: 1 lab: 1

### **LNDC 1242 - Plant Biology (4)**

This course is designed as an overview of the taxonomic and structural characteristics of higher plants. An understanding of plant anatomy, function and growth will be discussed. A lab will be held once a week to give hands on activities with regards to

plant structure.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify chemical structure of plants
- Identify plant cell structure
- Identify plant tissue
- Identify root structures
- Identify stem structures
- Identify leaf structures
- Identify floral structures
- Identify fruit/seed structures
- Identify dicotyledon plants
- Identify monocotyledon plants
- Describe the photosynthetic process
- Describe the respiration process
- Describe transpiration

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477  
Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 2

### **LNDC 1250 - Bedding Plant Production (3)**

This course is designed to introduce the student to cultural schedules, growing techniques, and profitable markets for herbaceous plants. Emphasis will be placed on spring bedding plants. The student will grow bedding plants and market them to the public.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate seeding techniques
- Implement a growing schedule
- Demonstrate transplanting skills
- Determine container systems
- Identify bedding crop pests
- Implement cultural requirements
- Develop a marketing plan
- Explore advanced technology for the bedding plant industry

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 2

### **LNDC 1271 - Soil Science (3)**

This course will help the student recognize the various types of soils and how plants respond to various soils and soil fertility.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate knowledge of the history of soil science

Demonstrate knowledge of soil formation

Demonstrate knowledge of soil classification

Demonstrate knowledge of soil texture

Demonstrate knowledge of soil water

Demonstrate knowledge of soil pH

Demonstrate knowledge of organic matter

Demonstrate knowledge of soil fertility

Demonstrate knowledge of fertilizers

Demonstrate knowledge of soil tests

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **LNDC 1300 - Minnesota Invasive Terrestrial Plants (2)**

This course is designed to give the student a working knowledge of invasive plants in Minnesota and surrounding regions by studying local eco-regions and designing a management plan to control invasives on that site. The plant list will cover non-native, invasive woody and herbaceous plants that are currently endangering native habitats. Annual, perennial, and biennial

types will be covered. Students will learn the common and botanical names as well as the habitats these plants are most successful in.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify invasive plants by photos
- List plant features that aid in species identification/control
- List threats of invasive plants to native habitats
- Predict environmental consequences of certain control methods
- Demonstrate manual control methods
- List chemical control methods

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2

### **LNDC 1315 - Minnesota Native Plants and Communities (4)**

This course is designed to introduce the student to Minnesota's natural resources, and the plants that live there natively. Emphasis will be given to identifying characteristics, nomenclature and functions of native plants in Minnesota's six ecosystems. The student will participate in weekly plant hikes to aid in the identification of plants weather permitting. The student will come away with knowledge of the impact humans have on those plants and their ecosystems.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Develop sound principles of Minnesota ecology
- Develop sound principles of Minnesota's climate
- Examine human impacts on the Eastern broadland forest ecosystems in Minnesota
- Examine human impacts on the Laurentian mix forest ecosystems in Minnesota
- Examine human impacts on the tall grass and aspen parkland ecosystems in Minnesota
- Examine human impacts on the prairie parkland ecosystems in Minnesota
- Examine ecological complexities of old growth forests
- Examine the significance of old growth forests
- Identify proper conservation measures
- Identify native plant materials in the natural habitats
- Study native plant habitats through field sessions
- Develop principles of geologic history in Minnesota

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

[bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

Brooklyn Park Campus: 952-995-1300

**Credit Details:** lecture: 3 lab: 1

### **LNDC 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A 'Specialized Lab Training Agreement' must be signed by the student and the instructor and submitted to the registrar at the time of registration.

**Prerequisite:** None

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Work independently.

Organize work schedule.

Follow prescribed procedures.

Demonstrate safety.

Demonstrate initiative.

Integrate previously acquired skills.

Integrate previously acquired knowledge.

Display good judgment.

Demonstrate dependability.

Exhibit professionalism.

Organize work area.

Demonstrate cooperation.

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

Brooklyn Park Campus: 952-995-1300

**Credit Details:** lab: 1-4

### **LNDC 2110 - Introduction to Landscape Construction (2)**

This course is designed to give the student a basic understanding of essential skills necessary in the landscape construction industry. Included are blue print reading, landscape surveying, grading and drainage and basic carpentry.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify hand tools

Identify landscape construction materials

Identify power tools

Measure landscape plans

Read blueprints

Use surveying equipment

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2

### **LNDC 2120 - Landscape Construction I (4)**

This course is designed to prepare the student for professional competency in the area of landscape construction. Emphasis will be given to plan reading, plan take offs and extensive field lab projects. The focus of this course will be on different types of retaining walls, pavers, concrete, ponds and stonework.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Complete landscape construction drawings

Define installations specifications

Construct concrete retaining walls

Construct water features

Construct of paver projects

Describe landscape construction processes

Estimate construction drawings

Coordinate site staging

Demonstrate skill for the construction of outdoor lighting

Acquire catalogs from suppliers

Design an outdoor lighting system

Design an irrigation system

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

href="https://www.hennepintech.edu/finance-operations/campus-store.html" target="\_blank">bookstore</a>.

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 2

### **LNDC 2131 - Landscape Construction II (3)**

This course is designed to prepare the student for professional competency in the area of landscape construction. Emphasis will be given to plan reading, plan take offs and extensive field lab projects. The focus of this course will be on deck and fence construction.

Prerequisite: LNDC2110

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Draw fence plans

Draw arbor plans

Draw deck plans

Explain specifications for deck construction

Perform estimating for deck materials

Construct a deck project

Demonstrate leveling procedure for footings

Analyze types of building materials

List tools needed for deck construction

Operate power tools

Construct a fence section

Identify wood suppliers

Text and References: A list of textbooks required for this course is available at the <a rel="noopener noreferrer" href="https://www.hennepintech.edu/finance-operations/campus-store.html" target="\_blank">bookstore</a>.

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **LNDC 2160 - Sustainable Landscape Design I (4)**

This course is designed to give the student a fundamental knowledge of landscape design principles and an opportunity to develop skills in designing and drafting landscape plans. Leadership in Energy and Environmental Design (LEED) will be covered for landscape projects.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Scale measure landscape plans
- Letter drawings
- Select plant symbols
- Apply drafting tools
- Recognize standard landscape drafting symbolization
- Apply landscape drafting techniques
- Understand plan, elevation, section and detail drawing
- Produce a graphic drawing
- Measure a residential property
- Interviewing a client
- Identify design principles
- Prepare residential master plan
- Prepare plan cost estimates

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 2 lab: 2

### **LNDC 2165 - Advanced Arboriculture (3)**

This course is a continuation of Introduction to Arboriculture and is designed to give students a advanced knowledge of the care and recognition of problems facing woody plants in the landscape. Topics covered include: advanced tree pruning, storms and damage, hazard trees, soil remediation, plant appraisal and valuation, trees and the law, commercial use of pesticide injections, and air spade work. The class will discuss the ANSI and MnDOT industry standards for woody plant material and describe the Tree Inspector Certification process through the MN Dept. of Agriculture. Students will also study the defects within trees in which structural integrity may be compromised, as well as recognizing and identifying potentially hazardous trees and defects within trees. Emphasis will be on trees within the urban setting where typical surroundings and conditions will influence best management practices.

Prerequisite: LNDC1125

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Access ANSI and MnDOT standards for small woody plant material
- Perform pruning of trees under 12 feet tall
- Recommend soil remediation measures for trees and shrubs

Demonstrate tree hazards through site inspections  
 Identify symptoms of invasive pests in the landscape  
 Recommend IPM measures to control invasive pest problems in the landscape  
 Perform tree value appraisals in the landscape  
 Demonstrate knowledge of the MDA Tree Inspector Certification process  
 Demonstrate knowledge of CODIT  
 Demonstrate knowledge of species roles in compartmentalization  
 Recognize structural issues versus health issues  
 Communicate various aspects of risk management/avoidance

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **LNDC 2171 - Sustainable Landscape Design II (3)**

This course is a continuation of Landscape Design I. Advanced design concepts, problem solving and sustainable landscape solutions will be covered. Students will take projects through the complete design process from site analysis to concept and working drawings.

Prerequisite: LNDC2160

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Draw deck railing detail
- Draw bench detail
- Draw a patio plan
- Draw perspective drawing
- Render perspective drawing
- Draft a full lot master plan
- Write a paper
- Examine types of landscape styles
- Perform sales presentation
- Estimate full lot master plan
- Research theme garden
- Render theme garden plan

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **LNDC 2210 - Tropical Plants and Their Uses (2)**

This course is designed to give students an understanding of the Interior Plantscaping industry. Emphasis will be placed on tropical plant identification, interior plant design, selection, installation, management and maintenance within buildings. The effects of interior plants on people and the environment will also be emphasized.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify species and cultivars best adapted to commercial interiorscapes

Demonstrate knowledge of the common and scientific names for different species and cultivars

Assess the impact of plants in the interiorscape on the quality of life for humans

Explain the environmental requirements of common interior plants

Evaluate biotic and abiotic problems of interior plants following diagnostic protocol

Evaluate indoor environmental conditions

Determine indoor environmental modification that will enhance plant growth

Demonstrate knowledge of appropriate plant materials and accessories for interior landscaping

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 1 lab: 1

### **LNDC 2241 - Landscape Equipment Operation (3)**

This course is designed to give students hands-on experience with various types of equipment used in the Landscape/Horticulture industry. Focus will be given to safety, maintenance and the proper operation of equipment such as: skid steer loaders, 1-ton truck and trailer, backhoe, tree spade, workman, chainsaws, wood chipper, lawn mowers and various other types of equipment.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Operate skid steer loader

Load/unload 1 ton truck and trailer

Operate backhoe  
 Operate tree spade  
 Check oil on equipment  
 Cut timbers with chainsaw  
 List safety equipment needed to operate small equipment  
 List safety equipment needed to operate large equipment  
 Operate auger  
 Operate lawn mowers  
 Attach various apparatus to skid steer loader

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **LNDC 2261 - Professional Gardening (3)**

This course is designed to prepare the student to professionally design, install and maintain various garden types and containers in the community and private/commercial sectors. Some of the hands-on skills taught include site preparation, plant selection, pest/weed identification, pruning, tool identification, and pollinator activity in the garden.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate knowledge of garden types  
 Demonstrate garden maintenance  
 Demonstrate knowledge of garden soil  
 Identify garden tools  
 Demonstrate knowledge of herbaceous perennials  
 Demonstrate garden propagation  
 Demonstrate use of garden design  
 Identify garden pests

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **LNDC 2271 - Landscape Computer Design and Applications I (3)**

This course is designed to introduce the student to application of the computer in landscape drafting and plan development. The latest Dynascapes CAD software is used. Students create designs and produce completed drawings.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain the CLI/Prompt line

List the various pull down menus

Discuss the Undo/Redo commands

Open a drawing

Describe the difference between the various zoom commands

Describe the difference between the Delete vs. Undo commands

Perform Save/Save As commands

Perform Cut/Copy/Paste commands

List the Dynascape Prototypes and their functions in the software

Draft a building foot print

Draft a landscape plan

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **LNDC 2280 - Landscape Computer Design and Applications II (3)**

This course is a continuation of Landscape Computer Design and Applications I. The students will prepare complete landscape plans and working drawings. The latest Dynascapes CAD software is used. Students will produce material lists, quantity takeoffs and estimates using various computer programs.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Print a drawing

Create a landscape plan

Create a 3D drawing

Create a quote

Insert dimensioning  
 Print drawings as TIF, JPEG and PRN types  
 Insert raster images  
 Combine 2D and 3D drawings  
 Color a landscape plan

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **LNDC 2290 - Dynascapes Training for the Green Industry (2)**

This course is designed for the industry experienced designer. The course will give the student the required skills to become comfortable and proficient with software. Basic computer knowledge is required.

Prerequisite: Previous windows-based computer knowledge required

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Draft a building foot print
- Draft a landscape plan
- Color a landscape plan
- Investigate the use of Dynascape software
- Use tools in the Draw Tool Box
- Use tools in the Edit Tool Box
- Demonstrate Dynascape Design software program

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477  
 Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2

### **LNDC 2330 - Landscape Construction Internship Certificate (4)**

This is a cooperative training program between Hennepin Technical College and a landscape occupation facility which allows the student to apply competencies learned in the program to an employment-like work experience.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: SOE: 4

### **LNDC 2335 - Landscape Construction Internship (1 - 4)**

This is a cooperative training program between Hennepin Technical College and a landscape occupation facility which allows the student to apply competencies learned in the program to an employment-like work experience.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: SOE: 1-4

### **LNDC 2341 - Arboriculture Internship Certificate (3)**

This is a cooperative training program between Hennepin Technical College and a landscape occupation facility which allows the student to apply competencies learned in the program to an employment-like work experience.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: SOE: 3

### **LNDC 2346 - Arboriculture Internship (3)**

This is a cooperative training program between Hennepin Technical College and an occupation facility which allows the student to apply competencies learned in the program to an employment/work experience.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate professional attitude

Identify tree and shrub pests

Demonstrate proper plant care

Demonstrate good communication skills

Demonstrate good time management skills

Demonstrate proper care and use of tools

Use safe industry standards

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: SOE: 3

### **LNDC 2350 - Grounds Maintenance Internship (1 - 4)**

This is a cooperative training program between Hennepin Technical College and a grounds maintenance occupation facility which allows the student to apply competencies learned in the program to an employment/work experience.

Prerequisite: Completion of courses for a certificate or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: SOE: 1-4

### **LNDC 2360 - Horticulture Internship (1 - 4)**

This is a cooperative training program between Hennepin Technical College and a landscape occupation facility which allows the student to apply competencies learned in the program to an employment-like work experience.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: SOE: 1-4

# MACH - Machine Tool Technology

## MACH 1056 - Blueprint Reading I (3)

This course is designed for people who are currently working on, or training to be employed in technical positions that require the use of engineering drawings. Dimensions and notes, multi-view drawings, tolerancing and shop sketching will be given consideration. This course will focus on the latest drafting conventions including ANSI standards. Students will use textbooks and handouts that guide them through how blueprints are developed and how to interpret them.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Explain title block entries
- Identify line types
- Evaluate pictorial drawings
- Evaluate projection drawings
- Interpret dimensioning systems
- Interpret tolerancing systems
- Explain geometric dimensioning and tolerancing
- Interpret sectional views
- Identify working drawings
- Draw alpha numeric characters
- Sketch projection views
- Sketch pictorial views

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.  
Brooklyn Park Campus - 763-488-2477  
Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

## MACH 1075 - Careers in Manufacturing (2)

This course introduces students to the skills, technology, work environment, potential salary, and job placement for occupations in the fields of Machine Tool Technology, Mechatronics (Automation Robotics, Electronics, Fluid Power), Welding and Metal Fabrication, Plastics Engineering Technology, and Engineering CAD (Computer-Aided Design) Technology. This dynamic course includes industry-specific tours, as well as hands-on projects that familiarize students with field practices and shop safety. A technical aptitude assessment will be administered to assist students in determining if a career in manufacturing fits with their interests and abilities. The steps for enrolling in a program at HTC will be reviewed.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the characteristics of a career in Machine Tool Technology  
Describe the characteristics of a career in Mechatronics  
Describe the characteristics of a career in Welding and Metal Fabrication  
Describe the characteristics of a career in Plastics Manufacturing Technology  
Describe the characteristics of a career in Engineering CAD Technology  
Apply shop safety principles  
Determine the manufacturing career fields best suited to individual attributes and interests

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477  
Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **MACH 1100 - Introduction to Machining Technology (3)**

This course will give the student an overview of machining technology as it is used in the manufacturing industry today. The course also covers shop safety, use of hand tools, use of precision measuring tools and the operation of the pedestal grinder. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify safe shop procedures
- Measure parts using precision instruments
- Identify mechanical hardware
- Identify hand tools
- Produce square parts using files
- Produce hand sawn parts
- Produce threaded parts using taps and dies
- Identify layout instruments
- Lay out parts
- Produce general purpose tool bit
- Sharpen twist drill

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477  
Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 2

### **MACH 1105 - Drilling and Sawing Processes (2)**

This course will introduce the student to the horizontal cutoff saw, the vertical bandsaw and operation of the drill press. Hands on use of these machine tools will be emphasized through a lab experience. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Recommended: MACH1100 or Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate safe shop procedures

Produce abrasive saw parts

Produce horizontal cut-off saw parts

Produce vertical band saw parts

Calculate speeds and feeds for drill press tooling

Produce drilled and reamed holes

Produce countersinks and counterbores

Produce tapped holes

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lab: 2

### **MACH 1110 - Turning Technology I (3)**

This course is designed to introduce the student to the function and application of the engine lathe. Basic turning operations will be performed. Threading with taps and dies, boring and grooving operations will also be covered. Students will produce parts in the shop environment. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: MACH1105 or Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate safe shop procedures

Identify engine lathe nomenclature

Calculate speeds and feeds for turning operations

Produce faced parts

Produce turned diameters

Produce drilled and reamed parts  
Produce countersinks and counterbores  
Produce threaded parts  
Produce bored parts  
Produce cutoff parts

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477  
Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 2

### **MACH 1120 - Turning Technology II (3)**

This course is a continuation of Turning Technology I covering the operations of single point thread cutting, knurling, form tools and cutting tapers. Special emphasis will be placed on turning with carbide insert tooling. Students will produce parts in the shop environment. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: MACH1110 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate safe shop procedures  
Identify thread nomenclature  
Make thread calculations  
Produce threaded parts  
Produce knurled parts  
Produce form tool parts  
Make taper calculations  
Produce taper parts  
Calculate carbide speeds and feeds  
Produce carbide turned parts

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 2

### **MACH 1125 - Milling Technology I (3)**

This course will introduce the student to the operation of the vertical milling machine. Emphasis will be placed on machine setup and machining parts square and parallel. Drilling, reaming, tapping, boring and angle milling will also be covered. Students will produce parts in the shop environment.

Prerequisite: MACH1105 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate safe shop procedures
- Identify milling machine nomenclature
- Adjust milling machine head and vise
- Calculate milling machine speeds and feeds
- Produce flat parts
- Produce parallel and square parts
- Produce slotted parts
- Produce drilled and reamed parts
- Produce threaded parts
- Produce bored parts
- Produce angle and beveled parts

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 2

### **MACH 1130 - Milling Technology II (3)**

This course is a continuation of Milling Technology I and will cover the following vertical milling operations: pocket milling, form cutters, milling keyways, using a indexing head and rotary table. Students will produce parts in the shop environment. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: MACH1125 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Produce pocket
- Produce concave and convex radii
- Produce internal and external dovetails
- Identify key and key seat nomenclature

Perform keyway and keyseat calculations  
Produce keyways and keyseats  
Make indexing head calculations  
Produce parts using indexing head  
Make rotary table calculations  
Produce parts using rotary table

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477  
Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 2

### **MACH 1135 - Precision Grinding (2)**

This course is designed to introduce the student to the surface grinder. Grinding flat surfaces, angles and form grinding will be covered. Students will produce parts in the shop environment.

Prerequisite: MACH1125 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate safe shop procedures  
Identify surface grinder nomenclature  
Replace grinding wheel  
Produce flat parts  
Produce parallel and square parts  
Produce angle parts  
Produce vertical surfaces  
Produce radius parts  
Produce form parts

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.  
Brooklyn Park Campus - 763-488-2477  
Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lab: 2

### **MACH 1140 - Introduction to CNC (3)**

This course will introduce the students to the fundamentals of computer numerical control (CNC) milling and turning. Basic CNC operation and conversational programming will be covered. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: MACH1125 or Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate safe shop procedures
- Identify CNC system components
- Explain axis and coordinate systems
- Identify RS274 words
- Interpret Word Address Format programs
- Identify conversational programs
- Operate Bridgeport Easy Trac machine
- Operate Haas Toolroom Mill
- Operate Haas Toolroom Lathe
- Produce parts using conversational programming
- Produce parts using Word Address Format programming

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MACH 1145 - Machinists Reference Materials (1)**

This course will introduce the student to the use of reference books used by individuals in the machining industry. The use of Machinery's Handbook and The Machinists Practical Guide will be covered. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Solve general formula problems
- Solve metallurgical problems
- Solve screw/thread problems
- Solve cutter problems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1

### **MACH 1205 - Machine Tool Technology (3)**

This course is designed for students who are working or majoring in engineering or mechanical fields. These fields include areas such as: Automation Robotics Engineering Technology, Engineering CAD, Fluid Power, Machine Tool, Manufacturing Engineering and Plastics. The theory and application of machine tools to these fields will be emphasized. The concepts of CNC, Tool and Die, and Moldmaking will also be explored. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Registration in METS Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify safe shop procedures

Measure parts using precision instruments

Identify mechanical hardware

Identify hand tools

Lay out parts

Produce square parts

Produce drilled parts

Identify milling operations

Identify turning operations

Identify grinding operations

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

**MACH 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A `Specialized Lab Training Agreement` must be signed by the student and the instructor and submitted to the registrar at the time of registration. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Develop lab projects
- Organize work schedule
- Demonstrate ability to work independently
- Demonstrate safety
- Demonstrate initiative
- Integrate previously acquired skills
- Integrate previously acquired knowledge
- Complete CNC machining centers setups
- Simulate program on machine controllers
- Produce machined parts
- Complete inspection
- Record documentation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lab: 1-4

**MACH 2400 - CNC Setup and Operation (3)**

This course will familiarize students with CNC machines. The student will be trained in safety procedures, setup, and operation of various types of CNC machines. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: CNC Operators certificate, or equivalent industry experience with instructor's approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate CNC machines
- Explain CNC controls
- Explain CNC programming language
- Explain CNC language format
- Complete CNC machining center setups

Demonstrate conversational machining center programming  
Demonstrate conversational turning center programming  
Explain manual programming applications  
Simulate program on machine controllers  
Demonstrate optical tool setter  
Demonstrate CNC tuning center tool setting probe

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MACH 2406 - CNC Programming (3)**

This course will introduce the student to computer numerical control machine tools. CNC programming, setup, and operation will be studied. Milling and turning programs will be developed and examined. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: CNC Operators Certificate, or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain coordinate system/axis orientation

Utilize shop mathematics

Compare carbide tool holders/inserts

Explain CNC machining/turning center safety

Examine CNC mill tool length/radius compensation

Examine CNC machining center workholding devices

Examine CNC machining center tool holders/tools

Explain climb and conventional milling

Select CNC machining center speeds and feeds

Explain CNC turning center tool length/diameter compensation

Explain tool nose radius/direction compensation

Select CNC turning center speeds and feeds

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 3

### **MACH 2410 - CAD/CAM (3)**

This course will introduce the student to computer-assisted design and computer-assisted machining. Machining processes and post-processor selection will also be covered.

Prerequisite: METS1000 or basic computer skills

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain CNC fundamentals

Explain CAD/CAM programming processes

Compare CAD/CAM cartesian coordinate system to machine tool coordinate system

Explain CAD/CAM techniques

Relate coordinate axis to CNC mills and lathes

Construct various geometry for CNC milling

Select modify functions

Construct CNC milling/turning toolpaths

Prepare process sheets

Construct various geometry for CNC turning

Select CNC turning modify functions

Utilize verify operation

Utilize post-processors

Explore creation of wire frame models

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MACH 2415 - CNC Milling (3)**

This course will introduce the student to the fundamentals of computer numerical controlled milling. Programming, tooling requirements, machine setup, and machine operation will be emphasized.

Prerequisite: CNC Operators Certificate, or equivalent industry experience with instructor's approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Develop milling process
- Complete CNC milling text related work
- Develop programs utilizing various methods
- Measure X and Y part axis zero
- Complete tooling setup
- Complete tool carousel setup
- Measure tool length offsets
- Complete CNC program editing
- Produce machined parts
- Inspect machined parts
- Complete documentation
- Complete teardown of setup

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 2

### **MACH 2420 - Blueprint Reading II for Machinists (2)**

This course is a continuation of Blueprint Reading I. Enhancing machinists and inspectors blueprint reading skills will be emphasized. An introduction to Geometric Dimensioning and Tolerancing will be covered along with other advanced blueprint reading skills.

Prerequisite: MACH1056 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Interpret orthographic drawings
- Evaluate Geometric Dimensioning and Tolerancing call outs
- Identify screw thread symbols
- Identify steel coding system
- Interpret casting drawings
- Interpret welding drawings
- Interpret working drawings

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2

### **MACH 2425 - Geometry/Trigonometry for Machinists (2)**

This course covers the practical application of the basic principles of plane geometry and right angle trigonometry to solve machine shop related problems. Included will be right triangle functions and solutions along with the law of sines and the law of cosines. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: MATH0940 or equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify principles of planar geometry
- Solve geometric problems using the principles of planar geometry
- Identify principles of trigonometry
- Solve problems using the Pythagorean Theorem
- Solve problems using sine function
- Solve problems using cosine function
- Solve problems using tangent function
- Solve problems involving oblique triangles
- Solve compound angle problems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 2

### **MACH 2430 - CNC Machining Centers (3)**

This course will allow the student to increase their skills in CNC milling applications. CNC machining centers will be utilized. Programming, tooling requirements, machine setup, and machine operation of CNC machining centers will be emphasized. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: MACH2415

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Program projects using various methods
- Measure and store X and Y part axis zero

- Complete tooling setup
- Complete tool carousel setup
- Measure and store tool length offsets
- Complete CNC program editing
- Produce machined parts
- Examine and inspect machined parts
- Record documentation
- Complete teardown of setup

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 2

### **MACH 2435 - CNC Turning Centers (3)**

This course will introduce the student to CNC turning centers. Programming, tooling, setup, and operation of CNC turning centers will be emphasized.

Prerequisite: CNC Operators Certificate, or equivalent industry experience with instructor's approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Develop turning process
- Complete CNC turning center text related work
- Develop programs utilizing various methods
- Measure X and Z part axis zero
- Store tool nose radii and vector directions
- Complete tooling setup
- Complete tool turret setup
- Produce machined part
- Examine machined parts
- Complete documentation
- Complete teardown of setup

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 2

### **MACH 2440 - Quality Assurance (2)**

This course will expose the student to quality control concepts utilizing common manufacturing inspection methods. Inspection tools will include CMM machines, the digital height stand, profilometer, etc. SPC and the ISO 9000 series will also be discussed. The student will review and create inspection forms and charts.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify tenets of variation

Evaluate sample data using statistical analysis

Calculate Standard Deviation of a sample

Construct XR charts

Measure parts using digital height gauge

Measure parts using profilometer

Measure parts using toolmakers microscope

Measure parts using optical comparator

Measure parts using CMM

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **MACH 2445 - Heat Treating and Metallurgy (2)**

This course will introduce the student to the identification and characteristics of the common metals used in the machining industry. Emphasis will be placed on the composition of steel and the effects of its alloys. Heat treating and hardness testing of steel will also be examined. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: MACH1125 or Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify properties of metals

Identify steel making process

- Identify steel classification system
- Identify nonferrous materials
- Solve heat treating problems
- Identify heat treating equipment
- Produce hardened steel parts
- Evaluate metal hardness

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2

### **MACH 2450 - Fundamentals of EDM (2)**

This course is designed to introduce the student to the fundamentals of electrical discharge machine (EDM) technology. The process covered will include the programming, tooling, setup, and operation of traveling wire and sinker EDM machines.

Prerequisite: CNC Operators Certificate, or equivalent industry experience with instructor's approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate EDM safety precautions
- Examine EDM machine controller system
- Select EDM process and setup
- Develop wire EDM program and wire paths
- Validate wire EDM program
- Complete EDM edits
- Produce wire EDM projects
- Complete inspection
- Examine sinker EDM machine controller system
- Create program EDM program and erode strategies

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477  
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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **MACH 2455 - Die/Mold Design (3)**

This course will introduce students to the concepts of Tool and Die/Mold design. Projects include researching and designing a basic die and mold. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: CNC Operators Certificate, or equivalent industry experience with instructor's approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Complete tool and die text work
- Select stamped part idea for die project
- Develop die design
- Select die set stock and component requirements
- Complete die design
- Complete moldmaking text work
- Select molded part idea for injection mold project
- Develop mold design
- Select mold set stock and component requirements
- Complete mold design

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 2

### **MACH 2460 - Die Construction (3)**

This course applies the principle skills learned from Die/Mold Design to the construction of basic die components. The student will machine and construct a basic die. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: MACH2455

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate safety precautions
- Select material and hardware for die
- Complete machining of die plates
- Complete grinding of die plates
- Produce die opening
- Produce punch

Complete hole operations  
Assemble die components  
Examine and inspect die

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 2

### **MACH 2465 - Mold Construction (3)**

This course applies the principal skills learned in Die/Mold Design to the construction of basic mold components. The student will machine and assemble a basic mold.

Prerequisite: MACH2455

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate safety precautions
- Select permanent mold base
- Select materials and hardware for mold
- Complete machining of force plate
- Complete machining of cavity plate
- Complete machining of ejector plate
- Produce gates and runners
- Complete hole operations
- Produced polished cavity
- Assemble mold assembly
- Verify alignment
- Inspect completed mold

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 1 lab: 2

**MACH 2470 - Advanced CNC Turning Centers (3)**

This course is designed to allow the student to increase his/her skill level in CNC Turning Centers. Skills learned in the CNC Turning Centers course will be applied to programming and machining selected turned parts. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: MACH2435

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Develop turning process
- Complete tooling setup
- Complete tool turret setup
- Complete CNC program editing
- Produce turned part
- Inspect machined parts
- Record documentation
- Complete teardown of setup

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 2

**MACH 2475 - Gibbs CAD/CAM Milling (3)**

This course will introduce the student to computer-assisted design and computer-assisted machining. Students will use the latest version of GibbsCAM software to simulate CNC milling and generate CNC code. Part design, machining processes, and post-processor selection will be covered. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: METS1000 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Explain CNC milling concepts
- Prepare new part file
- Complete part setup on Gibbs
- Prepare part geometry
- Prepare cutting tools from library
- Develop machining operations
- Develop machining processes
- Simulate cut part rendering
- Develop post-processing file

Explain Geometry Expert function  
Explain 2 1/2 Axis surfacing  
Develop machining patterns  
Produce text engraving files

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MACH 2480 - ESPRIT Programming (3)**

This course will introduce the student to computer-assisted design and computer-assisted machining; CAD/CAM. Students will use ESPRIT CAD/CAM software to draw parts, create features on wire frame and solid models, create CNC milling and turning tool paths and generate code. Tool and fixture setup sheets will be produced as well as process sheets and time sheets.

Prerequisite: Prerequisite: MACH1140. Recommended: MACH2406

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain CAD/CAM fundamentals  
Describe menus and menu setup and the user interface  
Construct various geometry for CNC milling  
Explore creation of wire frame geometry  
Create solid models with extrusions and revolves from wire frame geometry  
Select geometry modify functions, trim, mirror, rotate and copy  
Install templates for fixtures and stock material for rendering  
Perform layer creation and translation of geometry, models and toolpaths  
Construct various geometry for CNC turning  
Develop machining processes  
Select entities to create features, chains and point to point selections  
Create lead in and lead out lines and reversing toolpath directions  
Utilize Knowledge Base operations for tools, and their speeds and feeds  
Translate, move and copy toolpaths  
Simulate machining processes through advanced simulation interface  
Utilize post-processors for lathes and mills  
Prepare process and tool sheets  
Analyze cycle times through time study simulation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

**MACH 2495 - Machine Tool Technology Internship (1 - 4)**

This course allows the student to gain on-the-job experience in the Machine Tool Technology industry. The student is responsible for locating and arranging the internship site. One (1) to four (4) credits can be taken, with each credit requiring 40 hours of time spent on the job. Student performance will be monitored by the instructor and evaluated by the employer. This will be a cooperative training program between Hennepin Technical College and a company. The student will apply competencies learned in the program to an employment-like work experience. Tasks and course goals will be determined by the instructor and the job site supervisor on an individual student basis. All industry internships require you be registered at the college for the internship and have instructor approval.

Prerequisite: Instructor approval and completion of at least 50% of your degree or diploma

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

The specific goals of this course will be defined in the 'Internship Agreement' signed by the student, employer and instructor and will be tailored to the experiences available at the internship site

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus: 952-995-1300

Credit Details: SOE: 1-4

**MACH 2500 - Introduction to Swiss-Style Machining (3)**

This course will expose students to the basics of CNC Swiss Style Lathes. The student will be introduced to safety procedures and the nomenclature of CNC Swiss Style Lathes. Basic CNC turning, milling, and drilling procedures will be reviewed.

Comparisons of CNC turning as opposed to CNC Swiss-Style training will be examined. Basic concepts of the setup and operation of CNC Swiss Style Lathes will be explored and common G&M codes will be identified. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Graduation from or concurrent enrollment in a 2 year Machine Tool Technology Program or a minimum of 2 years of related work experience

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Examine history of Swiss style turning
- Examine Swiss style turning center capabilities
- Examine Swiss style turning center safety
- Identify CNC Swiss turning center components
- Examine machine coordinate systems/axis orientation
- Identify machine control and its functions
- Identify work holding devices
- Identify cutting tool holders
- Identify cutting tools
- Explain Swiss turning center programs
- Explain automatic stock feeding
- Examine tool offset methods
- Complete basic machine setup to produce simple parts
- Produced simple machined parts

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MACH 2505 - CNC Swiss-Style Lathe Setup and Operation (3)**

This course will further expose students to the setup of CNC Swiss Style Lathes, tooling, and the bar feeder. The student will setup and operate CNC Swiss-Style Lathes. Parts will be machined from selected programs. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: MACH2500 plus graduation from or concurrent enrollment in a 2 year Machine Tool Technology Program or a minimum of 2 years of related work experience

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Examine programming codes
- Complete setup for main and sub-spindle collets
- Complete setup for guide bushings
- Complete setup for O.D. cutting tools
- Complete setup for I.D. cutting tools
- Complete setup for live tooling
- Complete setup for bar feed
- Complete setting tool offsets
- Complete tapping operations
- Complete cross drilling operations
- Complete milling operations
- Complete thread cutting operations
- Complete setup teardown

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

[bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html)

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Credit Details:** lecture: 2 lab: 1

### **MACH 2510 - CNC Swiss-Style Lathe Programming (3)**

This course will require students to write and produce programs for CNC Swiss Style Lathes. The student will also produce projects on the CNC Swiss Style Lathes using these programs. Setup and cycle reduction time will also be covered. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

**Prerequisite:** MACH2505 plus graduation from or concurrent enrollment in a 2 year Machine Tool Technology Program or a minimum of 2 years of related work experience

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Identify G&M programming codes

Examine program format

Identify program creation format

Prepare simple/basic programs

Complete manual program input

Use program creation software

Prepare multiple axis programs

Complete loading programs into control

Setup machine to produce parts

Complete program edits

Verify programs

Identify alarm codes

Complete tool offsets operations

Complete parts to specifications

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Credit Details:** lecture: 2 lab: 1

### **MACH 2520 - Mazak CNC Mazatrol Programming (3)**

This course will familiarize students with the Mazak Mazatrol programming system. Electronic Industries Association (EIA) (G and M code) is the standard programming language for CNC (Computer Numeric Control) machine tools, whereas Mazatrol is a Mazak specific conversational language. Students will be trained to use Mazatrol to create programs for Mazak machining and turning centers. Mazatrol allows for machine readable code to be created quickly and efficiently.

Prerequisite: MACH1140

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Compare CAD/CAM EIA programming to Mazatrol programming processes

Compare CAD/CAM EIA formats to Mazatrol formats

Create Mazatrol machining center programs

Create Mazatrol turning center programs

Perform on the floor programming with Mazatrol

Simulate verification of program in Mazatrol

Adjust Mazatrol program parameters

Perform dry run on Mazatrol programs

Articulate safe and proper use of Mazak probing tools and parts

Create tool paths for different materials and hardnesses

Establish parameters for surface finishes on parts

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: <p>The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.</p>

Special Accommodations:

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Credit Details: Lecture: 2 Lab: 1

### **MACH 2525 - Mazak CNC Turning Center (3)**

This course will allow students to increase their skills in Mazak CNC (Computer Numeric Control) Turning Center applications. Emphasis will be placed on programming, tooling requirements, machine setup, and machine operation and safety. Mazak processes will be taught using the Mazatrol programming language.

Prerequisite: MACH1140

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify EIA (G and M code) and Mazatrol differences

Perform on the floor programming with Mazatrol

Demonstrate proper use of Mazak turning center control panel technology

Simulate verification of program  
 Measure and store X and Z part axis zero  
 Demonstrate measuring tool lengths using probe system  
 Demonstrate measuring tool lengths and diameters manually  
 Complete tool turret setup with correct tool implementation  
 Facilitate tailstock and live center use  
 Facilitate chuck boundaries and safety parameters  
 Adjust Mazatrol program parameters through editing screens  
 Perform dry run on Mazatrol programs with the control  
 Produce machined parts while controlling offsets for size  
 Inspect machined parts  
 Document part measurements

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: Lecture: 2 Lab: 1

### **MACH 2530 - Mazak CNC Machining Center (3)**

This course will allow students to increase their skills in Mazak CNC (Computer Numeric Control) Machining Center. Emphasis will be placed on programming, tooling requirements, machine setup, and machine operation and safety. Mazak processes will be taught using Mazatrol and Electronic Industry Association (EIA) (G and M code) programming languages.

Prerequisite: MACH1140

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify EIA (G and M code) and Mazatrol differences  
 Perform on the floor programming with Mazatrol  
 Demonstrate proper use of Mazak mill control panel technology  
 Simulate verification of program  
 Measure and store X and Y part axis zero  
 Demonstrate measuring tool lengths using probe system and EZ set program  
 Demonstrate measuring tool lengths manually  
 Complete tool carousel setup with correct tool implementation  
 Adjust Mazatrol program parameters through editing screens  
 Adjust EIA (G and M Code) program parameters  
 Perform dry run on Mazatrol programs with the control  
 Perform dry run on EIA programs with the control  
 Produce machined parts while controlling offsets for size  
 Inspect machined parts  
 Record part measurement documentation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or

impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 2 Lab: 1

### **MACH 2600 - Introduction to Quality Assurance (3)**

This course will introduce the student to the basics of metrology. The reading of blueprint specifications and tolerance requirements will be discussed. Students will learn proper measuring techniques using precision hand tools.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Examine metrological concepts

Measure parts using direct measurement hand tools

Measure parts using transfer measurement hand tools

Interpret title block information

Interpret blueprint lines based on the alphabet of lines

Interpret blueprint views

Analyze part shapes

Analyze blueprint dimensions

Analyze blueprint tolerances

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MACH 2610 - Inspection Processes (3)**

This course will introduce the student to the concepts of statistical sampling and industry measuring methods. Students will examine setups and fixtures. Advanced measuring techniques will be introduced.

Prerequisite: MACH2440 or MACH2600 or METS1050 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Analyze data sampling methods
- Develop a data sample
- Interpret blueprint dimensions
- Interpret blueprint specifications
- Demonstrate appropriate measuring tool selection
- Apply fixturing and setup techniques
- Utilize proper measuring technique
- Report measurement findings per industry standards
- Analyze reported measurements

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MACH 2615 - Inspection Equipment and Techniques (3)**

This course will introduce the student to the maintenance and operation of advanced measurement equipment such as the CMM (Coordinate Measuring Machine) optical comparator, and vision systems. Programming and reporting software for this equipment will also be studied.

Prerequisite: MACH2610 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify parts and controls of measuring equipment
- Demonstrate proper maintenance of measuring equipment
- Utilize optical comparator to manually inspect parts
- Utilize CMM (Coordinate Measuring Machine) to manually inspect parts
- Utilize vision system to inspect parts
- Program optical comparator to inspect parts
- Program CMM (Coordinate Measuring Machine) to inspect parts
- Program vision system to inspect parts
- Generate inspection reports according to industry standards

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MACH 2620 - Quality Systems (3)**

This course will introduce the student to the Quality Control systems that are in use in today's modern manufacturing environment. Deming, Total Quality Management (TQM), Management By Objective (MB), Six Sigma, Lean, and International Organization for Standardization (ISO) will be covered.

Prerequisite: MACH2615 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify the standards put forth by the Deming Principle

Identify the principles of Total Quality Management (TQM) systems

Identify the principles of Management By Objectives (MBO) systems

Identify principles of Six Sigma systems

Generate Six Sigma reports

Identify principles of Lean Manufacturing systems

Generate Lean System reports

Identify principles of International Organization for Standardization (ISO) systems

Generate International Organization for Standardization (ISO) reports

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MACH 2625 - Computer Analysis of Manufacturing Data (2)**

The student will be exposed to advanced measuring techniques for collecting data from manufacturing processes. Methods of documenting, analyzing and reporting data utilizing Microsoft Excel and MiniTab software will be practiced. Participants will also employ process capability studies, hypothesis testing, and design of experiment techniques to perform measurement system and data analysis.

Prerequisite: Recommended: MACH2440 or Instructor Approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate basic proficiency in Excel software operations

Demonstrate proper data collection techniques

Apply principles of descriptive statistics to collected data

Analyze Excel charts

Demonstrate basic proficiency in MiniTab software operations

Analyze MiniTab charts using collected data  
 Perform a process capability study  
 Demonstrate Hypothesis Testing techniques  
 Demonstrate proper Design of Experiment techniques  
 Perform measurement system analysis

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 1 lab: 1

## MAST - Medical Assistant

### MAST 1010 - Medical Terminology (2)

This course is designed to cover word analysis, spelling and usage of word roots, suffixes, prefixes and abbreviations common to the medical profession. Emphasis will be placed on spelling and constructing medical terms and pronunciation.

Prerequisite: Qualifying score on reading assessment test or ENGL0921

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Define basic medical word parts

Construct correct medical terms

Spell medical terms

Articulate medical terminology

Define medical terms for specific body systems

Define abbreviations common to the medical profession

Utilize reference materials

Manage time to meet deadlines

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2

### **MAST 1015 - Medical Assistant Administrative I (3)**

This course introduces the student to a wide variety of medical office duties that are commonly performed by the Medical Assistant. Students will be introduced to the electronic medical record, the role healthcare team, legal and ethical implications of the profession, computer, telecommunications, and documentation.

Prerequisite: Qualifying score on writing assessment test OR ENGL0960, Qualifying score on reading assessment test OR ENGL0921, Qualifying score on math assessment test OR MATH0910, Qualifying score on computer literacy assessment test OR CPLT1100, and Qualifying score on keyboard assessment test OR CPLT1000

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify Medical Assistant Scope of Practice

Explore medical ethics as it relates to the Medical Assistant

Demonstrate communication skills needed in the ambulatory care setting

Utilize technology in the ambulatory care setting

Analyze the physical environment of the ambulatory care setting

Demonstrate the use of telecommunication equipment

Describe scheduling system utilization

Model professionalism in the ambulatory care setting

Discuss impact of Health Insurance Portability Accountability Act (HIPAA) regulations in the ambulatory care setting

Demonstrate proficiency in initial applications of Total Practice Management System

Identify legal aspects of documentation

Define items that must be documented

Implement methods of documentation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

### **MAST 1020 - Lab I (4)**

This course is designed to introduce the student to the clinical laboratory. Basic aspects of laboratory safety, use and maintenance of laboratory equipment, quality assurance, and controls will be taught. In a simulated lab students will perform urinalysis tests, urine, throat and wound cultures, wet prep, and gram staining.

Prerequisite: Admission into the Medical Assistant Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe the role of the medical assistant in the lab
- Identify the types of laboratories
- Demonstrate safety in the lab
- Explore the lab tests
- Identify most common lab tests ordered
- Demonstrate universal precautions
- Determine the type of microbe that cause disease
- Practice microbiological techniques
- Demonstrate competency in lab procedures

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 2 lab: 2

### **MAST 1030 - Clinical Procedures I (4)**

This course is designed to teach the fundamentals of medical assisting in all types of ambulatory care settings. These fundamentals include: obtain and record a patient history, obtain vital signs, appropriate documentation, prepare for and assist with patient examinations, perform sterilization techniques and assist with procedures and minor office surgeries. The student will also follow medical and surgical asepsis and microbial control.

Prerequisite: Admission into the Medical Assistant Program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Prepare examination and treatment areas
- Coordinate maintenance of the examination and treatment areas
- Complete patient's medical history
- Measure accurate vital signs, heights and weights on adults
- Measure accurate length, heights, weights, head and chest circumference on children
- Set up for physical examination procedures
- Assist with the physical examination procedures
- Describe sensory system exam and procedures
- Perform within the Medical Assistant Scope of Practice
- Demonstrate accurate medical documentation
- Explain methods of disease prevention
- Explain methods of health promotion
- Demonstrate therapeutic communication skills
- Identify expected physiologic changes that occur as part of the aging process
- Describe prevention techniques for complications arising from age related disorders
- Explain the importance of communication with older adults
- Implement rehabilitation medicine in an ambulatory setting
- Demonstrate pediatric care in an ambulatory setting

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

[bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html)

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Credit Details:** lecture: 1 lab: 3

### **MAST 1045 - Pharmacology (3)**

This course provides the student with an introduction to basic pharmacology. Drugs are presented within the major drug classifications along with general drug actions, common adverse reactions, contraindication, precautions, and interactions related to each body system. Emphasis is placed on ways to promote an optimal response to therapy, how to monitor and manage adverse reactions, and important points to keep in mind when educating patients about the use of these drugs. Special consideration for pediatric, obstetric and geriatric patients will be emphasized. Students will understand patient rights, education and safety.

**Prerequisite:** Admission into the Medical Assistant Program

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Define pharmacology

Explore the history of pharmacological development

Determine different categories of medications

Identify drug classifications according to body systems

Identify medications according to the classifications in the body systems

Explore resources used in medication management

Discuss non-pharmacological aspects to drug therapy

Acquire knowledge in patient teaching

Examine patient safety considerations in medication management

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Credit Details:** lecture: 3

### **MAST 1060 - Documentation for Health Care Professionals (2)**

This course is designed to give students an overview of charting, guidelines, and tips on improving documentation skills for Health Care Professionals. Students will study basic grammar, sentence structure, and writing skills for documentation as well as professional and regulatory requirements, and confidentiality.

Prerequisite: Qualifying score on keyboarding assessment test OR CPLT1000 and ENGL1100

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify legal aspects of documentation
- Identify professional and regulatory requirements
- Practice methods of documentation
- Identify items that must be documented
- Define SOAP (Subjective, Objective, Assessment, and Plan) notes
- Demonstrate techniques of condensing information

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2

### **MAST 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A `Specialized Lab Training Agreement` must be signed by the student and the instructor and submitted to the registrar at the time of registration.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Course goals addressed will depend on the area and type of specialization the student wishes to study, and will be defined in the "Specialized Lab Training Agreement"

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lab: 1-4

### **MAST 2000 - Fundamentals of Radiographic Imaging (2)**

This course is designed to give students an overview of limited radiology technology and the importance it plays in the medical field. It will provide students with the necessary information to understand the following: medical terminology as related to the specialty of radiology, the design and proper use of x-ray equipment, the principles of radiation safety with protection for both the operator and the patient, and the importance of good, safe working habits. It will also prepare students for the ARRT (American Registry of Radiologic Technologists) Limited Scope Examination for x-ray operators. The lab is situated off-campus.

Prerequisite: BIOL1400 or HLTH1010

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Define ionizing radiation

Describe the formation of the x-ray image

Describe the effects of radiation to the human body

Describe the ALARA (As Low As Reasonably Achievable) program

Position a human body part to produce an x-ray image of that part

Evaluate an x-ray image to ensure it is diagnostic

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1.5 lab: 0.5

### **MAST 2015 - Medical Assistant Administrative II (3)**

This course strengthens the knowledge and skills covered in Medical Assistant Administrative I. Students are introduced to clinic billing, coding, clinic accounting, health insurance, and written communication.

Prerequisite: MAST1015

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Coordinate appointment scheduling

Illustrate the purpose of medical records

Compose types of written communication

Examine role of filing in the ambulatory care setting

Investigate medical insurance coding procedures

Investigate financial management of the ambulatory care setting

Model professionalism in the ambulatory care setting  
 Manage appointments  
 Process insurance claims  
 Perform bookkeeping procedures  
 Demonstrate proficiency in administrative functions of Total Practice Management System  
 Identify professional and regulatory requirements for documentation  
 Identify trend of computerized documentation  
 Practice methods of documentation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **MAST 2022 - Lab II (5)**

This course is designed to build upon the skills acquired in Lab I. Students will perform venipuncture, capillary puncture, and 12-lead Electrocardiogram (ECG). This course covers immunology, hematology, clinical chemistry, and microbiology. In alignment with American Association of Medical Assistants (AAMA), Safety and Scope of Practice are thoroughly discussed. The students will perform waived testing according to the Clinical Laboratories Improvements Amendment guidelines.

Prerequisite: MAST1020 and must be taken semester before MAST2041

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain the medical assistant's responsibility to the patient in terms of quality of care

Demonstrate competency in lab procedures

Identify blood chemistry laboratory equipment

Explore blood laboratory test

Exercise professionalism within the Scope of Practice of the Medical Assistant

Discover the theory of electrocardiography

Practice competency in 3 methods of venipuncture

Demonstrate competency in capillary puncture method of blood collection

Demonstrate competency in performing electrocardiogram

Demonstrate safety in a lab setting

Apply Clinical Laboratories Improvements Amendment (CLIA) guidelines to practice in the lab setting

Utilize immunology in a lab setting

Utilize hematology in a lab setting

Utilize clinical chemistry in a lab setting

Utilize microbiology in a lab setting

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: Lecture: 2 Lab: 3

**MAST 2035 - Clinical Procedures II (5)**

This course builds on the skills attained in Clinical Procedures I. Critical thinking skills related to medication administration is a course focus. Safe and accurate drug administration utilizing parenteral and non-parental routes are taught as well as other special procedures. For example, successful course completion requires students to achieve 90% or higher on a dosage calculation exam. In addition, the course reviews stress management, pediatric care, geriatric care, rehabilitation, and therapeutic modalities. Emergency preparedness will be covered along with the fundamental of working within the electronic medical record. Service Learning is a part of this course.

Prerequisite: MAST1030

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Calculate dosage of medications with conversions of measurement

Demonstrate safety when calculating medications

Explore types of diagnostic testing

Demonstrate ability to communicate with patients

Explore methods of patient education

Demonstrate responsibilities during medical office emergencies

Identify several approaches to managing stress in the ambulatory care setting

Demonstrate patient care relating to life threatening illnesses

Identify emergency preparedness training in the ambulatory care setting

Explore Pharmacology

Demonstrate safe medication administration

Identify the Scope of Practice for the medical assistant related to drug administration

Manage preparations surrounding diagnostic testing

Perform routine maintenance of clinical equipment

Create an electronic medical record using training software

Perform aseptic technique

Describe infection control

Identify instruments used in a general physical exam

Identify instruments used in an ambulatory setting

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 2

**MAST 2041 - Practicum (6)**

The focus of this clinical experience is to apply Medical Assistant skills in the ambulatory care setting to patients across the lifespan. Students will work under the supervision of clinical personnel. The emphasis is on delivering safe, competent care. Students will observe and/or participate in clinical and laboratory procedures and treatments. Ethical and legal obligations of the Medical Assistant are integrated throughout the experience. This practicum is an unpaid experience in an ambulatory care setting. This experience facilitates performance within the Scope of Practice for the Medical Assistant student.

Prerequisite: MAST2022 and MAST2035. Cleared Criminal Background study. Negative Mantoux or negative chest x-ray within 30 days of start of course. Current CPR (Health Care Providers or Professional Rescuer). Completed Immunization form (Hepatitis B, Varicella, Tetanus, MMR)

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Demonstrate rooming procedures
- Obtain patient history
- Obtain accurate vital signs
- Prepare patient for procedures and treatments
- Demonstrate respect for diversity in approaching patients and families
- Instruct patients in health maintenance and disease prevention
- Demonstrate knowledge of clinical skills related to Anatomy and Physiology
- Apply mathematics
- Practice Standard Precautions
- Apply Infection Control in the ambulatory care setting
- Demonstrate communication methods
- Observe Clinical Laboratory Improvement Amendments waived testing
- Execute data management
- Demonstrate proficiency in Front Desk management
- Observe business office functions
- Utilize different types of insurance
- Apply managed care policy and procedures
- Perform within the Scope of Practice of the Medical Assistant
- Ascertain the correct procedural code
- Demonstrate Health Insurance Portability and Accountability Act (HIPAA) procedures
- Distinguish legal aspects of practice
- Implement a plan of professional ethics
- Apply ethical behaviors
- Evaluate safety in the working environment
- Apply safety procedures
- Acquire necessary resources to function as a Medical Assistant
- Identify location of emergency equipment
- Execute procedures in the lab

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

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Credit Details: SOE: 6

# MATH - Math

## **MATH 0800 - Essential Skills for Math Pathways (2)**

This course focuses on developing number sense and by-hand computational skills with whole numbers, fractions, decimals, and integers. These skills are a necessary foundation for employment, higher level mathematics courses, and everyday life. Students will also develop confidence in their mathematics skills through implementing a variety of strategies and study skills specific to mathematics.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Develop an improved number sense in regards to whole numbers, fractions, decimals, and integers

Utilize math specific strategies and techniques for homework, time-management, note-taking, and exam studying/taking

Demonstrate the importance of attendance and homework in a mathematics course Use appropriate resources including on-campus and/or online Represent whole numbers, fractions, decimals and integers in mathematical and real world situations

Interpret whole numbers, fractions, decimals and integers in mathematical and real world situations

Compare numerical values represented as whole numbers, fractions, decimals, mixed numbers, and integers

Convert between equivalent fractions, quotients, decimals, and mixed numbers

Round whole numbers, fractions, decimals, and mixed numbers

Estimate sums, differences, products, and quotients involving whole numbers, fractions, decimals, mixed numbers, and integers

Demonstrate usage of the four mathematical operations (add, subtract, multiply, divide) on whole numbers, fractions, decimals, and integers

Simplify numeric expressions involving whole numbers, fractions, and decimals by applying order of operations

Solve introductory application problems involving whole numbers, fractions, decimals and/or integers

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 2

## **MATH 0910 - Math Pathways Plus for College and Careers (4)**

This course is designed for students to establish a foundation for problem solving and critical thinking used in college level mathematics and career applications. Topics include practical applications of real numbers, geometry, measurement, data analysis, and algebraic equations. This course is taken at a slower pace than MATH0920, so that strategies for learning mathematics and a review of basic skills can be integrated throughout.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901 with a grade of "C" or better and Qualifying score on math assessment test MATH0800

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Convert within and between metric and U.S. customary measures of length, mass, capacity, and temperature
- Calculate measurements of plane and solid geometric figures
- Apply appropriate units and scales for problem situations involving measurement
- Apply properties of parallel, perpendicular, and intersecting lines, including properties of angles formed by these lines, to solve problems
- Apply properties of angles, including corresponding, exterior, interior, vertical, complementary and supplementary angles, to solve problems
- Apply properties of congruent and similar figures to solve problems
- Apply properties of triangles to solve geometric problems
- Solve real-world and mathematical geometric problems using algebra
- Evaluate various data representations
- Explain the uses of data and statistical thinking to draw inferences, make predictions and justify conclusions
- Apply measures of central tendency and theoretical probability to a set of data
- Apply ratios, rates, and proportions to model and solve real world situations
- Solve problems using direct variation
- Use algebraic equations to model and solve real world problems involving percents
- Evaluate expressions and functions
- Generate equivalent forms of algebraic expressions
- Solve problems in various context using linear equations, inequalities and functions
- Develop a deeper understanding of real number properties, and their use, so that they may be applied to solve mathematical and career oriented problems
- Use inductive reasoning
- Review basic operations with integers, fractions, and decimals
- Estimate the expected outcome of problems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

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Credit Details: Lecture: 4

**MATH 0920 - Math Pathways for College and Careers (3)**

This course is designed for students to establish a foundation for problem solving and critical thinking used in college level mathematics and career applications. Topics include practical applications of real numbers, geometry, measurement, data analysis, and algebraic equations.

Prerequisite: Qualifying score on math assessment test and Qualifying score on reading assessment test

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Convert within and between metric and U.S. customary measures of length, mass, capacity, and temperature
- Calculate measurements of plane and solid geometric figures
- Apply appropriate units and scales for problem situations involving measurement
- Apply properties of parallel, perpendicular, and intersecting lines, including properties of angles formed by these lines, to solve problems

Apply properties of angles, including corresponding, exterior, interior, vertical, complementary and supplementary angles, to solve problems

Apply properties of congruent and similar figures to solve problems

Apply properties of triangles to solve geometric problems

Solve real-world and mathematical geometric problems using algebra

Evaluate various data representations

Explain the uses of data and statistical thinking to draw inferences, make predictions and justify conclusions

Apply measures of central tendency and theoretical probability to a set of data

Apply ratios, rates, and proportions to model and solve real world situations

Solve problems using direct variation

Use algebraic equations to model and solve real world problems involving percents

Evaluate expressions and functions

Generate equivalent forms of algebraic expressions

Solve problems in various context using linear equations, inequalities and functions

Develop a deeper understanding of real number properties, and their use, so that they may be applied to solve mathematical and career oriented problems

Use inductive reasoning

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

### **MATH 0940 - Beginning Algebra (3)**

This course includes practical applications of basic algebra from signed numbers through solving and graphing equations plus solving systems of equations and formulas with applied problems.

Prerequisite: Qualifying score on math assessment test OR MATH0910 or MATH0920 with a grade of "C" or better

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Write and solve real-world problems using linear functions

Translate between graphs, tables, and symbolic representations

Add, subtract, and multiply polynomials

Factor polynomials

Simplify, add, subtract, multiply, and divide rational expressions

Simplify, add, subtract, multiply radical expressions

Evaluate polynomial, rational and radical expressions

Solve rational equations

Solve radical equations

Solve quadratic equations using factoring, square root property and quadratic formula

Use algebra to solve geometric problems of plane and solid geometric figures

Solve linear equations and inequalities

Solve systems of equations by the graphing, addition and substitution methods

Solve systems of linear inequalities by graphing

Calculate the slope and intercepts of a line

Graph linear functions and inequalities by plotting points and using slope-intercept form

Graph non-linear equations

Apply laws of exponents

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

### **MATH 0960 - Mathematical Literacy (4)**

In this course, students explore tools to decipher, solve, and explain mathematical problems encountered in college coursework and daily life. Key mathematical concepts of this course include numerical reasoning, proportional reasoning, algebraic reasoning, geometry, data representation and function analysis. Emphasis will be on modeling, interpretation, and problem solving in a variety of contexts. This course prepares students for MATH1150 Applications of Quantitative Reasoning or MATH1250 Introduction to Statistics.

Prerequisite: Qualifying score math assessment test OR MATH0910 OR MATH0920 with a grade of "C" or better

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply concepts of numeracy in multiple contexts

Analyze ideas, patterns, and multistep problems

Utilize the connections between various types of problems

Develop strategies to find mathematical processes

Solve problems with proportional reasoning

Demonstrate flexibility with mathematics through various contexts and modes of technology

Demonstrate the ability to utilize various representations of information

Utilize formulas and algebra to investigate, represent, and solve problems

Develop mathematical rules using real-life situations

Demonstrate knowledge of the connections between numerical and algebraic methods

Construct equations to solve problems involving unknown or variable quantities

Demonstrate the use of technology in problem solving

Develop strategies to persevere until the desired result is achieved

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 4

### **MATH 0980 - Intermediate Algebra (3)**

This course includes practical applications of advanced algebra topics: polynomials and factoring, quadratic equations, exponents and radicals, radicals equations and formulas, plus common and natural logarithms.

Prerequisite: Qualifying score on math assessment test OR MATH0940 with a grade of "C" or better

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Use set notation and interval notation

Determine the union and intersection of sets

Evaluate functions

Differentiate between relations and functions

Solve absolute value equations and inequalities

Determine the inverse and composition of functions

Perform operations using complex numbers

Solve systems of equations

Graph linear and quadratic functions

Simplify complex fractions

Solve quadratic equations by factoring and the square root method

Use the quadratic formula to solve equations

Simplify rational exponents and expressions

Divide polynomials

Rearrange literal equations

Solve systems of equations using Cramer's Rule and determinants

Solve radical, exponential, and logarithmic equations

Solve linear programming problems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

### **MATH 1007 - Math for the Trades (2)**

This course explores basic math skills in practical contexts required by students in the trade programs, including skills with integers, fractions, mixed numbers, and decimals. The course would emphasize doing rather than theory, application rather than memorization, self-confidence, building mathematical reasoning, and practical use of tools and formulas.

Prerequisite: Qualifying score on math assessment test

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Perform basic math operations with integers, fractions, mixed numbers and decimals

Convert numbers between fraction, mixed number and decimal form

Simplify complex fractions

Solve problems using estimation

Measure using hand tools

Solve problems using exponents and roots

Solve ratio, rate, proportion, and percentage problems

Interpret diagrams and technical specification sheets

Test solutions for reasonableness

Convert measurements between metric and US Customary Units

Solve basic application problems

Evaluate formulas and expressions

Solve problems involving geometric figures

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2

**MATH 1020 - Geometry and Trigonometry (2)**

This course includes practical applications of basic definitions and properties of plane geometry, trigonometric functions, the law of sines, the law of cosines and vectors.

**Prerequisite:** MATH0940

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Solve line, angle, and triangle problems

Solve Pythagorean theorem problems

Solve polygon perimeter and area problems

Solve circle, chord, circumference, sector, segment, and area problems

Solve line/circle intersection problems

Solve sine, cosine, and tangent problems

Solve right and oblique triangle application problems

Solve Law of Sines and Law of Cosines problems

Solve vector problems

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477  
Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2

### **MATH 1050 - Math Pathways Plus for College and Careers (4)**

This course is designed for students to establish a foundation for problem solving and critical thinking used in college level mathematics and career applications. Topics include practical applications of real numbers, geometry, measurement, data analysis, and algebraic equations. This course is taken at a slower pace than MATH1060, so that strategies for learning mathematics and a review of basic skills can be integrated throughout.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901 with a grade of "C" or better and Qualifying score on math assessment test OR MATH0950

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Convert within and between metric and U.S. customary measures of length, mass, capacity, and temperature
- Calculate measurements of plane and solid geometric figures
- Apply appropriate units and scales for problem situations involving measurement
- Apply properties of parallel, perpendicular, and intersecting lines, including properties of angles formed by these lines, to solve problems
- Apply properties of angles, including corresponding, exterior, interior, vertical, complementary and supplementary angles, to solve problems
- Apply properties of congruent and similar figures to solve problems
- Apply properties of triangles to solve geometric problems
- Solve real-world and mathematical geometric problems using algebra
- Evaluate various data representations
- Explain the uses of data and statistical thinking to draw inferences, make predictions and justify conclusions
- Apply measures of central tendency and theoretical probability to a set of data
- Apply ratios, rates, and proportions to model and solve real world situations
- Solve problems using direct variation
- Use algebraic equations to model and solve real world problems involving percents
- Evaluate expressions and functions
- Generate equivalent forms of algebraic expressions
- Solve problems in various context using linear equations, inequalities and functions
- Develop a deeper understanding of real number properties, and their use, so that they may be applied to solve mathematical and career oriented problems
- Use inductive reasoning
- Review basic operations with integers, fractions, and decimals
- Estimate the expected outcome of problems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.  
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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 4

### **MATH 1060 - Math Pathways for College and Careers (3)**

This course is designed for students to establish a foundation for problem solving and critical thinking used in college level mathematics and career applications. Topics include practical applications of real numbers, geometry, measurement, data analysis, and algebraic equations.

Prerequisite: Qualifying score on math assessment test and Qualifying score on reading assessment test

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Convert within and between metric and U.S. customary measures of length, mass, capacity, and temperature
- Calculate measurements of plane and solid geometric figures
- Apply appropriate units and scales for problem situations involving measurement
- Apply properties of parallel, perpendicular, and intersecting lines, including properties of angles formed by these lines, to solve problems
- Apply properties of angles, including corresponding, exterior, interior, vertical, complementary and supplementary angles, to solve problems
- Apply properties of congruent and similar figures to solve problems
- Apply properties of triangles to solve geometric problems
- Solve real-world and mathematical geometric problems using algebra
- Evaluate various data representations
- Explain the uses of data and statistical thinking to draw inferences, make predictions and justify conclusions
- Apply measures of central tendency and theoretical probability to a set of data
- Apply ratios, rates, and proportions to model and solve real world situations
- Solve problems using direct variation
- Use algebraic equations to model and solve real world problems involving percents
- Evaluate expressions and functions
- Generate equivalent forms of algebraic expressions
- Solve problems in various context using linear equations, inequalities and functions
- Develop a deeper understanding of real number properties, and their use, so that they may be applied to solve mathematical and career oriented problems
- Use inductive reasoning

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Credit Details: lecture: 3

### **MATH 1150 - Applications of Quantitative Reasoning (3)**

The focus of this course is on using quantitative information to think, reason and communicate more effectively. Students are presented with real world problems, and then asked to translate them into mathematics, and solve them. Topics include thinking critically, numbers in the real world, financial management, statistical reasoning, probability, and mathematical modeling.

Examples and applications will be drawn from a wide range of disciplines and everyday situations including problems involving geometry, proportional reasoning, and percentages. This course will be a mix of lecture, individual work, and team-based problem solving. Student participation and active learning will be stressed. This course meets Minnesota Transfer Curriculum (MnTC) goal areas 2 and 4.

Prerequisite: Qualifying score on math assessment test OR MATH0960 OR MATH0980 with a grade of "C" or better

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Analyze real world data through descriptive statistics, correlations, and regression lines

Analyze misuses of statistics and data representation

Apply concepts of geometry to optimize solutions for real world situations

Apply concepts of personal finance to make informed decisions

Analyze uses and abuses of percentages, ratios, rates, and proportions

Apply inductive and deductive reasoning to solve problems

Apply function notation to model real world applications

Solve problems using a variety of problem solving strategies

Analyze ideas, patterns, and multi-step problems

Model the connections between various types of problems

Gather information from a variety of sources

Organize statistical information from a variety of sources

Analyze statistical information from a variety of sources to make informed decisions

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 2 & 4.

### **MATH 1250 - Introduction to Statistics (3)**

This is an introductory course in descriptive statistics, probability, and inferential statistics topics include statistical theory and experimental design, data analysis, measures of central tendency, measures of dispersion, basic probability, binomial and normal distributions, regression analysis and correlation, inference, and sampling methods. Additional topics may include chi-squared tests and analysis of variance.

Prerequisite: Qualifying score on math assessment test OR MATH0960 or MATH0980 with a grade of "C" or better

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Use vocabulary and formulas integral to statistics

Organize data

Analyze data

Construct statistical functions and graphs

Interpret statistical functions and graphs

Identify misleading graphs

Calculate measures of central tendency and dispersion

Interpret measures of central tendency and dispersion  
 Utilize counting techniques and probability formulas  
 Calculate mean, variance, and standard deviation of a binomial distribution  
 Identify properties of normal distribution  
 Apply the Central Limit Theorem to statistical inference problems  
 Perform hypothesis testing  
 Use basic principles of linear regression and correlation  
 Determine appropriate statistical tests to apply

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 4.

### **MATH 1400 - College Algebra (4)**

Topics covered in this course include: concepts of algebra-real numbers, exponents, polynomials, and rational expressions; equations and inequalities; functions and graphs; polynomial and rational functions; exponential and logarithmic functions; conic sections; systems of equations and inequalities; sequences and probability.

Prerequisite: Qualifying score on math assessment test OR MATH0980 with a grade of "C" or better

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Perform operations with complex numbers  
 Determine the domain, range, and symmetries of a function  
 Graph functions using transformations  
 Perform operations with functions  
 Determine the inverse of a function  
 Graph polynomial and rational functions  
 Solve polynomial, exponential, and logarithmic equations  
 Solve systems of linear equations in two and three variables  
 Solve nonlinear systems of equations  
 Solve inequalities and systems of inequalities  
 Perform operations with matrices  
 Solve problems involving permutations, combinations, and probability  
 Determine the equation for various conic sections  
 Graph conic sections

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

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Campus:

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Credit Details: Lecture: 4

MnTC Goal Areas: 4.

### **MATH 1500 - Beginning Algebra (3)**

This course includes practical applications of basic algebra from signed numbers through solving and graphing equations plus solving systems of equations and formulas with applied problems.

Prerequisite: Qualifying score on math assessment test OR MATH1050 or MATH1060 with a grade of "C" or better.

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Write and solve real-world problems using linear functions

Translate between graphs, tables, and symbolic representations

Add, subtract, and multiply polynomials

Factor polynomials

Simplify, add, subtract, multiply, and divide rational expressions

Simplify, add, subtract, multiply radical expressions

Evaluate polynomial, rational and radical expressions

Solve rational equations

Solve radical equations

Solve quadratic equations using factoring, square root property and quadratic formula

Use algebra to solve geometric problems of plane and solid geometric figures

Solve linear equations and inequalities

Solve systems of equations by the graphing, addition and substitution methods

Solve systems of linear inequalities by graphing

Calculate the slope and intercepts of a line

Graph linear functions and inequalities by plotting points and using slope-intercept form

Graph non-linear equations

Apply laws of exponents

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

### **MATH 1650 - Mathematical Literacy (4)**

In this course, students explore tools to decipher, solve, and explain mathematical problems encountered in college coursework and daily life. Key mathematical concepts of this course include numerical reasoning, proportional reasoning, algebraic reasoning, geometry, data representation and function analysis. Emphasis will be on modeling, interpretation, and problem solving in a variety of contexts. This course prepares students for MATH2050 Applications of Quantitative Reasoning or

MATH2150 Introduction to Statistics.

Prerequisite: Qualifying score math assessment test OR MATH1050 OR MATH1060 with a grade of "C" or better

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Apply concepts of numeracy in multiple contexts
- Analyze ideas, patterns, and multistep problems
- Utilize the connections between various types of problems
- Develop strategies to find mathematical processes
- Solve problems with proportional reasoning
- Demonstrate flexibility with mathematics through various contexts and modes of technology
- Demonstrate the ability to utilize various representations of information
- Utilize formulas and algebra to investigate, represent, and solve problems
- Develop mathematical rules using real-life situations
- Demonstrate knowledge of the connections between numerical and algebraic methods
- Construct equations to solve problems involving unknown or variable quantities
- Demonstrate the use of technology in problem solving
- Develop strategies to persevere until the desired result is achieved

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 4 lab: 0

### **MATH 1700 - Intermediate Algebra (3)**

This course includes practical applications of advanced algebra topics: polynomials and factoring, quadratic equations, exponents and radicals, radicals equations and formulas, plus common and natural logarithms.

Prerequisite: Qualifying score on math assessment test OR MATH1500 with a grade of "C" or better

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Use set notation and interval notation
- Determine the union and intersection of sets
- Evaluate functions
- Differentiate between relations and functions
- Solve absolute value equations and inequalities
- Determine the inverse and composition of functions
- Perform operations using complex numbers
- Solve systems of equations
- Graph linear and quadratic functions
- Simplify complex fractions
- Solve quadratic equations by factoring and the square root method
- Use the quadratic formula to solve equations

Simplify rational exponents and expressions  
Divide polynomials  
Rearrange literal equations  
Solve systems of equations using Cramer's Rule and determinants  
Solve radical, exponential, and logarithmic equations  
Solve linear programming problems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

### **MATH 2250 - Precalculus with Trigonometry (5)**

This course will provide the necessary foundation for a standard calculus course. Topics include functions and their equations, exponential and logarithmic functions and their applications, right triangle trigonometry, law of sines and law of cosines, trigonometric functions and their inverses, trigonometric identities and equations, difference quotients, vectors, polar coordinates, and parametric equations. Students will also utilize their graphing calculator in solving and graphing functions.

Prerequisite: Qualifying score on math assessment test OR MATH1400 with a grade of "C" or better

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Utilize a graphing calculator for various tasks
- Graph advanced functions, vectors, polar coordinates, and parametric equations
- Model a given data set or situation using the appropriate function
- Compute trigonometric function values
- Perform algebraic operations and compositions on functions
- Apply function transformations
- Apply fundamental theorems relating to polynomials
- Solve higher degree polynomial equations and inequalities
- Prove trigonometric identities
- Convert between radian and degree measure
- Determine the domain, range, and the inverse of trigonometric functions
- Solve trigonometric equations
- Interpret difference quotients
- Analyze a vector's form, magnitude, and direction
- Perform vector operations
- Interconvert polar coordinates, rectangular coordinates, and complex numbers
- Evaluate parametric equations for given values of a parameter
- Solve mathematical application problems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 5

MnTC Goal Areas: 2 & 4.

**MATH 2300 - Calculus I (5)**

This course covers the derivative of functions of a single variable and an introduction to the definite and indefinite integrals. Topics include limits, continuity, derivatives and their applications, the Mean Value Theorem, curve sketching, antiderivatives, Fundamental Theorem of Calculus, and integrals. Students will also utilize their graphing calculator in solving and graphing functions.

Prerequisite: Qualifying score on math assessment test OR MATH2250 with a grade of a "C" or better

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Utilize a graphing calculator for various tasks

Evaluate limits of functions and difference quotients

Apply the concept of a tangent to rates of change problems

Analyze values of continuity or discontinuity in functions

Evaluate the derivative of a given function using the product, quotient, and chain rule

Calculate the derivative of a function given implicitly

Perform higher degree differentiation

Project function behavior using the first and second derivative of a function

Utilize critical points in curve sketching

Apply the concepts presented in the Mean Value Theorem, L'Hopital's Rule, and Newton's Method

Relate derivatives to velocity, acceleration, and speed

Evaluate antiderivatives

Develop the concept of an indefinite integral as the antiderivative

Evaluate definite integrals using antiderivatives

Relate the Fundamental Theorem of Calculus to differentiation and integration

Apply the theory of calculus in application problems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 5

MnTC Goal Areas: 2 & 4.

# METS - Manufacturing Engineering Technology

## **METS 1000 - Computers in Manufacturing (3)**

This course is for those currently working or studying to work in manufacturing areas that need to learn basic computer skills that relate to work in the manufacturing environment. Topics covered include basic computer hardware, operating systems, Internet research, word-processing, spreadsheets, visual presentations, simulation and CAD.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Contribute to group projects
- Compose various manufacturing documents with associated software
- Identify hardware requirements for common software
- Locate engineering information
- Use search engines
- Evaluate projects using simulation software
- Identify the components of the computer
- Manage project files
- Create complete CAD illustrations using appropriate software

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

## **METS 1020 - Industrial Manufacturing Processes (3)**

This course is designed to introduce the student to manufacturing methods commonly used to produce industrial parts. The information in this course is useful to students in most technical occupations. Study includes selecting a process that will produce parts with optimum physical properties at the lowest cost.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Examine machine tool operations
- Compare assembling methods
- Explain finishing processes
- Explain molding process

Explain casting methods  
 Describe the nature of engineering materials  
 Describe the Manufacturing industry  
 Examine process design and control  
 Explain forming methods

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **METS 1050 - Quality Control (3)**

This course introduces students to basic quality control principles, techniques, and procedures used by organizations to assure customer satisfaction of a product and/or service. This course includes quality control concepts utilizing common measurement methods and tools used for inspection.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe basic principles used in quality

Describe causes of variation

Use tools of quality

Produce frequency histograms and checksheets

Produce variable control charts

Process attribute control charts

Interpret machine and process capability

Apply quality problem-solving tools

Define elements of a total quality management system

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **METS 1150 - M-Powered Internship (2)**

This 80-hour course provides students with a prescribed on-the-job educational experience in their area of emphasis: CNC (computer numerical control) machine operator, precision metal stamping, quality, research and development lab and manufacturing process. Students receive Performance Achievement Records (PAR's) that outline the curriculum and are evaluated against these predetermined curriculum objectives by the employer.

Prerequisite: METS1105 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Verify parts/work pieces for quality

Maintain/service equipment related to assigned functions

Complete job planning activities

Prepare work site, equipment and materials related to assigned duties

Demonstrate troubleshooting problems/operations

Demonstrate awareness of applicable OSHA standards for safe operation during assigned duties

Describe appropriate customer service

Operate safely mechanized equipment related to assigned functions

Apply knowledge of federal and international regulations

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: SOE: 2

### **METS 1200 - Industry Practices and Procedures (3)**

This course will familiarize the learner with a variety of established practices and procedures. This course introduces widely followed environmental procedures prescribe by State and Federal laws. An emphasis on established safety, preventive maintenance and good industrial practices will be experienced throughout this course. A focus on accepted workplace rules, behavior and professionalism, material handling, hand tool identification and proper usage will be discussed. The importance of utilizing emerging computer software and mobile based applications will be highlighted. This course is appropriate for those seeking employment within technical skill fields.

Prerequisite: Qualifying score on computer literacy assessment test OR METS1000

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain key terms and concepts and the importance of safety-related work practices

Describe confined spaces terminology and concepts

Identify the elements contained in lockout/tagout procedures

Utilize various software applications found in the workplace

Review Safety Data Sheet systems related to hazard communication programs with regard to the labeling of hazardous

materials

Demonstrate proper use of hand tools

Recognize the importance of machine guarding to preventing injury

Utilize workplace based mobile applications

Recognize hazardous waste as per the Resource Conservation and Recovery Act (RCRA)

Demonstrate the ability to perform material handling techniques

Follow various professional communication protocol methods

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **METS 2000 - Engineering Design Principles (3)**

This course covers the nature of design, rotary and linear motion components such as: levers, linkages, winches, chain, belt and sprocket drives, gear boxes and electric motors. Hydraulic and pneumatic actuators and limited rotation devices will be discussed. Various applications will be discussed and evaluated during the course. The student will get experience selecting mechanical drive components, bearings, and fasteners from various vendor catalogs. Students will work in teams to develop an assigned project.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Use mathematical principles

Describe design process

Apply various units of measure

Identify assembly considerations

Study fluid power principles

Study electrical principles

Study mechanical drive principles

Solve power transmission ratios

Compare mass and weight

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **METS 2100 - Statics and Strength of Materials (3)**

This course will introduce the student to the understanding and applications of applied physics. Items covered will include the use of calculators to solve algebra and trigonometry functions, vectoring equilibrium's, stress, strain, deformations, moments of inertia and section modules, belt friction, thermal expansion, welded and bolted connections.

Prerequisite: Recommended: MATH1150 or MATH1400

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Solve component-of-force problems

Solve equilibrium problems

Solve tensile stress problems

Solve shear stress problems

Solve stress and strain problems

Determine Bar X and Bar Y of an area

Calculate moments-of-inertia

Determine fastener location

Determine overall joint strength

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **METS 2800 - Manufacturing Engineering Technology Internship (1 - 16)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in "work-environment" areas of the curriculum. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. An "Internship Training Agreement" must be signed by the student, employer and the proper HTC representatives and submitted to the registrar at the time of registration.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Course goals addressed will depend on the area and type of specialization the student wishes to study, and will be defined in the "Internship Training Agreement"

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

href="https://www.hennepintech.edu/finance-operations/campus-store.html" target="\_blank">bookstore</a>.

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: SOE: 1-16

## MGDP - Graphic Design and Web Design

### MGDP 1010 - Basic Drawing (3)

This course introduces the concepts of basic drawing, one and two point perspective, basic line illustration, freehand drawing, basic form and shading techniques as it applies to design and professional drawing.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT1200

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply basic drawing principles

Classify shapes and forms

Demonstrate differences in perspective drawing

Construct 1pt, 2pt and 3pt perspective drawings

Explain light sources/depth of field

Sketch through free draw exercises to show development

Illustrate varieties of line techniques

Modify illustration styles based on commercial art images

Draw complex forms based on photographic images

Practice techniques of shading using different mediums

Reproduce color mixtures from memory and visually

Characterize drawings referring to self and others

Text and References: A list of textbooks required for this course is available at the <a rel="noopener noreferrer" href="https://www.hennepintech.edu/finance-operations/campus-store.html" target="\_blank">bookstore</a>.

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **MGDP 1120 - Introduction to Digital Photography (2)**

Digital Photography will be broken down into key terms, physical parts and finished samples. Students will develop an understanding of setting up and customizing a digital camera (from a cell phone to a full DSLR). What makes a good photo and how to capture a good photo will be emphasized. Through setup of camera equipment students manage and maintain devices in working order. Create an image portfolio of samples displaying images in various conditions. Students will edit and organize batches of images for editing. Students will practice workflow (shooting an image then editing in post-production). Software is not limited to but primarily will be Adobe Creative Suite software.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply basic camera setup

Utilize camera capabilities to maximize quality resolution

Set up lighting for various scenes

Compare images for editing

Edit using Photo software (Lightroom, Camera Raw, Photoshop)

Navigate functions of the camera through ISO, Aperture, Manual modes

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 1 lab: 1

### **MGDP 1205 - Fundamentals of Graphic Design (3)**

Graphic Design by definition is the applied art of designing any information, thought, idea or message for print or digital media. This course is designed to give the student the skills necessary to realize and value the graphic design industry. Course content includes historical overview, technological advances, common applications, basic design principles, layout and advertising concepts, typographical creativity, common tools and measuring systems. Whether the design is for print, web, or the multimedia, the student will explore the various design concepts that allow a thought, idea or message to be effectively communicated. Hands-on projects, demonstrations, experimentation, and case studies will be used in a positive industry driven learning environment.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT1200

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explore history of graphic design

Utilize picas and points measurement system

Identify type characteristics  
 Practice type and measuring identification on projects  
 Explore graphic design software  
 Differentiate mark-up and proofreading symbols on projects  
 Identify mark-up and proofreading symbols  
 Identify design principles  
 Recognize basic color theory  
 Demonstrate basic color theory on projects

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **MGDP 1210 - Graphic Design Essentials (3)**

Graphic Design professionals need to learn how to use tools of their trade. This course concentrates on several aspects of those tools: printing and presentation of materials; industry processes of printing and bindery as it pertains to finished printed materials; and color theory for design purposes. The student will learn on how to use the various printers and output devices in the Graphic Design department; use mounting materials and trimming devices for presentation purposes; and various color models which they will apply to their design concepts throughout their coursework.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify tools used in Graphic Design  
 Produce printed materials  
 Assemble printed materials for presentation  
 Utilize print production equipment  
 Demonstrate use of various printing processes  
 Use printed materials and substrates  
 Apply color theory principles  
 Demonstrate use of color in design  
 Classify color models used in Graphic Design

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **MGDP 1220 - Concepts in Creativity (3)**

Having employees who can think creatively is one of the major challenges facing business and industry. This course will enable the student to develop their own creative learning skills. They will be faced with a series of problems and through research and creative exercises come up with their own visual solutions. This course will provide students with the opportunity to discover their own creative strengths.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT1200

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate "left brain /right brain" theories
- Incorporate the role of perception in the creative process
- Incorporate the role of valuing in the creative process
- Incorporate the role of emotion in the creative process
- Demonstrate vertical thinking
- Demonstrate lateral thinking
- Determine the roles of the creative process
- Sketch creative ideas visually
- Apply learned techniques when experiencing creative blocks
- Use idea-starting techniques
- Use creative-thinking techniques in group activities
- Combine creative-thinking processes in designing a midterm project
- Use creative thinking techniques to solve design problems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3

### **MGDP 1230 - Photoshop (3)**

This course is designed to give the student basic knowledge and understanding of Adobe Photoshop. The student will be introduced to the operation of tools used in Photoshop. Also included in this course will be an introduction to the use of layers (element layers, layer masks, grouping layers, blending layers and using underlying layers), channels (color and alpha), selections (making, saving and loading), masks (quick masks, saving and editing), color modes, tonal correction (levels and curves), resolution control, file formats, drop shadows, text effects, filters, preparing files for web publication and memory management.

Prerequisite: MGD1205 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate familiarization of software functions
- Identify layer elements
- Construct files for output into varying medias
- Construct the layers palette to combine images
- Prepare the channels palette for various outputs
- Create an image using advanced layer techniques
- Demonstrate understanding of layer mask
- Rearrange image histogram according to output needs
- Modify layers to manage multiple parts of a file
- Construct graphics using the pen tool
- Determine image suitability for specific medias

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 2 lab: 1

### **MGDP 1240 - Illustrator (3)**

This course is designed to give the student a basic knowledge and understanding of Adobe's powerful vector based drawing program: Illustrator. Students will learn with step-by-step instruction, in-depth explanation, and creative projects. Skill building will occur through hands-on projects that cover Illustrator's powerful drawing functions, transformation features, patterns, brushes, filters, effects, graph creation, 3D, and print file preparation.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT1200 and MGD1205 or concurrent or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Explore application window
- Produce new document
- Demonstrate use of drawing tools
- Demonstrate use of transformation tools
- Manipulate text and gradients
- Compare patterns and brushes
- Construct an illustration with layers
- Investigate reshaping objects
- Identify color and transparency features
- Complete various types of graphs
- Use symbols and graphic styles

Create 3-dimensional objects  
Prepare document for prepress and print

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MGDP 1250 - Web Design & Development I (3)**

This course will introduce students to the basics of the latest version of HTML (hypertext markup language) and CSS (Cascading Style Sheets) while preparing them for more advanced studies. Students will learn HTML and CSS from the ground up, beginning with solid industry standard concepts. Instruction will stress designing for backward and forward compatibility, usability, and accessibility using standards-based markup. Topics include asset management, image optimization, web hosting, site planning, and the various tools web designers use to produce effective websites that meet industry demands. Students will plan, design and develop a basic web site utilizing HTML and CSS according to W3C (World Wide Web Consortium) standards.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Apply the basics of HTML markup
- Apply text formatting through markup and styles
- Construct pages using semantic markup
- Use color for design schemes
- Utilize images integrated with coding techniques for use in a web site
- Demonstrate linking pathways
- Compare ordered/unordered lists
- Construct tables for tabular data
- Utilize Cascading Style Sheets
- Verify HTML code using a validator
- Determine usability for web site design
- Construct web site

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MGDP 1265 - XHTML (3)**

This course will introduce students to the basics of XHTML (the web markup language) and prepare them for more advanced studies. Students will learn XHTML from the ground up, beginning with solid HTML concepts. Standards-based instruction will stress designing for backward and forward compatibility, usability, and accessibility. Students will develop and publish Web pages that include XHTML techniques while using tables, frames, and forms.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT1200

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply the basics of the World Wide Web coding standards

Apply basic text formatting

Assign internal and external hyperlinks

Use color for design schemes

Utilize images integrated with coding techniques for use in a web site

Demonstrate linking pathways

Compare ordered/unordered lists

Construct tables for tabular data

Explore cascading style sheets

Verify XHTML code using a validator

Determine web usability to web site design

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MGDP 1310 - InDesign (3)**

Adobe InDesign is a professional, industry standard page layout tool that allows you to integrate text and graphics with unparalleled precision and control. It provides seamless integration with Adobe's other production tools such as Photoshop and Illustrator. In this course you will cover basics of InDesign's workspace, document set-up, text formatting, layers, objects, frames, color models, graphic creation and modification, text linking and wrapping, bezier drawing techniques, tabs, tables, preflighting and printing.

Prerequisite: MGDP1205 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Examine software user-interface
- Identify various palette features
- Demonstrate page set-up
- Construct new document
- Review application preferences
- Apply paragraph formatting
- Review application tools
- Define master pages
- Define style sheets
- Modify graphic elements
- Practice linking text containers
- Prepare document for pre-flighting

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MGDP 1330 - Advanced Page Layout (3)**

This is an intermediate level of digital page layout designed to solidify concepts learned in the introductory page layout courses. This project-based course takes basic skills to the next level and focuses on production standards for using digital page layout using Adobe InDesign. Students will be required to create various single and multi-page projects emphasizing their ability to utilize page design, color application, color separation, libraries, style sheets, multi-page/master pages, advanced typographical techniques, and various output devices. A final portfolio quality capstone project will culminate course work.

Prerequisite: MGDP1230, MGDP1240, MGDP1310, and MGDP2010 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Construct industry standard page layouts
- Diagnose matching type formatting attributes
- Compile typography/printing measurements
- Identify paragraph formatting
- Differentiate style sheet components
- Analyze component container attributes
- Explore color separation techniques
- Manipulate font management software
- Identify preflight specifications
- Investigate advanced paragraph features

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or

impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MGDP 1340 - Advanced Photoshop (3)**

This course will cover advanced Photoshop techniques. Included in the course will be combining layers, using layer comps; blend modes used in layers and tools; advanced masking techniques, image presentation, Camera RAW, software integration, output resolution issues, using file formats for various outputs, color modes, color correction for print media and digital formats, duotones, tritones and quadtones, special effects, 3D image manipulation, and vanishing points. Other timely topics will be covered as technology changes during the course structure.

Prerequisite: MGDP1230, or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply the elements and principles of design when creating raster images

Apply knowledge of color theory to projects

Utilize the tools for project time management

Create weekly assignments

Write evaluations for final project

Integrate raster and vector artwork

Combine multiple images into one working file

Compare image resolution for high resolution outcomes

Explore specific formats for color output

Optimize color and tone correction

Link Photoshop files with other Creative Suite software

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MGDP 1350 - Advanced Illustrator (3)**

This course is designed to give the student a more in-depth working knowledge of Adobe Illustrator. The student will learn how to use more advanced Illustrator techniques in order to produce original digital artwork. This course will cover software integration

with other Creative Suite software.

Prerequisite: MGD1240, or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Utilize Illustrator to create complex vector artwork
- Use self-created vector artwork for course projects
- Apply the elements and principles of design when creating vector images
- Use knowledge of color theory in projects
- Utilize proper tools for project time management
- Create weekly assignments
- Write written evaluations of final project
- Create a composite vector-based original project
- Integrate raster and vector artwork
- Defend the use of design choices
- Construct a compilation of vector-based digital artwork

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MGDP 1360 - Acrobat (2)**

Acrobat works on multiple platforms offering flexible, independent viewing of content integrity and consistency. The student will use Acrobat to repurpose files for multiple uses, including: print, web and interactive design. Students will analyze and create PDF files by adding interactivity, annotated proofers marks, links, bookmarks, forms and search methods.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT1200

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Combine file formats from multiple applications
- Create interactive PDF files using forms, links and bookmarks
- Add security and encryption to PDF files
- Assemble PDF's for various media
- Create an eBook for distribution online
- Utilize annotated PDF as a part of a workflow to indicate changes

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or

impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Credit Details: lecture: 1 lab: 1

**MGDP 1645 - Social Media Production II (2)**

This course introduces students to media campaigns in a social media environment. Students will incorporate a mix of media to accomplish the goals of having multiple versions of a campaign delivered to different audiences and various online formats. Students will write a creative brief based on collected data through key marketing methods; A/B split testing on targeted audiences, and re-marketing strategies. A measurable KPI (key performance indicator) will help students develop thoughtful social media advertising. Emphasis on the tone or "voice" gives the design meaning. Marketing to specific audiences are critical in the instant world of digital marketing on your screen. Niche markets will be planned by writing and reading market objective statements and creative briefs. Students will create content for various audiences from data collected in a marketing environment. Final produced content will be created using software from the Adobe Creative Suite.

This course is paired with MMVP1640 Social Media Production I (required co-registration).

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Evaluate engagement rates from case studies

Utilize data that has been previously collected to create visual solutions

Create A/B split testing on targeted audiences

Compare images for editing

Edit using digital software (Adobe Creative Suite)

Create digital marketing using the principals of design

Assemble designs for social media that will convey a themed message

Write a creative brief from a marketing plan

Create social marketing for a variety niche markets

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

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Credit Details: lecture: 1 lab: 1

**MGDP 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A `Specialized Lab Training Agreement` must be signed by the student and the instructor and submitted to the registrar at the time of registration.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Chart a learning plan to put into action
- Accept responsibility for goals and development
- Predict goals within agenda
- Complete all goals
- Back up all project work and related materials
- Define gained knowledge

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lab: 1-4

### **MGDP 2010 - Applied Graphic Design (3)**

This course incorporates hands-on application of Fundamentals of Graphic Design combined with creativity and tools from software and other lecture courses. Students will apply the principles and elements of design to hands-on projects. The learner will create and design projects from concept to completion. The projects developed in this course will be used in the student's portfolio.

Prerequisite: MGDP1010, MGDP1205, and MGDP1240, or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Write report on the history of Graphic Design
- Use Gestalt theory in producing design layouts
- Sketch thumbnails for each the design projects assigned
- Use the principles of graphic design
- Show continuous improvement in design techniques
- Use the elements of graphic design
- Create a grid project using the golden ratio
- Apply the rules of typography
- Evaluate visual hierarchy
- Critique design solutions
- Create a typographic poster
- Design an advertising campaign

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MGDP 2030 - Packaging and Display Advertising (3)**

This advanced course students explore the production of 3-D form and surface graphics. The student will use a creative approach design multiple projects including packaging, display and environmental outdoor advertising. Students will create 3-D prototypes for various packages and build models for point-of-purchase displays and large signage. Projects will be designed for inclusion in student portfolios.

Prerequisite: MGDP1330, MGDP1340, MGDP1350, or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate diecutting and scoring

Classify project design construction materials

Construct project prototypes to meet process specifications

Ascertain project goals with product needs

Generate marketing objective statements

Demonstrate understanding of design elements and principles

Examine materials for specific product goals

Engineer displays to fit medium and longevity of product

Diagram display advertising market for demographic audiences

Track time spent on projects

Complete project designs from sketch to final printed piece

Develop products with sociocultural considerations

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MGDP 2040 - Collateral Advertising (3)**

This advanced course examines the graphic designer's role in the layout and design of publications including booklets, brochures, direct mail and multi-page projects. Lectures and lab will cover current trends and technological practices within the graphic design industry. Students will produce comprehensive visuals for several publications using the elements and principles of design. Collateral materials created in this course will be included in the student's final portfolio.

Prerequisite: MGDP1330 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Ascertain which materials are best suited for a particular project
- Apply industry standards when selecting colors
- Calculate multiple-page document specifications
- Illustrate design and market objectives
- Differentiate audience market objectives when creating a project
- Produce press-ready computer comps
- Sketch ideas to convey strong visual thumbnails
- Investigate market strategies in directmail advertising
- Adapt design principles to project market goals
- Integrate design trends to suit design style with market agenda
- Construct finished projects to industry standards
- Translate sociocultural trends for adaptation into development of projects

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MGDP 2050 - Web Design & Development II (3)**

This course introduces intermediate HTML (Hypertext Markup Language) and CSS (Cascading Style Sheets) concepts including positioning and layout, responsive design, CSS3 concepts, and basic scripting. The learner will build an effective and dynamic navigation system, learn how to use page layout, work with typography, colors, backgrounds, and use white space. The course will use a project-based approach, follow industry's best practices, and the learner will design and develop a fully functional web site for a semester project. The learner will examine user experience by conducting user research, developing user personas and evaluating scenarios. They will also utilize information architecture, user interface design, prototype creation, and usability testing and analysis.

Prerequisite: MGDP1250

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate the ability to separate design elements from content

Utilize advanced positioning using CSS techniques  
 Differentiate the differences in Browser compatibilities  
 Demonstrate knowledge of web design industry best-practices  
 Apply responsive design techniques to create web sites that work across platforms and devices  
 Produce two complete web sites using varying designs  
 Design drop down menus for dynamic navigation  
 Utilize User Experience Scenarios  
 Use CSS3 (Cascading Style Sheets) in two varying designs  
 Demonstrate use of media queries

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MGDP 2060 - Web Design & Development III (3)**

The dynamic needs of modern web applications would not be possible without server-side technologies. This course explores PHP by developing dynamically driven content, form processing, Content Management Systems (CMS) and will focus on WordPress. Topics also include database setup, database queries, publishing and syncing to a web host. In this project-based course, students design and develop a dynamic website utilizing WordPress as a CMS. Concepts include WordPress fundamentals, creating custom themes, website maintenance, and using plug-ins to extend WordPress. This course also continues to explore HTML, CSS, JavaScript, asset management, design considerations, remote hosting, and live publishing (FTP) as introduced in Web Design and Development I and II.

Prerequisite: MGDP1250

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate the ability to differentiate programming languages for the web

Distinguish how programming languages work together

Demonstrate use of JavaScript for web development

Integrate information for a web site

Utilize Content Management Systems to create dynamic web site

Demonstrate the use of PHP within a web site

Integrate Google Maps into a web page

Demonstrate use of dynamic scripting languages within a web site design

Create a fully functional dynamic web site using WordPress

Deploy web site to web hosting service

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 2 lab: 1

### **MGDP 2080 - Applied Typography (3)**

In this intermediate level course the student will immerse themselves in the craft of typography. Focus will be to develop skills in typesetting, exploration of letterforms, type classifications, letter spacing, kerning, hyphenation logic, and all typographic conventions applied to control the aesthetic properties of type. Students will develop an appreciation for the beauty of typographic letterform, learn to solve design problems principally with type, create organizational hierarchy, instill appropriate rules and guidelines, as well as research and discuss great type design.

Prerequisite: MGDP1205

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explore typographical form and function throughout history

Develop typographical craft

Demonstrate understanding of gestalt as it relates to type design

Explore type categories

Identify historical typeface usage

Differentiate type design

Develop hierarchy of type design

Practice hierarchy of type design

Demonstrate typographic skills

Apply typesetting rules of design

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MGDP 2100 - Web Design/Production (3)**

Web Analytics provides sophisticated traffic information about a website, and is a must for every business entity with an internet presence. It delivers a comprehensive array of business intelligence and visitor behavior insights. Google provides a free analytics service which has already captured a major share of the analytics market. This course will introduce the learner to Google Analytics. They will also learn about SEO, Search Engine Optimization and techniques to raise the ranking of a web site within search engines. The student will build their own web site, evaluate it for optimization and analyze the site for traffic flow.

Prerequisite: MGDP1250

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and

evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Apply acquired skills from previous life experience
- Utilize working independently
- Apply Search Engine Optimization techniques
- Assemble materials (text and images) for use in Web Site design
- Apply web standards according to the World Wide Web Consortium
- Distinguish audiences for intended web sites
- Assemble a timeline to complete web site
- Conduct regular meetings to discuss web site with client, other students and faculty
- Demonstrate planning by documenting time, assets and web site workflow management
- Design a web site using integrated skills
- Demonstrate use of good communication through class discussions

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

**MGDP 2150 - Advanced Production Lab (1 - 8)**

This course is a Pass/No Credit (P/NC). In this course the student will concentrate on advanced research or production methods that are not included in other courses. A training agreement must be signed by the student and the instructor at the beginning of the semester.

**Prerequisite:** Instructor approval

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Determine client needs
- Prepare proposal
- Prepare production schedule
- Determine all production elements
- Select software package(s)
- Determine visual style
- Meet production deadlines
- Evaluate production workflow(s)
- Produce assets for client project

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lab: 1-8

**MGDP 2200 - Design Portfolio (3)**

A capstone course for Creative and Web Degrees and Diplomas. This course will focus on the presentation of portfolio. Student will explore various techniques and strategies for obtaining employment with the aid of a professionally designed portfolio. Students will select, customize and finalize their projects and learn proper presentation. Development of resume and interviewing techniques associated with presentation of portfolio will also be covered. Industry personnel will evaluate portfolios individually with the student at the end of the course. This course must be taken during the students last semester.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Complete an assessment of personal attributes

Use personal assessment to complete an artist's statement

Assess strengths and weaknesses

Assemble a portfolio

Develop a self-marketing plan

Assess all prior graphic design projects for inclusion in portfolio

Determine what revisions need to be made to prior projects

Improve projects to meet industry standards

Write a creative brief for each project

Create new projects in areas of design that have inadequate projects

Consolidate portfolio projects for presentation

Prepare portfolio presentation for presentation to industry personnel

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

**MGDP 2215 - Graphic Design Internship (1 - 12)**

This course is an individualized internship that focuses on the student's emphasis within the graphic design industry. Each credit purchased equates to 40 hours of on-site industry specific training and is normally taken during the last semester of a student's major. Students participate on-site with professionals and are evaluated by predetermined curriculum objectives that have been

agreed upon by the employer, instructor and student. This course provides the student with valuable on-the-job experience, interaction with industry professionals, and preparation for job entry. Students must interview for and acquire their internship site. It is recommended that student seek out instructor expertise for possible recommendation.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Outline career/internship goals
- Identify internship plan and site
- Complete internship paperwork
- Project professional image according to industry standards
- Demonstrate responsibility for internship
- Exercise dependability
- Demonstrate technical competence
- Ascertain working environment guidelines
- Demonstrate competence in performing assigned tasks
- Handle constructive directives
- Show mature attitude
- Demonstrate cooperation
- Recognize successful working relationships
- Demonstrate effective communication skills
- Complete follow-up for internship completion

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: SOE: 1-12

## MHTT - Medium Heavy Truck Technology

### MHTT 1002 - Truck Technology Fundamentals (2)

This course is designed to give the student an understanding of various types of trucks and truck components. Personal and shop safety along with tool and hardware identification and fundamental repair skills will be addressed. This course will also cover the characteristics of hazardous waste and its safe handling, storage, and disposal.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT0900

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate shop safety practices

- Demonstrate the use of hand tools
- Measure components using precision tools
- Access service information
- Identify vehicle components
- Demonstrate thread restoration
- Demonstrate brake line fabrication
- Demonstrate oxy-acetylene operation
- Demonstrate welding practices

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

#### **MHTT 1011 - Electricity in Truck Technology I (4)**

This course is designed to give the student an understanding of electrical circuits to include battery, starting, and charging systems.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT0900

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate shop safety practices
- Explain Ohm's Law
- Identify truck electrical circuits
- Identify use of circuit components
- Perform electrical measurements
- Repair electrical circuits
- Interpret wiring schematics
- Diagnose battery system
- Diagnose starting system
- Diagnose charging system
- Diagnose electrical accessories

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 2

### **MHTT 1015 - Electricity in Truck Technology II (3)**

This course is designed to give the student an understanding of the troubleshooting and repair of advanced electrical circuits and controls.

Prerequisite: MHTT1011

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate personal and environmental safety
- Interpret DMM measurements
- Diagnose vehicle lighting circuits
- Diagnose vehicle electrical components
- Identify vehicle electronic controls
- Interface with vehicle multiplex wiring systems
- Verify electrical/electronic repair
- Document electrical measurements

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MHTT 1020 - Vehicle Service (3)**

This course is designed to give the student an understanding of preventive maintenance, service, adjustment, and inspection of medium and heavy-duty trucks. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT0900

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate personal and environmental safety practices
- Identify preventive maintenance procedures
- Implement vehicle lubrication procedures

Incorporate principles of vehicle inspection  
Determine needed repairs  
Identify out-of-service criteria  
Identify vehicle component adjustments  
Document inspection results

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 2 lab: 1

### **MHTT 1031 - Internship/Industry Partnership I (6)**

This course will provide the student on-the-job training in the medium/heavy truck industry. The student will use knowledge learned during previous courses and put into practice those technical skills at the workplace.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT0900

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate personal and environmental safety  
Implement vehicle lubrication procedures  
Incorporate principles of vehicle inspection  
Measure components  
Record vehicle inspection results  
Determine needed repairs  
Identify out-of-service criteria  
Adjust vehicle components  
Measure electrical circuits  
Perform electrical repairs  
Interpret wiring schematics  
Diagnose battery system  
Diagnose starting system  
Diagnose charging system  
Diagnose electrical accessories

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: SOE: 6

### **MHTT 1100 - Hydraulic Brake Systems (3)**

This course is designed to give the student an understanding of operation, maintenance, troubleshooting and repair of hydraulic brake systems.

Prerequisite: MHTT1002

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate personal and environmental safety
- Identify hydraulic brake system fundamentals
- Evaluate hydraulic brake system operation
- Identify out-of-service criteria
- Perform hydraulic brake system repairs
- Document hydraulic brake service

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MHTT 1115 - Air Brake Systems and Controls (3)**

This course is designed to give the student an understanding of theory, operation, maintenance, troubleshooting, and repair of air brakes and controls, including ABS brake systems.

Prerequisite: MHTT1002

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate personal and environmental safety
- Identify air-brake system fundamentals
- Evaluate air-brake system operation
- Identify out-of-service criteria
- Perform air-brake system repairs
- Document air-brake service

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

[bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html)

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

Brooklyn Park Campus: 952-995-1300

**Credit Details:** lecture: 2 lab: 1

### **MHTT 1131 - Internship/Industry Partnership II (6)**

This course will provide the student on-the-job training in the medium/heavy truck industry. The student will use knowledge learned during previous courses and put into practice those technical skills at the workplace.

**Prerequisite:** MHTT1002

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Demonstrate personal and environmental safety

Identify hydraulic brake system fundamentals

Evaluate hydraulic brake system operation

Perform hydraulic brake system repairs

Identify air-brake system fundamentals

Evaluate air-brake system operation

Perform air-brake system repairs

Identify steering system fundamentals

Evaluate steering system operation

Perform steering system repairs

Identify suspension system fundamentals

Evaluate suspension system operation

Perform suspension system repairs

Identify out-of-service criteria

Document repairs

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

Brooklyn Park Campus: 952-995-1300

**Credit Details:** SOE: 6

**MHTT 1200 - Steering and Suspension Systems (3)**

This course is designed to give the student an understanding of operation, maintenance, troubleshooting and repair of steering and suspension systems.

Prerequisite: MHTT1002

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate personal and environmental safety
- Identify steering system fundamentals
- Evaluate steering system operation
- Perform steering system repairs
- Identify suspension system fundamentals
- Evaluate suspension system operation
- Perform suspension system repairs
- Identify out-of-service criteria
- Document repairs

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

**MHTT 1210 - Clutch and Driveline (3)**

This course is designed to give the student an understanding of operation, maintenance, troubleshooting, repair and adjustments of clutches, u-joints, and drivelines.

Prerequisite: MHTT1002

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate personal and environmental safety
- Identify driveline fundamentals
- Identify driveline components
- Examine driveline components
- Identify clutch types
- Assess clutch operation
- Document precision measurements
- Examine clutch components
- Document component inspection
- Verify repair

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MHTT 1300 - Introduction to Diesel Engines (3)**

This course is designed to give the student an understanding of diesel engine system operation. Tune up procedures will be performed on a variety of truck diesel engines.

**Prerequisite:** MHTT1002

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Demonstrate personal and environmental safety

Identify diesel engine theory of operation

Identify diesel engine components

Identify diesel engine lubrication system operation

Identify diesel engine cooling system operation

Diagnose diesel engine complaints

Interpret diesel engine operating characteristics

Examine diesel engine components

Perform diesel engine tune up procedures

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MHTT 1322 - Heating and Air Conditioning (2)**

This course is designed to give the student an understanding of service and repair procedures used on heating, ventilation and air conditioning systems (HVAC). This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

**Prerequisite:** MHTT1011

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify all components of a Heating, Ventilation and Air Conditioning (HVAC) system
- Describe HVAC operation
- Demonstrate diagnostic troubleshooting and repair of an HVAC system
- Identify HVAC system fundamentals
- Diagnose HVAC system operation
- Perform HVAC system recovery
- Examine HVAC system components
- Perform HVAC system component replacement
- Perform HVAC system evacuation
- Perform HVAC system charge
- Document HVAC system repairs

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: Lecture: 1 Lab: 1

### **MHTT 1332 - Internship/Industry Partnership III (4)**

This course will provide the student on-the-job training in the medium/heavy truck industry. The student will use knowledge learned during previous courses and put into practice those technical skills in the workplace.

Prerequisite: MHTT1100, MHTT1115, and MHTT1200

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe Heating/ Air Conditioning (HVAC) Operation
- Demonstrate HVAC troubleshooting and repair
- Demonstrate Diesel Engine Fuel System repair
- Demonstrate personal and environmental safety
- Identify diesel engine theory of operation
- Identify diesel engine components
- Identify diesel engine lubrication system operation
- Identify diesel engine cooling system operation
- Diagnose diesel engine complaints
- Interpret diesel engine operating characteristics
- Examine diesel engine components
- Perform diesel engine tune up procedures

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or

impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

SOE: 4

### **MHTT 1401 - Diesel Engine II (3)**

This course is designed to give the student an understanding of the theory, operation, troubleshooting, and repair of diesel engine intake, exhaust and fuel systems.

Prerequisite: MHTT1300

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate personal and environmental safety

Identify diesel engine air intake system operation

Identify diesel engine exhaust system operation

Identify mechanical fuel system fundamentals

Identify mechanical fuel system components

Solve mechanical fuel system timing issues

Interpret mechanical fuel system performance issues

Perform mechanical fuel system governor adjustments

Verify repair

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MHTT 1410 - Transmission Technologies (3)**

This course is designed to give the student an understanding of operation, diagnosis, service and repair of medium and heavy-duty standard, automatic, and electronic truck transmissions.

Prerequisite: MHTT1002

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate personal and environmental safety
- Identify manual transmission fundamentals
- Identify manual transmission components
- Examine transmission components
- Identify air shift controls
- Assess transmission operation
- Interface with electronic controls
- Interpret DMM measurements
- Verify repair

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MHTT 1420 - Drive Axles (3)**

This course is designed to give the student an understanding of the operation and repair of medium and heavy-duty drive axles.

Prerequisite: MHTT1002

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate personal and environmental safety
- Identify drive axle fundamentals
- Identify drive axle components
- Examine drive axle components
- Document precision measurements
- Identify air shift controls
- Assess drive axle operation
- Calculate drive axle ratio
- Verify repair

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MHTT 1431 - Internship/Industry Partnership IV (6)**

This course will provide the student on-the-job training in the medium/heavy truck industry. The student will use knowledge learned during previous courses and put into practice those technical skills at the workplace.

Prerequisite: MHTT1210, MHTT1410, and MHTT1420

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe clutch theory and operation
- Perform clutch diagnostics and repair
- Perform transmission diagnostics and repair
- Perform differential diagnostics and repair
- Identify driveline fundamentals
- Identify driveline components
- Examine driveline components
- Identify clutch types
- Assess clutch operation
- Document precision measurements
- Examine clutch components
- Document component inspection
- Identify manual transmission fundamentals
- Identify manual transmission components

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: SOE: 6

### **MHTT 1501 - Diesel Engine III (3)**

This course is designed to give the student an understanding of diesel engine repair and overhaul procedures.

Prerequisite: MHTT1300

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate personal and environmental safety
- Identify diesel engine components
- Examine diesel engine cylinder head for reuse

Examine diesel engine cylinder block for reuse  
 Measure diesel engine components for reuse  
 Calculate cylinder protrusion  
 Organize parts for reassembly  
 Perform diesel engine major overhaul  
 Verify repair

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MHTT 1512 - Diesel Engine IV (4)**

This course is designed to give the student an understanding of systems operation, troubleshooting, repair, and programming of electronically controlled diesel engines.

Prerequisite: MHTT1300

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate personal and environmental safety
- Identify electronic controlled diesel engine theory
- Identify electronic controlled diesel engine components
- Identify electronic controlled diesel engine software
- Interface with electronic controlled diesel engine
- Assess electronic controlled diesel engine performance issues
- Validate electronic controlled diesel engines electronic settings
- Solve electronic controlled diesel engine fault codes
- Adjust electronic controlled diesel engine injectors
- Document diagnostic troubleshooting processes
- Verify repair

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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 Brooklyn Park Campus - 763-488-2477  
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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 2

### **MHTT 1533 - Internship/Industry Partnership V (6)**

This course will provide the student on-the-job training in the medium/heavy truck industry. The student will use knowledge learned during previous courses and put into practice those technical skills in the workplace.

Prerequisite: MHTT1401, MHTT1501, and MHTT1512

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify critical truck engine systems
- Analyze truck engine failures
- Demonstrate engine overhaul procedures
- Identify mechanical fuel system fundamentals
- Perform mechanical fuel system governor adjustments
- Identify diesel engine components
- Examine diesel engine components for reuse
- Measure diesel engine components for reuse
- Calculate cylinder protrusion
- Organize parts for reassembly
- Perform diesel engine major overhaul
- Identify electronic controlled diesel engine theory
- Identify electronic controlled diesel engine components

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

SOE: 6

### **MHTT 1600 - Advanced Diagnostics (2)**

This course will instruct students on the latest technologies used in troubleshooting engine, transmission, and Anti-Lock Brake System (ABS)/safety systems used in current model year on- highway trucks.

Prerequisite: MHTT1100

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate engine troubleshooting and repair
- Demonstrate transmission troubleshooting and repair
- Demonstrate ABS/safety system troubleshooting and repair
- Identify Original Equipment Manufacturers (OEM) diagnostic tools

Demonstrate parameter changes in OEM software programs  
 Diagnose no start conditions due to transmission faults  
 Demonstrate transmission software updates  
 Diagnose datalink communication faults

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: Lecture: 1 Lab: 1

### **MHTT 1630 - Internship/Industry Partnership VI (4)**

This course will provide the student on-the-job training in the medium/heavy truck industry. The student will use knowledge learned during previous courses and put into practice those technical skills in the workplace.

Prerequisite: MHTT1401, MHTT1501, and MHTT1512

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate advanced electrical diagnostics

Demonstrate engine diagnostics and troubleshooting using latest Original Equipment Manufacturer (OEM) software

Demonstrate transmission diagnostics and troubleshooting using latest OEM software

Demonstrate Anti-lock Brake System (ABS)/safety system diagnostics and troubleshooting

Diagnose electronic controlled diesel engine performance issues

Validate electronic controlled diesel engines electronic settings

Solve electronic controlled diesel engine fault codes

Adjust electronic controlled diesel engine injectors

Identify electronic controlled diesel engine theory

Identify electronic controlled diesel engine components

Identify electronic controlled diesel engine software

Interface with electronic controlled diesel engine

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

SOE: 4

# MMST - Marine, Motorsport and Outdoor Power Equipment Technology

## **MMST 1095 - Beginning Motorcycle Maintenance (1)**

This is an introductory course to preventative motorcycle maintenance. Students will be exposed to various routine preventative maintenance techniques including how to safely change fluids and batteries. A deeper understanding of why service intervals exist and how to perform a multi-point safety inspection on motorcycles will also be covered.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify basic maintenance procedures
- Explain different service intervals
- Complete a safety inspection
- Perform preventative maintenance

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1

## **MMST 1100 - Introduction to Marine and Motorsport Technology (3)**

This is an introductory course to the trades of Marine, Motorsport and Outdoor Power Equipment Technology. Subjects covered will be shop safety, tools, fasteners, precision measurement and career exploration. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Explore the trade area
- Measure engine parts accurately
- Identify fasteners by size and type
- Describe safety procedures
- Identify hand tools needed for working in the trade
- Produce threaded holes in a steel bar
- Install a Heli- Coil thread insert

Explain proper oxy-fuel setup  
 Identify key welding safety procedures  
 Exhibit professionalism  
 Exhibit safe work practices  
 Identify potential career pathways

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MMST 1105 - Introduction to Engine Theory (3)**

This course will include four cycle and two-cycle engine theory. Also covered will be engine operating theory and failure analysis. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain 2 stroke theories  
 Explain 4 stroke theories  
 Identify parts of an engine  
 Explain engine component functions  
 Perform engine disassembly  
 Perform engine reassembly  
 Perform basic measurements  
 Access data from Internet  
 Accept responsibility  
 Exhibit professionalism  
 Exhibit safe work practices

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMST 1110 - Introduction to Fuel Systems (3)**

This course will introduce the student to the theories that make a fuel system operate such as atmospheric pressure, venturi principle, fuel air ratios and venting. The class will explore alternative fuels advantages and disadvantages. Some of the system parts covered will be tanks, pumps, filters and lines. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify carburetor theories of operation
- Set carburetors to factory specifications
- Service fuel systems
- Diagnose engine problems related to fuel systems
- Describe advantages and disadvantages of alternative fuels
- Execute carburetor adjustments on a running engine
- Identify carburetor circuits
- Describe fuel and air passages through a carburetor body
- Identify problems associated with alternative fuels
- Describe lubrication systems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MMST 1115 - Introduction to Electrical Systems (3)**

This course will cover basic electrical theories and their application in various situations. Volt/ohmmeter and circuit tester operation will be taught. Battery maintenance and theory will also be part of their course. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Differentiate between parallel and series circuits
- Explain how an electrical relay works
- Explain electro magnetism theory
- Explain ohms law
- Identify electrical components

Explain basic electrical theory  
 Diagnose electrical failures  
 Operate volt/ohm meter  
 Utilize electrical schematics

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMST 1120 - Introduction to Ignition Systems (3)**

This course will introduce the student to the operation theories of ignition systems in use today. Service and repair procedures will be part of this course. Testing components and systems to diagnose problems will also be covered. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: MMST1105 and MMST1115

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify theories of operation

Identify the parts

Test components

Explain operation of a magneto ignition system

Explain operation of an electronic ignition systems

Explain operation of a battery ignition system

Practice timing on ignition systems

Troubleshoot ignition problems

Perform normal maintenance

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMST 1125 - Service Management (3)**

This course will cover the basics of customer relations, parts lookup, job documentation and the other aspects of running a service shop business. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Explain the "Do's " of customer relations
- Explain the "don'ts " of customer relations
- Perform parts lookup for related equipment.
- Identify customer dissatisfaction
- Identify tools
- Acknowledge customer problems
- Perform work order completion
- Organize tools
- Apply customer satisfaction training

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MMST 1130 - Introduction to Drive Systems (3)**

This course will cover the basics of power transmission by belt, chain and gear drives. Lubrication and maintenance will be taught also. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Explain belt drive systems
- Explain clutch systems
- Explain chain drive systems
- Identify different kinds of bearings
- Identify different types of seals and their purpose
- Compare differential differences
- Explain power transmission transfer
- Explain mechanical transmission
- Explain hydrostatic transmission

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MMST 1145 - Trailer Maintenance (3)**

This course will cover the storage of seasonal equipment. Trailer maintenance and use will be covered also. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: MMST1115

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify electrical problem symptoms

Identify safety procedures

Identify trailer handling procedures

Explain trailer hitch size and classification

Explain preventive maintenance procedures for trailers

Explain equipment tie down procedures for the power equipment industry

Perform trailer maintenance

Perform correct equipment tie down procedures

Identify trailer weight classes

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 2

### **MMST 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that

meet their needs. A `Specialized Lab Training Agreement` must be signed by the student and the instructor and submitted to the registrar at the time of registration. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Negotiated with instructor

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lab: 1-4

### **MMST 2105 - Motorcycle Transmissions and Clutch Service (3)**

This course will cover theories of operation and repair procedures used on common motorcycle transmissions and clutches. Parts identification and function are included. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: MMST1130

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain attributes of a constant mesh transmission

Explain function of typical motorcycle clutches

Diagnose failures of motorcycle transmissions

Overhaul a horizontally split motorcycle transmission

Overhaul a vertically split motorcycle transmission

Explain final drives used on motorcycles

Describe the power flow through a typical motorcycle transmissions

Explain the operation of variable sheave drives

Service a shaft drive system

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MMST 2110 - Motorcycle Wheels and Suspension (3)**

This course will cover the theories of operation and repair procedures on common motorcycle wheels, tires, brakes and suspension systems. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: MMST1130

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Perform manual tire changing
- Perform tire changing with a tire machine
- Perform maintenance on a disc brake system
- Build a spoked motorcycle wheel
- Perform suspension maintenance
- Explain operation of a hydraulic brake system
- Perform repair of a drum brake system
- Adjust brake light switches
- Explain operation of motorcycle suspension

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MMST 2126 - Marine Lower Unit and Cooling System Service (3)**

This course will cover the design and operation of common outboard lower units. Included will be servicing water pumps and cooling systems. Repair and normal maintenance will be included. Troubleshooting typical problems will be included. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: MMST1130

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Remove an outboard lower unit
- Disassemble an outboard lower unit

Diagnose common shifting problems found in an outboard lower unit  
Diagnose common cooling system problems found in an outboard motor  
Identify the parts of an outboard cooling system  
Reassemble an outboard lower unit  
Perform maintenance on an outboard motor lower unit  
Describe the operation of the propeller for an outboard motor  
Select the correct propeller for a boat

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMST 2140 - Marine Tilt/Trim and Controls (3)**

This course will cover the theories of operation of common power tilt and trim systems found on outboards. Repair procedures used on different systems will be taught. Students will disassemble and service at least one tilt and trim unit. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Successful completion of all first year courses

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe principles of tilt and trim operation  
Describe benefits of having a tilt and trim system on an outboard motor  
Explain different circuits of a tilt and trim system  
Perform normal maintenance on a tilt and trim system  
Overhaul a tilt and trim unit  
Describe operation of an electric hydraulic tilt and trim unit  
Pressure test a tilt and trim unit  
Describe safety procedures when working on hydraulic systems  
Describe operation of an electric tilt and trim system  
Identify controls of industry electronics

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMST 2175 - Power Equipment Drive Systems (3)**

This course is designed to give the student hands on experience with transmissions, variable drive systems, and clutches, used in the power equipment industry. Disassembly, identification, and measurement of worn parts as well as reassembly and adjustments will be covered. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: MMST1130

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Discover hydrostatic drives
- Service brake systems
- Recognize gear failure
- Diagnose mechanical drives
- Perform disassembly
- Perform measurement
- Examine clutches
- Examine and adjust brakes
- Prepare work orders

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMST 2180 - Power Equipment Accessory Maintenance (3)**

In this course the student will learn how to do basic maintenance and adjustments to accessories such as blade sharpening, mower deck adjustment, cable adjustment, safety switch operation, and belt pulley and bearing replacement. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: MMST1100

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Perform tire repair
- Operate sharpening equipment
- Perform replacement and adjustment of many types of control cables
- Perform replacement and adjustment of many types of belts

Perform sharpening of mower blades and chain saw blades  
Remove and replace power belts on equipment  
Remove, replace, or repair recoil starters on equipment  
Demonstrate functionality of safety switches  
Remove and or replace bearings

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMST 2300 - Advanced Fuel Systems (3)**

This course will expand upon the material taught in basic fuel system class. Subjects covered are synchronizing multiple carburetor setups, jetting for different conditions and introduction to fuel injection. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: MMST1110

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the operation of a fuel system  
Diagnose problems with a fuel system  
Synchronize multiple carburetor setups  
Describe basic fuel injection systems  
Compare alternative fuels  
Analyze fuel system damage  
Describe the procedure for rejetting carburetors for different conditions  
Describe auxiliary circuits found on some carburetors  
Service fuel pumps

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

**MMST 2305 - Advanced Electrical Systems (3)**

This course is designed to give the student advanced understanding of electrical systems unique to specific outdoor power equipment, motorcycle, and marine equipment. The main focus of the class will be wiring diagrams, reading wiring diagrams, and troubleshooting electrical components using a volt/ohm meter. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: MMST1115

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Differentiate between charging systems
- Explain basic electrical theory
- Discuss electrical components
- Diagnose electrical failures
- Solve ignition problems
- Perform ignition timing
- Exhibit safe work practices
- Participate in class exercises
- Access and use data from Internet

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

**MMST 2310 - Engine Overhaul (3)**

This course will allow the student to use information from previous courses to overhaul an engine to factory specifications. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Successful completion of all first year MMST classes

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Diagnose engine failures
- Analyze cost of repair
- Perform measurement on worn parts
- Perform disassembly procedures
- Perform reassembly procedures
- Exhibit safe work practices
- Communicate with the customer as needed
- Test engine operation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMST 2315 - Tune Up (3)**

This course will allow the student to use skills learned in previous classes to tune up equipment to factory specifications. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Successful completion of all first year courses

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Complete the repair order for a tune up

Diagnose the problems

Perform leakdown test on the engine

Perform lubrication services

Adjust all linkages

Perform ignition services

Adjust valve clearance

Service fuel system

Test equipment for proper operation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMST 2320 - Customizing Lab (1 - 3)**

This course will allow the student to use skills and knowledge from previous courses to customize motorcycles, boats or other equipment. This course will include modifications and installing accessories but no painting. Mechanical, electrical work and installing accessories will be allowed. Student will present a plan before starting work on the project with an estimate of both time and cost. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Second year student

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Develop a plan for customizing a machine

Perform modifications according to plan

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lab: 1-3

### **MMST 2325 - EETC/Advanced Troubleshooting (3)**

This course will include advanced four cycle and two-cycle engine theory. Equipment and Engine Training Council (EETC) Certification will be stressed in the content of the class. Also covered will be advanced troubleshooting, and failure analysis. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: MMST1105

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain 2 stroke theory

Explain 4 stroke theory

Identify engine components

Explain engine component functions

Perform basic measurements

Access data from Internet

Practice EETC code of ethics repair procedures

Exhibit professionalism

Exhibit safe work practices

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMST 2340 - Repair and Accessory Lab (3)**

This course will allow the student to advance the skills and knowledge from previous courses to repair, restore or accessorize marine, motorsports or outdoor power equipment. Students will present an approved project plan, estimate, design, and material list before work begins. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate safe handling disposal of hazardous waste/materials
- Apply safe work practices during repairs
- Conduct work and communication in a professional manner
- Develop a repair or estimate plan
- Revise the estimate or plan
- Diagnose symptoms using a troubleshooting process
- Report back on the developed time log
- Inspect the quality of repairs
- Compose a narrative of the repair work

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 0 lab: 3

### **MMST 2350 - Internship (1 - 3)**

This course allows the student to gain on-the-job experience in the Marine, Motorsport and Outdoor Power Equipment industry. The student is responsible for finding and setting up the internship position. One (1) to three (3) credits can be taken, with each credit requiring 40 hours of time spent on the job. Student performance will be monitored by the instructor and evaluated by the employer.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

The specific goals of this course will be defined in the 'Internship Agreement' signed by the student, employer and instructor and will be tailored to the experiences available at the internship site.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: SOE: 1-3

### **MMST 2400 - Fuel Injection Systems (3)**

This course will cover the fundamentals of EFI computer systems, diagnosis and repair of fuel injection systems. Students will work with manufacture supported scan tools and late model equipment performing live troubleshooting commonly found in industry within Marine, Motorsports and Outdoor Power Equipment. Industry certification is also available based on eligibility and current offerings.

Prerequisite: MMST1110, MMST2300, and MMST2305

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe theory and operation of computerized engine controls

Inspect computerized engine control components

Perform component tests

Operate diagnostic scan tools

Interpret Scan-Tool data

Diagnose computerized engine control systems

Perform vehicle repairs

Identify proper service information

Apply proper troubleshooting procedures

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

# MMVP - Interactive Design and Video Production

## **MMVP 1500 - Concepts of Interactive Media (3)**

This introductory course will provide the student with an overview of the world of interactive media. The student will be exposed to software and hardware currently being used in the industry and through lectures and projects will explore the role of the interactive designer in the production of different types of multimedia.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Define interactive media
- Participate as members of an interactive team
- Compare the production expertise needed for interactive media
- Analyze the effect of pictures and sound in interactive media
- Compare delivery and display options
- Investigate new technologies in interactive media
- Create audio assets for interactive projects
- Create image assets for interactive project
- Create animations
- Develop nonlinear interactive projects
- Create interactive projects with audio, images, and animations

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

## **MMVP 1505 - Introduction to Visual Communications (3)**

In this course emphasis will be on the basic visual design strategies and techniques used in all types of multimedia presentations.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Compare media aspect ratios
- Determine legibility requirements for different media
- Compare color/font requirements for different media environments

Identify fonts correctly for different media  
 Determine correct typographical spacing  
 Identify colors correctly for different media  
 Evaluate existing visuals for different media playback formats  
 Identify different styles/levels of visualization  
 Create images/designs using different visual styles

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 0

### **MMVP 1511 - Production Planning (4)**

This course will introduce the student to the process of evaluating client needs and preparing written production documents for multimedia and video projects.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Evaluate the needs of the client
- Develop the target audience
- Develop creative strategies
- Create budgets for media projects
- Write proposals for media projects
- Write a treatment or content outline for a media project
- Write audio scripts
- Write dual column scripts
- Create storyboards for media projects
- Create wireframes for media projects
- Create flowcharts for media projects
- Create user interface designs
- Demonstrate presentation methods for media projects

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 1

### **MMVP 1520 - Flash (3)**

This course will introduce the fundamentals of creating exciting animations and compelling interactive projects using Adobe Flash.

Prerequisite: MMVP1500 with a grade of "C" or better or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Create artwork assets with software tools
- Create artwork assets with imported bitmaps
- Incorporate audio into projects
- Develop frame based animation
- Create animations using tweens
- Utilize inverse kinematics to control animations
- Create motion presets
- Create interactive buttons
- Utilize ActionScript to add interactivity
- Develop techniques to optimize project assets
- Produce animated and interactive projects

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMVP 1540 - Web Basics (2)**

This course will introduce students to the fundamentals of XHTML. Students will learn to deploy XHTML through traditional hand-coding and WYSIWYG applications. Instruction will focus on the implementation of web standards, valid markup, usability, and accessibility. Students will learn through hands-on practice how to design, create, and deploy basic web sites.

Prerequisite: Recommended: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 and qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Understand XHTML coding

Understand web standards and semantic markup  
 Understand usability and accessibility  
 Create XHTML and CSS documents  
 Create effective web design solutions  
 Integrate media elements into web pages  
 Construct complete websites  
 Deploy web sites  
 Use WYSIWYG applications to increase efficiency in website creation and deployment

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2

### **MMVP 1545 - 3D Basics (3)**

This course introduces the foundations of 3D modeling, texturing, animation, lighting, and rendering. Through this course, the student will use industry standard software and explore the production environment.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate 3D modeling with standard primitives, box modeling, and modeling from reference

Identify lighting techniques in a 3D environment

Create UV map and textures for basic 3D objects

Demonstrate principles of animation to create simple 3D animations

Apply the concepts of design in 3D scenes and models

Evaluate project solutions through discussions and critiques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMVP 1562 - Audio for Media (3)**

This course will introduce the student to sound editing for use in video and interactive projects. Audio software will be used to create loop-based audio, edit pre-made audio, and sync audio and video. Students will create exciting projects that combine music, sound effects, and dialogue.

Prerequisite: Recommended: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Apply basic audio theory
- Demonstrate studio and location audio recording methods
- Demonstrate editing on audio waveforms
- Demonstrate audio enhancements
- Demonstrate noise reduction
- Demonstrate sound removal techniques
- Create projects with pre-made and self-created loop audio
- Manipulate audio from a video
- Demonstrate ADR (automatic dialogue replacement) audio techniques
- Create foley sound effects for video and animation
- Demonstrate mixing of music, sound effects, and voice audio

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMVP 1565 - Captivate (3)**

Students will create scenario-based trainings, simulations, demonstrations, and quizzes using Captivate. Projects will be delivered online and to portable devices in multiple media types.

Prerequisite: MMVP1500 with a grade of "C" or better or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Develop eLearning content
- Create content for different learner types
- Integrate multimedia content into projects
- Create engaging simulations
- Produce technology demonstrations
- Create scenario-based training projects
- Create quizzes
- Deliver content to multiple devices in different media types
- Integrate content into Learning Management Systems (LMS)

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMVP 1570 - Introduction to Programming for Designers (3)**

This course is a hands-on introduction to computer programming for artists, designers, and others who want to work in a visual context. Students will create images, animations, and interactive experiences. Students will learn the fundamentals of programming and object-oriented techniques to create engaging visual projects and designs. The open source programming language, Processing, will be used in this course.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Use variables to store and track information

Develop array structures to store variables, objects, and other information

Create programs to make decisions and use branching logic

Create programs that control event flow

Demonstrate the use of functions

Demonstrate object-oriented programming techniques

Create interactive programs that manipulate images and pixels

Create programs that use video input

Design using arcs, spline curves, and bezier curves

Develop programmatic animation simulations

Demonstrate debugging methods to remove syntax and logic errors

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMVP 1575 - Storyboarding for Animation (3)**

This course introduces the foundations of storyboarding for animation. The student will learn about using storyboards in the animation industry. Using industry standard tools, the student will produce storyboards.

Prerequisite: Basic computer skills and understanding of Internet strongly recommended for successful course completion

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate visual storytelling in storyboards
- Analyze script for storyboarding
- Develop a breakdown of script for storyboarding
- Explain the purpose scenes, shots, and panels in storyboarding
- Demonstrate camera moves in storyboard panels
- Determine camera shots to support script breakdown
- Demonstrate panel creation process from rough through cleanup to color
- Create animatics for animation
- Create storyboards for animation
- Critique storyboards

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 2 Lab: 1

### **MMVP 1580 - Animation (3)**

This course will introduce the student to the principles of animation. Students will use cartoon style animation techniques to explore storytelling, creative visualization, and character development through the animation process. Students will learn about the digital animation workflow as they produce an animated short.

Prerequisite: Concurrent enrollment or prerequisite MMVP1500 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Apply narrative structure to animation
- Develop visualizations through storyboarding
- Design characters from hand drawn, photographic, and vector-based sources
- Create character walk cycles, lip synchronization, and action movements
- Demonstrate the 12 principles of animation
- Utilize animation production workflows
- Create diverse environments for animations
- Use audio for voice, music, and sound effects synchronized to visual assets
- Apply IK (inverse kinematics) to character movements
- Produce finished output animation files

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMVP 1590 - Multimedia for the Web (3)**

In this course students will learn methods and techniques to integrate interactive rich media into web pages.

Prerequisite: MMVP1520 with a grade of C or better OR MGDP1230 with a grade of "C" or better OR instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Evaluate website hosting solutions

Set up websites with top level domain names

Explore different Content Management Systems (CMS) for maintaining website content

Integrate basic databases using Access or MySQL

Create dynamic web pages using database content with PHP

Utilize Javascript on web pages

Explore methods to use different video formats on web pages

Demonstrate progressive enhancement techniques to include multimedia content

Develop project management workflows for multimedia websites

Discuss search engine optimization (SEO) for multimedia websites

Utilize semantic XHTML and CSS

Use code that meets web standards validation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMVP 1600 - Introduction to Video Production (4)**

In this course the student will develop skills and proficiency in the operation of video production equipment. Camera operation,

lighting, basic audio and recording equipment are covered. Students will work as a member of a crew.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify video production styles and values
- Identify video formats
- Identify proper tape handling and storage procedures
- Identify video signal(s) characteristics
- Connect video record and playback systems
- Set up a video monitor
- Set up video camera
- Compare camera specifications
- Demonstrate all camera video controls
- Demonstrate all camera audio controls
- Demonstrate camera framing
- Demonstrate the use of a video switcher
- Identify supplemental lighting needs
- Set up three-point lighting
- Control lighting in various areas
- Follow safe electrical standards
- Perform lamp replacement

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 1

### **MMVP 1605 - Videography and Directing (4)**

In this course students will develop and increase their camera skills, including hand-held operation, Electronic News Gathering (ENG) and Electronic Field Production (EFP) applications. Students will also be introduced to directing techniques, including single camera and multi-camera strategies.

Prerequisite: MMVP1511 with a grade of C or better and MMVP1600 with a grade of "C" or better or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Interpret scripts that will be used as a guide for a production
- Create a written project based on the work of a famous director
- Demonstrate the use of studio camera movements
- Demonstrate the set up and of a two or three camera studio production
- Direct a team during all phases of a video production
- Demonstrate the use of lighting instruments

Demonstrate the use of audio instruments  
 Create a background set for a 30-minute program  
 Identify directing communication techniques  
 Create a script for a 30-minute program  
 Operate the teleprompter for a `live` program  
 Edit a 30-minute talk show program  
 Demonstrate the techniques associated with switching as a technical director  
 Demonstrate the techniques associated with studio camera operation  
 Identify floor director communication techniques  
 Serve as a floor director during a 30-minute program  
 Serve as camera operator during a 30-minute program  
 Identify audio mixer parts and best practices  
 Serve as audio technician during a 30-minute program  
 Examine 30-minute programs and make suggestions for future programs

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 1

### **MMVP 1640 - Social Media Production I (2)**

This course will introduce students to creating a social media campaign using still photos, graphics, video and written media to develop social media content. Students will analyze and present data in order to address organizational issues and make strategic decisions. Students will design and develop social media strategies and tactics. This course will be paired with MGD1645 Social Media Solutions II.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Compare various social media platforms  
 Design social media presentation assets  
 Create a social media campaign using a video platform  
 Create a social media campaign using Facebook  
 Create a social media campaign using Twitter  
 Create a social media campaign using YouTube  
 Create a social media campaign using LinkedIn  
 Create a social media campaign using Instagram and Snapchat  
 Develop social customer strategy  
 Analyze social media strategies for effectiveness

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 1

**MMVP 1650 - Event Technical Production (4)**

This course will prepare students to develop strategies for planning an event. Students will use event design software for diagram design of an event space. Students will learn how to become an event planner and handle all of the logistics associated with arranging professional meetings, conferences, trade shows, receptions and special occasions.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Design staging diagrams for an event

Design audio visual diagrams for an event

Identify food and beverage needs for various events

Develop strategies and process for event registration

Design trade show and conference diagrams

Design an entertainment diagram for an event

Design an attendee template using a Microsoft Excel spreadsheet

Design a seating diagram for an outdoor event

Design a seating diagram for an indoor conference center

Identify audio visual equipment needs for an indoor event

Collaborate with food, audio visual and conference center vendors

Generate a detail event procedure and process report using event planning software

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 1

**MMVP 1700 - DSLR Video Production (3)**

This course will introduce photographers and video producers to video production with a DSLR (digital single-lens reflex) camera. The basic course will cover the DSLR workflow, which will include planning, shot composition, lenses, media types, media off-loading, media conforming and processing software, editing and delivery. This course is designed for photographers and video producers with emphasis on client delivery for weddings, corporate training and movie making.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and

evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

#### Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify the parts of a DSLR camera
- Identify various HD and SD video formats and frame rates
- Identify the types of lenses used with DSLR cameras for video
- Capture footage from a DSLR camera
- Demonstrate camera movement and composition
- Demonstrate archiving workflow
- Set up lights for interviews and product shots
- Set up audio for interviews and event recording
- Utilize DSLR footage conforming software
- Utilize non-linear editing software
- Create video projects using pre-production, production and post-production methods
- Use compression and exporting software for delivery to the web
- Use DVD authoring software for delivery

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

#### Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMVP 2001 - Advanced Lighting (3)**

This course is for advanced video students who want to become more creative in their use of lighting. Through lectures, demonstrations and screenings we explore the cinematic possibilities of advanced digital video cinematography and lighting. We experiment with the creative use of video production lighting techniques and equipment. Learn how to use the camera's built-in menus to control hue, density, and contrast, while using lighting equipment and light meters to control image quality. We test the various cameras, and use filters and diffusion to create dramatic scenes in the studio and on location. We will test theory and gain practical experience in various lighting situations: day-for-night, night-for-night, available and mixed light, magic-hour, fire and candle light, close-up table tops, etc.

Prerequisite: MMVP1600 with a grade of "C" or better, or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

#### Learning Outcomes:

The following outcomes will be addressed in the course:

- Create advanced lighting set ups with single camera
- Use filters and gels with lighting instruments
- Integrate lighting instruments with camera and monitor
- Integrate DV Rack for light metering
- Create advanced lighting situations
- Plan lighting scenes
- Create various color temperature recordings
- Create innovative light application experiences
- Produce and deploy lighting plan for various set ups

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MMVP 2010 - JavaScript for Designers (3)**

Learn the exciting and dynamic language used to power the web and mobile environments. Use javascript to control screen elements, power animations. Build entertaining and visually rich interactive user experiences deployed on different devices.

Prerequisite: MMVP1570 and MGDP1250, or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate the use of variables, conditionals, loops, and functions

Create objects and functions

Demonstrate manipulation and control of the DOM (document object model)

Create interactivity using events

Create animations using page elements

Generate animations on the canvas

Construct user experiences combining canvas and video

Utilize code libraries

Develop integrations with third party APIs (application programming interfaces)

Demonstrate debugging procedures

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 2 lab: 1

### **MMVP 2025 - Interactive Game Design (3)**

This course will focus on the exciting field of casual online gaming. Students will explore how the casual gaming market is revolutionizing the world of game design. Using game development frameworks, students will create an original game concept.

Prerequisite: MMVP2010 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Evaluate game design
- Create game concept
- Utilize sprite sheets for animations
- Integrate game design and programming
- Develop user interface and controls
- Utilize game development frameworks
- Demonstrate collision detection methods
- Integrate visual and audio assets into games
- Apply testing and usability principles to game design
- Produce a finished game for game portal or contest submission

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MMVP 2030 - UI/UX for Designers (3)**

This course introduces the student to the foundations of user interface/user experience (UI/UX). Through this course the student will explore user centered design. Using wireframing and rapid prototyping tools the student will develop solutions for web and app projects.

Prerequisite: Basic computer skills and understanding of Internet strongly recommended for successful course completion

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Conduct user research to create purpose driven design
- Communicate with project stakeholders through wireframes and storyboards
- Develop user personas from project specifications
- Conduct UI and UX analysis of user experiences
- Test designs with users
- Create effective solutions using the principles of design
- Demonstrate effective typography
- Construct low-fidelity rapid prototypes
- Demonstrate iterative design processes

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course

Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus: 952-995-1300

Credit Details: Lecture: 2 Lab: 1

### **MMVP 2045 - 3D Modeling (3)**

This course will explore modeling and texturing methodologies. Building on the basics of polygonal modeling and UV mapping, this course will focus on 2D and 3D painting techniques, normal mapping, and how to apply shaders. Using industry best practices, the student will study good and bad topology with multiple types of models.

Prerequisite: Recommended: MMVP1545 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Create 3D models through the application of 3D polygonal modeling techniques

Develop realistic textures for models with multiple software tools

Identify UV mapping and layout techniques

Construct and optimize 3D models of varying complexity

Develop normal maps from geometric details and texture maps

Demonstrate industry production methods to create, edit, and optimize shaders, layered shaders, and UV layouts

Evaluate project solutions through discussions and critiques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMVP 2055 - 3D Animation (3)**

This course will integrate the principles of animation into the 3D environment. Students will develop their skill in character animation and rigging. Advanced body mechanics, acting, and shot composition will be used to create animations for games and film.

Prerequisite: Recommended: MMVP1545 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate the principles of animation through pose to pose and straight ahead animation methods  
 Create biped 3D character animations  
 Apply reference models for animation  
 Create personality and believability in animations  
 Create character lip sync animation  
 Utilize motion capture in character animation  
 Demonstrate fundamental character rigging techniques  
 Evaluate project solutions through discussions and critiques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

#### **MMVP 2065 - Advanced Animation Production (4)**

This project-focused course will focus on the creation of an advanced animation project. Teamwork and collaboration skills from the animation industry will be an integral part of the course. Topics may include advanced character rigging, motion capture, and working within the film and animation production pipelines.

Prerequisite: MMVP2045 and MMVP2055 or MMVP1575 and MMVP2580 are strongly recommended for successful course completion

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Create a character that demonstrates a unique and appropriate movement style

Demonstrate advanced character rigging techniques

Demonstrate advanced asset creation techniques

Demonstrate advanced animation techniques

Integrate assets into a short film

Demonstrate collaboration and teamwork in production workflows

Create a portfolio-worthy animation project

Evaluate project solutions through discussions and critiques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 1

### **MMVP 2530 - Advanced UI/UX for Designers (3)**

This course explores advanced features of user interface/user experience (UI/UX). Through this course the student will explore user centered design. Using wireframing and rapid prototyping tools the student will develop solutions for web and app projects.

Prerequisite: Basic computer skills and understanding of Internet strongly recommended for successful course completion. MGDP1250 and MGDP2050 or equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Create style guides for design, typography, and brand
- Apply style guides to maintain brand continuity
- Incorporate usability principles into projects
- Incorporate accessibility requirements
- Create interactive high-fidelity prototypes
- Develop projects using semantic HTML, CSS and JavaScript
- Integrate web libraries and frameworks
- Deploy projects to live servers

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 2 Lab: 1

### **MMVP 2550 - Video Field Production (3)**

This course will give the student fundamental understanding of remote video production. Camera setup, audio techniques and proper lighting on location will be explored. Students will work as a team with this `hands-on` course.

Prerequisite: MMVP1511 with a grade of C or better and MMVP1600 with a grade of "C" or better or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Create scripts to be used in production
- Direct other crewmembers
- Set up audio equipment in a remote location
- Compare various video production designs
- Create video samples
- Critique video samples from various media outlets as well as class-produced media
- Identify the parts of a portable video camera
- Operate signal generating devices of the video camera
- Demonstrate the set-up for a remote production

Identify the various kinds and uses of video production lighting instruments  
 Demonstrate the lighting techniques used in various remote environments  
 Identify the kinds and uses of various audio instruments in remote environments  
 Demonstrate the set up of remote signal processing equipment  
 Demonstrate the proper set up for remote signal monitoring equipment  
 Demonstrate the proper directing techniques in a remote environment  
 Demonstrate the proper remote production techniques for a post production

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMVP 2560 - After Effects (3)**

This course will introduce the student to the foundations of motion graphics. Students will explore animation and visual effects for video, film, web, and games.

Prerequisite: MMVP1500 with a grade of "C" or better or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Produce storyboards to pre-visualize animations

Create animatics

Demonstrate animation of photographic image assets

Show keyframe techniques to animate properties of compositions

Produce animated sequences using typography

Demonstrate compositing using keying methods

Construct 3D camera scenes

Produce visual effects to enhance scenes

Apply color correction techniques to footage

Demonstrate production workflows incorporating additional software programs

Produce rendered output for target device

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 1 lab: 2

### **MMVP 2565 - Advanced After Effects (3)**

This advanced course in motion graphics will challenge the student to push the creative envelope of visual effects. Focus will be placed on creating seamless integration of effects with cinema footage.

Prerequisite: MMVP2560 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate advanced keying techniques to blend visual effects with footage

Demonstrate 3D camera tracking

Use expressions to control animations

Demonstrate polished animation techniques

Integrate models into VFX (visual effects) scenes

Demonstrate detailed color corrections

Show depth compositing using z-pass

Produce film style title sequences

Produce finished projects through collaboration as a team member

Critique the projects made during the course

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMVP 2575 - Interactive Mobile Design (3)**

This course will focus on the development of applications for mobile devices using HTML5. Students will develop the concepts, assets, and user interaction for their projects targeting mobile devices. Students will produce web apps and develop native apps using packaging technologies.

Prerequisite: MMVP2010 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Create artwork assets for multiple screen sizes and types

Develop user interfaces for mobile devices

Demonstrate responsive design techniques

Use mobile development frameworks

Design web applications for mobile devices

Utilize packagers to build native wrappers

Develop multi-touch and gesture applications  
 Demonstrate access to device APIs (application programming interfaces)  
 Demonstrate application deployment

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 2 lab: 1

### **MMVP 2580 - 2D Animation Rigging and Compositing (3)**

This course will focus on advanced full character rigging for use in 2D animation. Students will create full turn-around characters. Compositing with effects, templates, and camera animations will be taught to students.

Prerequisite: Basic computer skills and animation experience recommended for successful course completion. MMVP1580 or equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate organized rigging techniques

Incorporate deformers

Construct hierarchy chains using inverse kinematics

Utilize constraints to control movement

Create full turn-around character rigs

Demonstrate asset template creation and deployment

Incorporate effects into scenes

Create multiplane scenes

Demonstrate camera movements and shots

Evaluate project solutions through discussions and critiques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 2 Lab: 1

### **MMVP 2600 - Digital Post Production (4)**

In this advanced course students will build on existing non-linear editing skills. Final Cut Pro, and DVD Studio Pro software will be used to create digital special effects, titles, animation, and audio tracks. Students will learn how to integrate these elements into a finished video production.

Prerequisite: Recommended: MMVP1600 with a grade of "C" or better, qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200, or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify the various keystrokes used during non-linear editing
- Identify nonlinear editing systems software
- Demonstrate importing video footage and/or still photo techniques
- Demonstrate video clip placement on the timeline sequencer
- Record the final output of the Final Cut Pro to videotape
- Create tutorial video sample for Final Cut Pro software
- Create 15-picture video sample from Final Cut Pro
- Create video sample from footage provided on the Final Cut Pro
- Demonstrate the digitizing of video for the Final Cut Pro
- Demonstrate file management on the Final Cut Pro.
- Demonstrate the use of still images in the non-linear digital environment
- Demonstrate the use of special effects
- Demonstrate the use of titling
- Demonstrate the use of transitions in non-linear editing
- Demonstrate the lighting techniques used in various environments
- Create a DVD using DVD Studio Pro

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 3 lab: 1

### **MMVP 2605 - Corporate Video Production (4)**

In this course students will be introduced to the various ways video is used to increase communications and solve training problems in business and industry. Students will complete a training tape and a marketing/promotional video.

Prerequisite: MMVP1511 with a grade of "C" or better and MMVP1600 with a grade of "C" or better or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify the basic video concepts and terms
- Compare the video producer requirements in the workplace
- Identify equipment to be used in a remote location

Set up equipment in a remote location  
 Determine and use video production budgeting procedures  
 Evaluate different treatment writing styles  
 Create scripts for a corporate training video  
 Evaluate different methods of visualization for a corporate training video  
 Create a production book  
 Identify the target audience for various video production efforts  
 Write a three-minute sales script  
 Produce and direct a three-minute sales promotion video

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

### **MMVP 2615 - DaVinci Resolve (3)**

DaVinci Resolve is the most advanced editing, visual effects color correction, and audio post production solution for feature films, television shows, and commercials. This course covers the basics of editing, color correction and audio. The course is hands-on practice to introduce students to DaVinci Resolve software, a revolutionary 64-bit color correction application.

Prerequisite: Basic computer skills and understanding of Internet strongly recommended for successful course completion. MMVP1600 or equivalent

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify and demonstrate the various keystrokes used during non-linear editing.

Demonstrate video digitizing and transcoding techniques.

Demonstrate importing video footage and/or still photo techniques

Demonstrate video clip placement on the timeline sequencer

Demonstrate the cutting techniques for a video clip on the timeline

Record the final output of the DaVinci Resolve timeline to digital file

Create a final 5-minute editing video sample with DaVinci Resolve

Evaluate different editing styles and techniques

Demonstrate the digitizing of video for DaVinci Resolve

Demonstrate basic color correction

Demonstrate creative color grading for final output

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 2 Lab: 1

### **MMVP 2630 - Advanced Production Lab (1 - 8)**

This course is offered as Pass/No Credit (P/NC). In this course the student will concentrate on advanced research or production methods that are not included in other courses. A training agreement must be signed by the student and instructor at the beginning of the semester.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Determine client needs

Prepare proposal

Determine production values

Prepare production schedule

Assemble production team

Prepare rough storyboard

Determine all production elements

Determine image file formats

Select software package(s)

Review storyboard

Determine visual style

Review artwork with client

Determine digital image needs

Create digital images

Meet production deadlines

Determine video requirements

Review script and storyboard

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lab: 1-8

### **MMVP 2641 - Portfolio Production (3)**

This course will provide an opportunity for the student to assemble and prepare their portfolio. Students will produce other documents necessary to seek employment. The student will research employment in their industry.

Prerequisite: Project related beginning courses and instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Analyze portfolio strategies
- Develop portfolio focus
- Develop creative strategy for portfolio
- Revise project assets for portfolio
- Demonstrate proficiency in program of study
- Demonstrate industry best practices in portfolio
- Write cover letter and resume
- Investigate current industry job opportunities
- Demonstrate legal and ethical principles
- Show portfolio

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **MMVP 2650 - Interactive Design Video Production Internship (1 - 8)**

This will be a cooperative training program between Hennepin Technical College and a business which allows the student to apply competencies learned in the program to an employment-like work experience.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrates initiative
- Exhibits enthusiasm
- Displays judgment
- Demonstrates courtesy
- Displays punctuality
- Demonstrates dependability
- Organizes work area
- Follows company policies
- Maintain successful working relationships
- Display technical competence
- Demonstrate safety
- Demonstrate cooperation
- Communicate successfully with co-workers

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

Brooklyn Park Campus: 952-995-1300

**Credit Details:** SOE: 1-8

# MUBE - Music Business and Entrepreneurship

## **MUBE 1000 - Introduction to Music Business and Entrepreneurship (3)**

This course provides a survey of entrepreneurial and business concepts related to the music industry. Topics will include principles of marketing, publishing, licensing, distribution, promotion, and music sales.

**Prerequisite:** None

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Explore career paths that exist within the music industry

Analyze introductory music business principles

Identify non-traditional career opportunities and various ways to generate income

Analyze artist contracts

Analyze music licensing, distribution, and publishing

Analyze creative royalties and copyright law

Demonstrate the operations between record labels, independent artists, and managers

Analyze the ever-changing dynamics within the music industry

Create proposals for various artistic projects

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

**Credit Details:** Lecture: 3

**MUBE 1005 - Musicianship I (3)**

This course provides students with the foundations of applied music theory and performance. The course introduces students to music terminology, principles of music theory, notation, aural training, and introductory keyboard skills.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Transcribe music through aural practice
- Notate intervals and interval qualities
- Define the concept of key
- Notate key signatures
- Notate common scales, chords, and chord qualities
- Demonstrate competence in primary keyboard skills
- Read and notate musical melodic and harmonic passages
- Create short musical compositions appropriate to course concepts

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

**MUBE 1010 - Technology Tools for the Music Entrepreneur (4)**

This course surveys technologies required to create and produce engaging content in the music industry. Topics introduce students to tools used in music production, music information retrieval, musical interfaces, and mobile music production.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate basic technological proficiencies and computer skills
- Describe the history of music technologies
- Develop aesthetic values in music production
- Develop skills in home studio production
- Apply media tools to solve creative problems
- Research industry standard technologies used in the music production
- Research industry standard technologies used in content creation
- Apply theory, practice, and techniques within the multi-media arts
- Create projects utilizing an assortment of media tools

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course

Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 4

### **MUBE 2000 - Marketing and Monetization (3)**

This course provides an in-depth study of music marketing and revenue streams for artists, musicians, and labels. Topics include exploration of the most current and effective marketing strategies, tools, and methods used to monetize music.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify traditional and non-traditional pricing and marketing strategies

Research multiple modes and approaches to music monetization

Research the dynamics of the artist-fan relationship

Develop fluency with modern marketing technologies

Create a creative brief

Create a fan-friendly website

Develop a direct-to-fan marketing campaign for a music release

Apply analytical tools to measure campaign success

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

### **MUBE 2005 - Musicianship II (3)**

This course provides students with an intermediate knowledge of applied music theory and performance including notation, aural training, and introductory keyboard skills. Students also explore several industry standard notation software titles.

Prerequisite: MUBE1005 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Transcribe music through aural practice

Develop critical and analytical listening skills  
 Develop proper notation skills using industry standard notation software  
 Identify major scale modes, harmonic minor, and melodic minor scales  
 Notate major scale modes, harmonic minor, and melodic minor scales  
 Identify intervals and interval quality above an octave  
 Notate intervals and interval quality above an octave  
 Identify 7th chord qualities  
 Notate 7th chord qualities  
 Define formal/structural concepts specific to common-practice methods  
 Develop skills necessary to communicate about music with professional musicians and lay-listeners  
 Create short musical compositions appropriate to course concepts

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

### **MUBE 2010 - Creation and Copyright (3)**

This course provides an in-depth study of copyright and trademark related to producing content in the music industry. This project-based course provides students an environment to develop their creativity in project planning and execution. Through assigned projects, students create content to promote a business idea or artist.

Prerequisite: Recommended: MUBE2000 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify the history and applicability of copyright to creative work
- Analyze digital media and copyright suits utilizing the case-study model
- Explain the roles and rights of intellectual property in the creative economy
- Demonstrate appropriate application of different licensing attributions and doctrines
- Explain the process to file and register for trademark and copyright
- Demonstrate distribution of music to streaming services and other media outlets
- Develop a creative-content scenario from concept to delivery

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: Lecture: 3

### **MUBE 2020 - Music Business and Entrepreneurship: Capstone (4)**

This course provides an opportunity for students to design a significant project in a collaborative environment. The course culminates in a formal oral presentation of their project.

Prerequisite: Recommended: MUBE2010 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate the techniques of detailed decision-making

Demonstrate critical/lateral thought

Demonstrate entrepreneurial dynamics

Demonstrate collaborative project-management techniques

Synthesize knowledge gained to develop an original project

Communicate ways the Capstone project contributes to a sense of closure

Communicate ways the Capstone project contributes to purpose, and agency

Demonstrate preparedness for future pursuits in the music industry

Create a culminating experience project

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 4

## **MUSC - Music**

### **MUSC 1010 - Influence of Pop/Rock Music (3)**

This course explores the influence of popular music from its inception to the present: its musical processes and styles; and how recording technology has had an impact on accompanying social, political and cultural identities.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate regular music participation and support through the experience of a listener and audience member

Articulate a critical perspective on the historical, socio-cultural, political and economic forces that have influenced the composition, performance, production, and consumption of popular music in the United States

Describe the musical characteristics of American popular music styles  
 Explain the influences of global cultures on the development of popular music in the United States  
 Demonstrate the basic vocabulary used to describe musical elements, such as timbre, rhythm, harmony, melody, and structure, in written and oral communication  
 Analyze the diversity represented in American and global popular music  
 Integrate primary and secondary sources to support an individual perspective on the role of popular music in American society

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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 Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 6 & 7.

**MUSC 1015 - World Music (3)**

The purpose of this course is to gain a broader understanding of the music of the world's cultures through examining a survey of traditional musical cultures from around the globe. This course will concentrate on the development and historical background of the music, the introduction of typical musical instruments and most well-known musicians of each region, and the relationship between music and the society. The focus is on learning how musicians around the world understand their own music, and on exposure, appreciation and understanding of basic musical and cultural elements from the selected regions.

Prerequisite: Recommended: Qualifying score on reading assessment test OR ENGL0921

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Develop habits of music participation and support through the experience of a listener and audience member
- Define the cultural elements of world music in relationship to global societies within historical and contemporary dimensions
- Demonstrate cultural differences in the music of selected cultures of the world
- Describe how music of world societies represents diversity of population and affects our culture and milieu
- Discuss how the awareness of music in world cultures promote global citizenship
- Analyze observations from a live performance
- Describe the basic dynamics of a particular music genre/style
- Examine the history and development of a music genre/style

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

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Credit Details: Lecture: 3

MnTC Goal Areas: 6 & 8.

### **MUSC 1020 - Class Guitar (3)**

The purpose of this course is to develop a foundational understanding of beginning guitar techniques as well as an understanding of music notation, improvisation, and functional music theory. This course provides an opportunity for students to explore their musical aspirations through various styles of popular music including Folk, Rock, and Blues guitar. No previous musical experience is necessary. Students are required to provide their own functioning guitar.

Prerequisite: Recommended: Qualifying score on reading assessment test OR ENGL0921

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate tuning the guitar

Perform melodies

Perform chord progressions

Demonstrate the fundamentals of musical notation

Write a descriptive critique of a professional musical performance

Perform accompaniments to selected pieces in a variety of popular music styles

Create an original composition

Perform an original composition

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: Lecture: 3

MnTC Goal Areas: 6.

## **NAHA - Nursing Assistant/Home Health Aide**

### **NAHA 0110 - Nursing Assistant Written Test (0)**

This is an examination process which is necessary for registration of nurses aides employed in long-term care facilities. The examination consists of two parts; a written evaluation and a skills evaluation. This evaluation is designed to objectively measure nurses aide candidate's knowledge and skills and to ensure minimal entry level competency in the field. Individuals successfully completing this examination are placed on the Minnesota Nursing Assistant Registry.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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### **NAHA 0115 - Nursing Assistant Written-Retake (0)**

This is a retake examination process which is necessary for registration of nurses aides employed in long-term care facilities. The retake examination consists of two parts; a written evaluation and a skills evaluation. This evaluation is designed to objectively measure nurses aide candidate's knowledge and skills and to ensure minimal entry level competency in the field. Individuals successfully completing this examination are placed on the Minnesota Nursing Assistant Registry.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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### **NAHA 0120 - Nursing Assistant Skills Test (0)**

This is an examination process which is necessary for registration of nurses aides employed in long-term care facilities. The examination consists of two parts; a written evaluation and a skills evaluation. This evaluation is designed to objectively measure nurses aide candidate's knowledge and skills and to ensure minimal entry level competency in the field. Individuals successfully completing this examination are placed on the Minnesota Nursing Assistant Registry.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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### **NAHA 0125 - Nursing Assistant Skills-Retake (0)**

This is a retake examination process which is necessary for registration of nurses aides employed in long-term care facilities. The retake examination consists of two parts; a written evaluation and a skills evaluation. This evaluation is designed to objectively measure nurses aide candidate's knowledge and skills and to ensure minimal entry level competency in the field. Individuals successfully completing this examination are placed on the Minnesota Nursing Assistant Registry.

**Prerequisite:** None

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course.

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

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### **NAHA 0130 - Home Health Aide Written Test (0)**

This examination focuses on the role of nursing assistants in home care. Upon successfully completing this examination the individual is placed in the Minnesota Nursing Assistant/Home Health Aide Registry.

**Prerequisite:** None

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course.

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or

impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

### **NAHA 0140 - Home Health Aide Written-Retake (0)**

This retake examination focuses on the role of nursing assistants in home care. Upon successfully completing this examination the individual is placed in the Minnesota Nursing Assistant/Home Health Aide Registry.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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### **NAHA 1002 - Nursing Assistant/Home Health Aide (5)**

This state approved course introduces concepts of basic human needs, health and/or illness continuum and basic personal care skills. It includes theory with skills demonstrated in a supervised laboratory setting and 24 hours of clinical care of selected adult elders in a long term care (LTC) setting. The role of the nursing assistant in a LTC facility as well as working with various populations is discussed. In addition, the course provides an overview of the nursing assistant's role in home care. It identifies issues related to working in homes, including adjustments to delivering personal care, food and nutrition, and homemaking responsibilities. Upon successful completion of this course, the student is eligible to take the MN Nursing Assistant Competency Evaluation for NA/HHA. Individuals successfully completing this examination are placed on the MN Nursing Assistant/Home Health Aide Registry.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901. Ability to lift and move 25-50 pounds. 16 years of age

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify general characteristics of aging and the effects on body systems

Differentiate between verbal and non-verbal communication techniques  
Describe effective communication with population served, supervisor and co-workers  
Identify situations requiring emergency action  
Apply principles of infection control  
Demonstrate personal care for select population  
Demonstrate safe moving and transferring of select population  
Identify factors which affect nutritional needs of select population  
Identify factors that interfere with elimination needs of select population  
Define dementia and strategies to effectively work with select population having this diagnosis

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3 lab: 2

#### **NAHA 1010 - Nursing Assistant (4)**

This course introduces students to some of the most important concepts used in caring for our elderly population in a variety of health care settings. The course includes the theory for these concepts, as well as the training to perform the necessary care giving skills. The skills are demonstrated in a supervised laboratory setting. The course includes an additional 16 hours of clinical experience. Upon successful completion of this course the student is eligible to take the Minnesota Competency Evaluation for Nursing Assistants.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Define personal qualifications of being a Nursing Assistant  
Compare person centered vs. task oriented delivery of care  
Identify general characteristics of the aging process  
Identify cultural variations in communication  
Describe techniques to improve communication with elders suffering from cognitive impairments  
Describe principles of infection control and standard precautions  
Demonstrate personal care skills  
Describe the physical and psychological effects of immobility on the aging population  
Differentiate between rehabilitation and restorative therapy  
Identify the signs and symptoms of fluid imbalance  
Define factors that affect the nutritional needs of the elderly  
Define factors that affect the elimination needs of the elderly  
Define the stages and characteristics of dementia  
Compare positive and negative coping strategies when managing stress  
Explain the 5 stages of grieving process  
Describe the Nursing Assistant's role in the providing end of life care  
Identify various cultural beliefs related to death and dying

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3 Lab: 1

### **NAHA 1020 - Trained Medication Aide (2)**

This state-approved program provides an overview of the requirements concerning medications and their administration. Other topics include legal criteria, medical abbreviations, measurements, use of the Physician's Desk Reference (PDR), and overview of body systems and drug classifications. Administration of medications via oral, eye, ear, rectal, and topical routes will also be covered. Attendance of all classes is mandatory; any absence will result in repeating the course. Students must attain 90% on all examinations to continue in the class. Students who do not attain 90% in the retake exam may continue to attend the lecture portion of the class but may not test and will receive a failing grade.

Prerequisite: Qualifying score on reading assessment test or ENGL0901. Proof of completing a 75 hour Nursing Assistant course. Proof required at the first class

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe principles of medication administration

Define forms of medications

Match correlating medical abbreviations with medical terminology

Utilize drug reference manual

Name the basic anatomy and physiology of body systems

Identify medications to drug classifications

Demonstrate medication administration

Document medication

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 1 Lab: 1

# NURS - Practical Nursing

## **NURS 1015 - Nutrition Basics (1)**

This course provides information concerning the relationships between health, food and nutrients. The student will be able to identify the nutritional requirements for a healthy diet, analyze labels and create a healthy meal plan.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Analyze the basic nutrients needed for a healthy diet

Apply basic nutrition needed for a healthy diet

Illustrate the nutritional challenges faced when adapting to a new culture

Analyze food labels as it relates to a healthy diet

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 1

## **NURS 1375 - Fundamentals of Nursing (8)**

This course provides an introduction to the theoretical foundation for basic assessment and nursing skills. The student is given an opportunity to demonstrate these skills in the laboratory and clinical setting. An introduction to the nursing process provides the student with a framework for decision making, professional identity, and patient centered care. Evidence based practice, leadership skills, and informatics are introduced.

Prerequisite: Acceptance into the nursing program

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify therapeutic communication skills to provide culturally sensitive client care

Identify steps of the nursing process while providing care

Identify members of the health care team

Demonstrate basic nursing skills using techniques and measures that ensure client safety

Describe the safety principles in relation to pharmacology

Demonstrate the elements of documentation

Identify evidence based sources that support client care

Utilize information technology for accurate documentation

Identify professional boundaries and behaviors related to established codes of ethics, nurse practice acts, and legal/ethical frameworks

Define the major classifications of medications as a framework for medication administration

Describe the health and wellness continuum and the impact that lifestyle and risk factors have on one's health status

Identify strategies to improve personal performance

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 4.5 lab: 3.5

### **NURS 1380 - Medical Surgical Nursing I (8)**

This course focuses on care throughout the lifespan to include newborn to older adults with common medical/surgical health problems. Pathophysiology, nutrition, and pharmacology are applied to diseases within each concept.

Prerequisite: NURS1375

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Collaborate with licensed health care providers to provide client-centered care

Demonstrate culturally and developmentally appropriate therapeutic communication techniques

Perform focused assessments from an established plan of care for the client with common medical/surgical health problems

Identify potential and actual client complications or changes to report to the appropriate health care provider

Discuss rationales for nursing judgments and prioritization of client care

Implement appropriate interventions within an established plan of care based on potential and actual client complications

Apply knowledge of pharmacology, pathophysiology, and nutrition to the care of clients with common health problems

Utilize evidence-based resources to find information related to the care of clients with common health and safety issues

Identify client health and safety needs

Demonstrate professional boundaries and personal integrity

Recognize ways to improve patient satisfaction

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 4 lab: 4

### **NURS 2375 - Medical Surgical Nursing II (8)**

This course focuses on care throughout the lifespan to include newborn to older adults with advanced medical/surgical health problems. Application of pathophysiology, nutrition, and pharmacology are applied to complex diseases within each concept.

Prerequisite: NURS1380

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate the nursing process when providing care

Communicate with the health care team to provide care for the client with advanced medical/surgical health problems

Complete focused assessments from an established plan of care for the client with advanced health problems

Prioritize potential/actual client complications or changes to report to the appropriate health care provider

Implement appropriate interventions within an established plan of care based on potential/actual client complications with advanced health problems

Apply knowledge of pharmacology, pathophysiology, and nutrition to the care of clients with advanced health problems

Apply safe nursing practice when performing skills

Maintain confidentiality of medical record and patient information

Demonstrate compliance with facility policies and procedures

Implement techniques to improve patient satisfaction

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Credit Details: lecture: 4.5 lab: 3.5

### **NURS 2380 - Transition to Practice (8)**

This course facilitates the transition of the student to the role of the Licensed Practical Nurse (LPN). Concepts related to teamwork, collaboration, and leadership are presented as well as career development options that enhance career mobility. Advanced discussion around decision making, professional identity/behavior and patient centered care, judgment/evidence based practice, and informatics/technology is introduced.

Prerequisite: NURS2375

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Design a plan for National Council Licensure Exam-Practical Nursing (NCLEX-PN) success

Interpret ethical, legal and regulatory frameworks within the scope of nursing practice

Participate in an emergency response as a member of the healthcare team

Apply principles of quality improvement in a nursing environment

Compare evidence-based resources related to the care of clients with advanced health and safety issues

Use nursing judgment to provide rationale for prioritization of care

Determine appropriate actions for conflict resolution

Investigate Minnesota State Board of Nursing requirements for acquiring and maintaining Practical Nursing (PN) licensure

Manage the care of individual clients through planning, organizing and assigning

Integrate community involvement and service with coursework  
 Select culturally and developmentally appropriate therapeutic communication techniques  
 Demonstrate safe nursing practice

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 4.5 lab: 3.5

## OFCR - Medical Office Careers

### OFCR 1301 - Medical Terminology (4)

This course covers the introduction to word analysis and construction with usage of word roots, prefixes and suffixes. Emphasis will be placed on definition, pronunciation, and spelling of roots, prefixes, suffixes and medical words. In addition, students gain an understanding of the organization and complexity of the body and become familiar with the location and function of major body organs. Pharmacological drugs associated with the body systems will also be studied.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course.:=

Define combining forms, suffixes and prefixes for specific body systems

Construct correct medical terms

Spell medical terms

Pronounce medical terms

Define medical terms for specific body systems

Spell common drugs associated with specific body systems

Define abbreviations associated with specific body systems

Name the major organs of each of the specific body systems

Describe basic physiology as it relates to each body system

Describe disease processes and symptoms that affect specific organs

Utilize reference materials

Manage time to meet deadlines

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 4

### **OFCR 1317 - Medical Office Procedures (4)**

This is an introductory course to medical office procedures and the administrative medical assisting profession. Topics covered will include medicolegal regulations, ethical responsibilities, telephone etiquette, customer service, appointment scheduling, medical records management and written communication. Students will utilize a fully online integrated practice management and electronic health record system.

Prerequisite: Qualifying score on math assessment test OR MATH0910 or MATH0920 and OFCR1301 and CPLT1005

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe medicolegal and HIPAA responsibilities in health care

Describe ethical responsibilities in health care

Perform basic medical receptionist clerical functions

Communicate effectively over the telephone

Schedule patient medical appointments and procedures

Manage patient medical records

File records according to appropriate systems and conventions

Prepare written correspondence common to the medical practice setting

Process mail and telecommunications

Utilize a fully online integrated practice management and electronic health record system

Perform an Internet job search for a medical office support position

Create a resume and cover letter for a medical office support position

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 4

### **OFCR 1331 - Medical Document Processing (4)**

This course introduces the student to scribing of medical reports. Emphasis will be placed on the use of reference material, report formats, and proofreading. The student will create office notes, procedural notes, consultative and emergency service medical reports, history and physicals, operative notes, discharge summaries, and patient correspondence.

Prerequisite: CPLT1005 and OFCR1301

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Scribe medical documents by work type
- Scribe medical documents by medical specialty
- Improve keyboarding accuracy
- Use correct medical terminology
- Use correct medical abbreviations, symbols and lab values
- Demonstrate understanding of health information professional standards/issues
- Incorporate correct grammar, punctuation and proper English mechanics
- Demonstrate research skills using the Internet and reference books
- Proofread medical documents
- Edit medical documents

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 3 lab: 1

### **OFCR 1335 - Medical Coding and Reimbursement Fundamentals (4)**

This course includes an overview of ICD10 diagnostic coding as well as CPT and HCPCS procedural coding. Principles of complete and accurate coding for both statistical reporting and insurance billing will be covered. Exercises and case studies will be used to demonstrate requirements for accurate coding and claims processing.

Prerequisite: OFCR1301

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate use of coding publications: ICD10, CPT, and HCPCS
- Utilize reference materials effectively
- Assign ICD10 diagnostic codes
- Assign HCPCS national codes
- Assign CPT procedure/service codes
- Demonstrate code sequencing in multiple diagnoses
- Link diagnostic codes with procedure/service codes
- Describe basic billing functions
- Identify insurance reimbursement methodologies
- Outline specific payer guidelines
- Complete insurance claims
- Explain the Electronic Data Interchange (EDI) process

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 4

#### **OFCR 1341 - Medical Office Management (4)**

This course is an extension of the Medical Office Procedures course, focusing on medical office managerial responsibilities. It includes the application of fees, credit, accounting, banking and finance management principles. Content also includes a medical office staff orientation presentation incorporating policy and procedure development.

Prerequisite: ACCT1000 or ACCT1102 and OFCR1317 and OFCR1335

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify medical office management responsibilities

Use the Internet to research health care issues

Create orientation and training materials for medical reception

Apply medical practice financial management principles

Apply accounting principles

Apply banking principles

Apply fees, credit, and collection principles

Identify safety/health standards and healthcare regulatory bodies

Demonstrate time management skills

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 4

#### **OFCR 1345 - U.S. Healthcare System (4)**

This course introduces the student to the complex healthcare system of the United States. An historical perspective will be presented with exploration of how healthcare in the U.S. has changed over the years. The present state of healthcare will be the focus and topics covered will be: Operations of a healthcare organization; government involvement in U.S. healthcare; the difference between inpatient, outpatient, and long-term care; healthcare careers; public health; healthcare payors, financing, and managed care; technology in healthcare; healthcare law and ethics; and mental health issues in America. Students will analyze how all of these areas affect the management of a healthcare organization.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the history of healthcare in the U.S.

Identify characteristics of the current U.S. healthcare system

Explain current healthcare initiatives and related website resources

Describe the government role and public health role in healthcare

Differentiate the common healthcare settings and their characteristics: Outpatient, Inpatient, Long Term Care

Explain the different ways healthcare is financed by consumers in the U.S.

Describe the impact that technology has made on healthcare

Identify major healthcare laws and regulations

Discuss the concept of ethics and its application to healthcare organizations

Identify mental health issues related to the U.S. healthcare environment and society

Explain the characteristics of the wide variety of healthcare careers

Relate the topics of access to healthcare, health disparities, and social determinants of health to current healthcare issues in the U.S.

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 4

## PHIL - Philosophy

### PHIL 1000 - Introduction to Logic (3)

Logic is the study of how or why something makes sense. This course focuses on the rules and skills of formal and symbolic logic and its practical applications. The rules of logic are used everywhere from computer and machine programming to making valid and convincing arguments.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Define key terms within logic

Symbolize natural language

Distinguish between validity and soundness

Construct truth tables

Construct Venn diagrams

Evaluate arguments for validity

Identify formal fallacies

Complete a logical proof

Apply logical principles to real world problems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab

credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

MnTC Goal Areas: 4.

### **PHIL 1100 - Critical Thinking for College Success (3)**

This course is an introduction to the study of reasoning and its applications to making good decisions and avoiding mental errors in the college environment. Students will investigate the logical concept of an 'argument' and focus on how supporting beliefs with evidence and sound reasoning leads to better positions, decisions, behaviors, and outcomes in college and in life.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Define personal success

Explain intellectual virtues advantageous to the college environment

Explain fallacious reasoning and the tendency to make mental errors

Evaluate inductive arguments for generalizations

Evaluate inductive arguments for analogies

Evaluate inductive arguments for causation

Evaluate inductive arguments from authority

Use deductive reasoning to troubleshoot problems

Analyze personal financial behaviors

Analyze personal time management

Analyze relationships with persons of influence

Apply problem-solving methodologies

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

MnTC Goal Areas: 2.

### **PHIL 1200 - Ethics (3)**

This course is an introduction to ethics and moral philosophy, the branch of philosophy which concerns conduct and how we ought to live. Students explore the nature of ethics, important challenges to ethics as traditionally construed by philosophers, and several ethical theories prominent in the history of philosophy. Throughout the inquiry, students will have occasion to discuss

various contemporary moral problems and see how ethical theories have addressed them.

Prerequisite: Qualifying score on writing assessment test OR ENGL0960. Basic computer literacy skills required

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Evaluate Kantianism
- Evaluate utilitarianism
- Evaluate virtue ethics
- Explain moral terms and concepts
- Evaluate challenges to universality in ethics
- Conduct respectful ethical discussions
- Apply moral theories to contemporary moral problems
- Brainstorm multiple options for resolving ethical dilemmas
- Map conflicting moral values
- Defend moral arguments

Text and References: A list of textbooks required for this course is available at the <https://www.hennepintech.edu/finance-operations/campus-store.html> bookstore.

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 6 & 9.

#### **PHIL 1400 - Medical Ethics (4)**

This course introduces students to some of the fundamental issues in medical ethics and the major branches of moral theory and methodology that bear upon them. Given that we all participate in the medical system as a patient, relative of a patient, or as a practitioner, this class is open and relevant to all students, regardless of major. Using mastery of moral theories and concepts, students will analyze specific issues in medical ethics and learn the philosophical skills needed to develop and defend moral arguments. Students will analyze particular cases in medical ethics and apply the moral concepts to their own lives and situations. Inquiry will emphasize the evaluation and application of various methodological approaches to ethical problems arising in medical situations.

Prerequisite: Qualifying score on writing assessment test OR ENGL0960. Basic computer literacy skills required

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Apply major moral theories to moral dilemmas in medicine
- Explain moral terms and concepts
- Analyze cases in medical ethics
- Defend moral arguments
- Conduct respectful ethical discussions
- Identify the major issues related to informed consent, issues of patient privacy, and confidentiality
- Identify key issues in research ethics
- Evaluate the moral dimensions of emerging issues in technology and medicine
- Evaluate issues raised by conflicts of interest
- Evaluate issues related to refusals of treatment

Evaluate ethical issues raised in treating children and incompetent adults

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 4

MnTC Goal Areas: 6 & 9.

### **PHIL 1500 - World Religions (3)**

This course is an introduction to the major world religious traditions. Traditions to be studied may include Ancient Greek and Egyptian religions, Native American religions, Hinduism, Buddhism, Taoism, Confucianism, Judaism, Christianity, and Islam. The course will focus on the historical formation of religions and those who founded them. The course will also examine their scriptures, practices and beliefs and the ways each tradition answers fundamental religious questions concerning the nature of reality, purpose in life, ethics and death.

Prerequisite: Qualifying score on writing assessment test OR ENGL0960. Basic computer literacy skills required

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Conduct respectful religious discussions

Explain religious terms and concepts

Explain historical origins of religion

Identify founders and beliefs of major world religions

Evaluate major world religions' approaches and answers to fundamental questions of the human condition

Apply religious world views to contemporary social, ethical, and political issues

Appreciate historical and contemporary influence of world religions on human culture

Compare major world religions' practices and scriptures

Assess the philosophical underpinnings of religious world views

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

MnTC Goal Areas: 6 & 8.

### **PHIL 1600 - Environmental Ethics (3)**

This course is an examination of philosophical approaches to the questions "Do we have moral obligations to nature and the environment? If so, what are they and how can they be justified?" Using a variety of philosophical perspectives we will investigate environmental concerns such as conservation and preservation, the effects of population growth, theories of nature, animal rights, the effects of pollution, concerns about the use of natural resources, ecofeminism, deep ecology, and land ethics.

Prerequisite: Qualifying score on writing assessment test OR ENGL0960. Basic computer literacy skills required

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

Learning Outcomes:

The following outcomes will be addressed in the course:

Conduct respectful ethical discussions

Apply moral theories to contemporary environmental problems

Identify key historical and contemporary issues in environmental ethics

Analyze cases in environmental ethics

Explain moral terms and concepts

Defend moral arguments

Assess philosophical theories of nature and the environment

Evaluate environmental problems and solutions

Appreciate interrelationships between natural ecosystems and human cultures and institutions

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

MnTC Goal Areas: 9 & 10.

## PHYS - Physics

### PHYS 1005 - Introductory Physics I (3)

Physics is the study of matter, energy, and the interaction between them. Fundamental principles of physics provide the basis upon which much of modern technology operates. In this course students will investigate the fundamental principles of physics with an emphasis on conceptual understanding. Students will gain knowledge of natural processes and their applications. Topics include the structure of matter, mechanics, heat, light, electricity, and magnetism.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply fundamental physics principles to a wide variety of applications in modern technology

Draw conclusions in written lab reports based on data gathered in experiments

Formulate various hypotheses to explain the observed motion of objects in the lab and in everyday life

Predict the results of motion experiments based on known laws of physics

Solve motion problems

Formulate various hypotheses to explain observations of forces on objects in the lab and in everyday life  
Predict the results of force experiments based on Newton's force laws  
Solve force problems

Investigate common misconceptions about the laws of motion and Newton's force laws

Analyze physics problems using the principle of the conservation of energy

Analyze the behavior of static and flowing fluids using force and energy concepts

Apply the concepts of heat, temperature, and thermodynamics to applications in technology

Solve problems in electricity and magnetism using Coulomb's, Kirchoff's, Ohm's, Lenz's, and Joule's Laws

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 2 Lab: 1

MnTC Goal Areas: 2 & 3.

### **PHYS 1010 - Introductory Physics II (3)**

This course is the second of a two-semester sequence covering the fundamental principles of physics and their applications in technology. While this is a problem-solving course, emphasis is placed on conceptual understanding rather than rigorous quantitative analysis. This course is designed for non-science majors. The course will include lab-like components. Topics include waves, energy, atomic physics, nuclear physics, and Einstein's theories of relativity.

Prerequisite: PHYS1005

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply fundamental physics principles to applications in modern technology

Solve problems using the special theory of relativity

Describe the effect of mass on spacetime

Contrast the differences between Newton's and Einstein's theories of gravity

Solve problems involving waves

Draw conclusions based on data gathered in wave interference simulations

Analyze simulation results, including graphical analysis and analysis of error and uncertainty

Formulate hypotheses to explain differences in wave propagation in different mediums

Construct an argument, based on experimental evidence, that matter and light are waves

Construct an argument, based on experimental evidence, that matter and light are particles

Solve problems regarding the efficiency of various energy sources

Compare and contrast advantages and disadvantages of using fossil fuels, renewable energy resources, and nuclear energy, including consideration of the social and environmental impacts

Explain how a nuclear chain reaction works

Discuss misconceptions about the laws of quantum mechanics

Solve problems involving the uncertainty principle

Describe the difference between different models of the atom

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course

Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: Lecture: 3

MnTC Goal Areas: 2 & 3.

### **PHYS 2005 - College Physics I (4)**

College Physics I is the first semester course in which the applications, problems, and experiments are selected to illustrate fundamental principles of physics, and demonstrate the relevance of physics to other areas of interest, such as the health science, and engineering technology professions. This first semester of the two-semester sequence is organized around the fundamental principles of forces and interactions, conservation of momentum and conservation of energy. Topics covered include force and motion with applications of Newton's Laws of Motion, gravitational force, angular momentum, torque and equilibrium, work, energy, static and dynamic fluids, and thermal physics. To facilitate learning how to solve problems, cooperative learning methods will be used in this section.

Prerequisite: Qualifying score on math assessment test OR MATH0980 with a grade of "C "or better

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply the fundamental laws and concepts of classical physics

Use the terminology of physics correctly

Execute physics lab experiments

Write physics laboratory reports

Apply physics principles to engineering disciplines

Use scientific notation

Use vector principles to solve problems

Solve motion problems based on the kinematic equations

Apply Newton's Second Law

Solve physics problems in friction

Apply the principles of projectiles motion

Solve problems using Newton's Universal Law of Gravitation

Solve static equilibrium problems

Solve problems by employing the laws of momentum

Solve problems involving work done by forces

Apply the principles of fluids to technology

Solve problems in thermodynamics

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 1

MnTC Goal Areas: 3.

### **PHYS 2010 - College Physics II (4)**

College Physics II is a second semester course in which the applications, problems, and experiments are selected to illustrate fundamental principles of physics, and demonstrate the relevance of physics to other areas of interest, such as health-related fields and engineering technology. This course focuses on wave phenomena including sound, electricity and magnetism, geometrical optics, and nuclear physics. Examples of applications will be drawn from areas such as medical imaging, human auditory system, human vision, electrical safety, and nuclear medicine. Everyday technologies and phenomena such as musical acoustics, magnetic and optical recording, home wiring, and power generation will be included.

Prerequisite: Qualifying score on math assessment test OR MATH0980 with a grade of "C" or better and PHYS2005 with a grade of C or better

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Solve realistic physics problems related to relevant technology

Use the terminology of physics correctly

Conduct physics experiments in laboratory and field environments

Write comprehensive laboratory reports

Demonstrate an understanding of the importance of physics to communication, electronics, and optical technology

Solve problems involving sound

Calculate the effects of electrostatic force

Solve problems on electric potential

Solve problems in electrical capacitance

Solve problems in DC circuits

Calculate the quantifiable effects of electromagnetism

Solve problems in AC circuits

Solve problems of electromagnetic waves

Apply the physical principles of optics to technology

Apply the principles of nuclear physics to technology

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 1

MnTC Goal Areas: 3.

## **PLBG - Plumbing Pre-Apprenticeship**

### **PLBG 1000 - Iron and Steel Pipe Procedures (2)**

Students will study cast iron and steel piping, which involves the joining of cast iron and steel for drain, waste and vent, compressed air and gas piping systems. Students will become familiar with the different types of cast iron and steel pipe and fittings. Safe methods of handling and installing piping in accordance with general industry accepted standards will be

emphasized.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Apply proper safety techniques and procedures
- Operate hand and power cast iron and steel cutting and threading tools
- Identify different types of cast iron pipe and fittings
- Join cast iron pipe and fittings using industry standard methods and tools of assembly
- Identify different types and sizes of steel pipe and fittings
- Join steel pipe and fittings using industry standard methods and tools of assembly
- Perform hanger installation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 1 lab: 1

### **PLBG 1005 - Introduction to Plumbing and Safety (2)**

Students will study the history of plumbing from a global perspective and discuss current technology, industries, and associations that make up the present day plumbing profession. Students will also study safety on the job site at a level equivalent to a 10 hour OSHA card.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Discuss the history of the plumbing profession
- Explain the stages of progress in the plumbing profession
- List the responsibilities of a person working in the plumbing industry
- Articulate proper safety techniques and procedures
- Determine job site hazardous work specific to plumbers
- Demonstrate the use and care of appropriate personal protective equipment

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 1 lab: 1

### **PLBG 1011 - Blueprint Reading and Estimating I (3)**

Students will study the different types of plumbing drawings they will encounter on the job including isometric, oblique, orthographic and schematic. Students will also complete an estimate of a residential plumbing system.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Recognize the basic symbols used in plumbing drawings

Identify various plumbing drawings

Explain the types of drawings in a complete set of blueprints

Use an architect's scale to make drawings to scale

Describe how code requirements apply to certain drawings

Sketch a schematic drawing of a residential plumbing system

Sketch an isometric drawing of a residential plumbing system

Complete an estimate for a residential drain, waste and vent system

Complete an estimate for a residential potable water system

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Credit Details: lecture: 3 lab: 0

### **PLBG 1016 - Building Sewers and Drain Systems (3)**

This course covers practical experience in the installation of sewers, drain, waste and vent piping by laying out pipe, using a builder's level to establish grade and elevations of the piping, and in a safe and efficient manner. Students will learn the proper installation of plastic and cast iron sewers, drain, waste and vent pipe.

Prerequisite: PLBG1035

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate effective communication and interpersonal skills

Practice industry safety standards

Identify sewer, drain, waste, and vent drain construction

Install sewer, drain, waste and vent systems with plastic pipe  
 Repair sewer, drain, waste and vent systems with plastic pipe  
 Install sewer, drain, waste and vent systems with cast iron pipe  
 Repair sewer, drain, waste and vent systems with cast iron pipe  
 Identify storm drain systems  
 Demonstrate knowledge of plumbing systems test procedures  
 Demonstrate knowledge of plumbing inspection procedures  
 Perform plumbing system tests  
 Perform plumbing inspection procedures

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

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Credit Details: lecture: 2 lab: 1

### **PLBG 1020 - Copper Pipe Procedures (2)**

Students will study copper piping, which involves the joining of copper pipes for water supply, distribution and space heating. Students will become familiar with the different types of copper pipe, fittings and tubing. Copper water and heating distribution piping will be discussed and utilized. Safe methods of handling and installing piping in accordance with Minnesota State Plumbing Code and general industry accepted standards will be emphasized.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify different types and sizes of copper pipe and fittings

Operate hand & power copper cutting and cleaning tools

Join copper pipe and fittings using appropriate methods and tools of assembly

Identify and comprehend materials and methods of hanger installation

Demonstrate proper installation of copper potable water piping

Demonstrate proper installation of copper piping for hot water heating

Identify hydronic heating system copper components

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **PLBG 1025 - Plastic Pipe Procedures (2)**

Students will study plastic piping, which involves the joining of plastic pipes for plumbing systems. Students will become familiar with the different types of plastic pipe, fittings and tubing. Safe methods of handling and installing piping in accordance with general industry accepted standards will be emphasized.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Apply proper safety techniques and procedures
- Identify different types and sizes of plastic pipe and fittings
- Operate hand and power plastic cutting and cleaning tools
- Join plastic pipe and fittings using appropriate methods and tools of assembly
- Demonstrate proper installation of plastic potable water piping
- Demonstrate proper installation of plastic drain, waste and vent piping
- Perform hanger installation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **PLBG 1031 - Plumbing Calculations I (3)**

Students will study basic math concepts and plumbing terminology and how they apply to on the job situations. Students will use formulas and dimension tables common to the plumbing industry to calculate simple offsets. The use of tape measures to determine lengths of pipe layouts and fitting allowances will be covered. Students will also study the use of an architectural scale.

Prerequisite: Qualifying score on math assessment test OR MATH0800

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Recognize plumbing terminology for pipe layouts and fittings
- Identify the parts of a fitting in order to use common pipe measuring techniques
- Determine fitting allowances and thread makeup using fitting dimension tables
- Calculate allowances for pipe fittings
- Solve pipe length calculations
- Calculate end-to-end measurements using fitting allowances and thread makeup
- Identify the common terminology of a 45 degree pipe offset
- Calculate the travel measurement of a 45 degree pipe offset

Demonstrate the use of an architectural scale to measure drawn pipe lengths

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

### **PLBG 1035 - Minnesota State Plumbing Code I (3)**

Students will study the Minnesota State Plumbing Code including the laws, rules and regulations of plumbing installed in Minnesota. This also includes definitions, general plumbing principles, materials, fixtures and hangers and supports used in construction, repair and remodeling of buildings.

Prerequisite: Qualifying score on reading assessment test OR ENGL0901

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Apply plumbing definitions

Explain basic and general plumbing principles

Classify materials used for pipes, fittings, joints and connections

Categorize the materials from which traps and cleanouts are made from

Compare fixture materials for the proper use and installation

Label component parts of hangers

Identify the proper installation procedures for hangers and supports

Identify the component parts for potable water system

Identify the component parts for drainage, waste, and vent systems

Explain the qualifications and licensure procedures for licensed plumber

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

### **PLBG 1041 - Plumbing Systems Design (3)**

Students will study design of drain, waste and vent systems, potable water systems, hot water systems, water softening systems, storm water systems and backflow prevention systems.

Prerequisite: PLBG1035

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Design a drain, waste and vent system for a residential plumbing system
- Design a potable water system for a residential plumbing system
- Design a hot water system for a residential plumbing system
- Design a water softening system for a residential plumbing system
- Design a drain, waste and vent system for a commercial plumbing system
- Design a potable water system for a commercial plumbing system
- Design a hot water system for a commercial plumbing system
- Design a storm water system for a commercial plumbing system
- Design a backflow prevention system for a commercial plumbing system

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **PLBG 1045 - Minnesota State Plumbing Code II (3)**

Students will study the Minnesota State Plumbing Code including the laws, rules and regulations of plumbing installed in Minnesota. This also includes drain, waste and vent systems, potable water supply systems, indirect waste systems, and storm water systems used in construction, repair and remodeling of buildings.

Prerequisite: PLBG1035

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify the chapters of the plumbing code related to sizing plumbing systems
- Identify the parts of a drain, waste and vent system
- Utilize the code to size a drain, waste and vent system
- Identify the parts of a potable water system
- Utilize the code to size a potable water system
- Identify the parts of an indirect waste system
- Utilize the code to size an indirect waste system
- Identify the parts of a storm water system
- Determine the steps to size a storm water system

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or

impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3 Lab: 0

### **PLBG 1050 - Plumbing Systems Installation (3)**

Students will study the assembly, installation and repair of various types and styles of plumbing fixtures for residential and commercial buildings. Safe methods of handling, installing and repairing fixtures in accordance with Minnesota State Plumbing Code and general industry accepted standards will be emphasized.

Prerequisite: PLBG1035

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify different types of sinks and faucets

Identify different types of water closets and urinals

Identify different types of tubs and showers

Install water closets and urinals

Repair water closets and urinals

Install bathroom, kitchen, utility and commercial sinks

Repair bathroom, kitchen, utility and commercial sinks

Install bathtubs, whirlpools and showers

Repair bathtubs, whirlpools and showers

Install residential and commercial faucets

Repair residential and commercial faucets

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **PLBG 1055 - Plumbing Internship (2)**

Students will work in a plumbing related business applying knowledge, concepts and skills learned in the Plumbing Pre-Apprenticeship program.

Prerequisite: PLBG1035

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and

evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Apply proper safety techniques and procedures
- Perform quality plumbing installation and repairs
- Execute proper care and use of tools
- Adapt to changing employer needs

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Eden Prairie Campus: 952-995-1300

Credit Details: OJT: 2

**PLBG 1060 - Plumbing Calculations II (3)**

Students will study math concepts and plumbing terminology and how they apply to on the job situations. Students will use formulas and dimension tables common to the plumbing industry to calculate simple offsets, rolling offsets, multiple pipe offsets and offsets on parallel runs of pipe. The use of tape measures to determine lengths of pipe layouts and fitting allowances will be covered.

**Prerequisite:** PLBG1031

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Determine the run, travel, and rise of an offset
- Calculate 22 ½ and 45 degree offsets
- Calculate 22 ½ and 45 degree parallel offsets
- Calculate 45 degree offsets around obstructions
- Determine a true offset
- Calculate 22 ½ and 45 degree rolling offsets using constants
- Calculate travel on a rolling offset
- Solve for center to center measurements
- Solve for end to end measurements

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

**Special Accommodations:**

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Eden Prairie Campus – 952-995-1544

**Campus:**

Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3 lab: 0

### **PLBG 1065 - Blueprint Reading and Estimating II (3)**

Students will study and interpret civil, architectural, structural, mechanical, electrical and plumbing drawings for a commercial project. Emphasis will be placed on locating plumbing entry points and how to establish piping routes and fixture locations. Students will also complete an estimate of a commercial plumbing system.

Prerequisite: PLBG1011

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Interpret information from given site plans
- Locate plumbing entry points, walls, and chases
- Establish piping routes in the building
- Determine plumbing fixture locations using provided plans
- Describe the need for coordination drawings and shop drawings
- Sketch a layout for the plumbing systems and fixture rough-ins
- Sketch an isometric drawing of a commercial plumbing system
- Complete an estimate for a commercial drain, waste, and vent system
- Complete an estimate for a commercial potable water system

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this syllabus for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3 Lab: 0

### **PLBG 1070 - Plumbing Service and Repair (3)**

Students will study the service and repair of faucets, plumbing fixtures, water heaters, potable water systems and drain, waste and vent systems. Safe methods of service and repair in accordance with general industry accepted standards will be emphasized.

Prerequisite: PLBG1035

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Apply proper safety techniques and procedures
- Explain service and repair of faucets
- Demonstrate service and repair of faucets

Explain service and repair of plumbing fixtures  
Demonstrate service and repair of plumbing fixtures  
Explain service and repair of water heaters  
Demonstrate service and repair of water heaters  
Explain service and repair of potable water systems  
Demonstrate service and repair of potable water systems  
Explain service and repair of drain, waste and vent systems  
Demonstrate service and repair of drain, waste and vent systems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 2 Lab: 1

## PLST - Plastics Engineering Technology

### PLST 1008 - Fundamentals of Plastics/Chemistry/Ingredients (4)

This course introduces the student to the history of plastics, current status, and significant organizations within the industry. This course includes health and safety, reading and understanding Material Safety Data Sheets (MSDS). This course includes polymer chemistry, molecules and the special ingredients used to alter and enhance plastics.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Classify natural, modified, synthetic plastics  
Characterize commercial plastics  
Identify top ten plastics materials  
Explore recycling of plastics  
Examine disposal by incineration or degradation  
Identify organizations in plastics industry  
Identify plastics manufacturing hazards  
Determine sources of chemical hazards  
Analyze material safety data sheet (MSDS)  
Analyze basic chemistry  
Identify hydrocarbon molecules  
Determine types of macromolecules  
Characterize commercial plastics  
Analyze basic materials  
Figure out selection of material grades  
Use computerized databases for material selection  
Characterize molecular structures organization  
Differentiate inter-intra molecular forces

Predict molecular orientation  
 Identify thermosets  
 Identify additives  
 Classify reinforcements  
 Identify fillers

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

### **PLST 1041 - Introduction to Plastics Molding Processes (3)**

This course introduces students to the major molding processes used in converting plastics (polymers) into products. Startup, operation, and shutdown of the compression, injection, extrusion, extrusion blow, rotational and thermoforming molding processes will be covered.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Collect injection molding processing data

Collect compression molding processing data

Examine transfer molding process

Collect extrusion molding processing data

Collect extrusion blow molding processing data

Collect thermoforming processing data

Collect rotational molding processing data

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **PLST 1075 - Careers in Manufacturing (2)**

This course introduces students to the skills, technology, work environment, potential salary, and job placement for occupations in the fields of Machine Tool Technology, Mechatronics (Automation Robotics, Electronics, Fluid Power), Welding and Metal Fabrication, Plastics Engineering Technology, and Engineering CAD (Computer-Aided Design) Technology. This dynamic course includes industry-specific tours, as well as hands-on projects that familiarize students with field practices and shop safety. A technical aptitude assessment will be administered to assist students in determining if a career in manufacturing fits with their interests and abilities. The steps for enrolling in a program at HTC will be reviewed.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the characteristics of a career in Machine Tool Technology

Describe the characteristics of a career in Mechatronics

Describe the characteristics of a career in Welding and Metal Fabrication

Describe the characteristics of a career in Plastics Manufacturing Technology

Describe the characteristics of a career in Engineering CAD Technology

Apply shop safety principles

Determine the manufacturing career fields best suited to individual attributes and interests

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **PLST 1500 - Plastics Processes Lab (1 - 3)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that are beyond the current scope of existing courses. This course will cover the basics of Plastics Processes safety as well as the safe use of Injection or Extrusion molding equipment and its startup, operation and shutdown procedures. Dependent on the needs of each individual class, the specific areas of focus will change to meet the needs of the class.

Prerequisite: Instructors approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Utilize safe working techniques and practices for Injection molding processes

Utilize safe working techniques and practices for Extrusion molding processes

Operate Injection or Extrusion molding equipment

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit

Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lab: 1-3

### **PLST 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A `Specialized Lab Training Agreement` must be signed by the student and the instructor and submitted to the registrar at the time of registration.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Show enthusiasm

Demonstrate initiative

Use good judgement

Demonstrate courtesy

Exercise punctuality

Demonstrate dependability

Organize work area

Create successful working relationships

Demonstrate safety

Demonstrate prescribed procedures

Apply technical competence

Demonstrate cooperation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lab: 1-4

### **PLST 2007 - Properties and Tests of Selected Plastics (4)**

This course is designed to introduce the student to the fundamental methods of identifying plastics, laboratory testing of plastic materials, testing specifications and measurement systems used in the plastics industry. Hands on training in setup and

operation of many types of destructive and non-destructive instruments will be emphasized.

Prerequisite: PLST1008

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Classify materials identification methods
- Identify plastics testing agencies
- Practice mechanical properties testing
- Practice physical properties testing
- Practice thermal properties testing
- Practice environmental properties testing
- Practice optical properties testing
- Practice electrical properties testing
- Practice chemical properties testing
- Figure out processing characteristics tests

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

### **PLST 2011 - Extrusion Molding Processes I (3)**

This course is designed to introduce the student to extruder operation and control - Single Screw, this course teaches the fundamentals of single screw technology, including the knowledge needed to make informed decisions on the production floor. This course includes sheet extrusion technology used in conjunction with the nine lesson single screw extrusion program. Personnel in many functions from machine operators to process engineers will find the information in this course valuable to help make their work with the sheet extrusion process more efficient. This course utilizes an interactive training program using CD-ROM based (software). Set-up, operation and troubleshooting of several extrusion dies and down stream equipment will be emphasized. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Analyze single screw extruder: Parts and Operation
- Analyze structure of plastic raw materials
- Analyze characteristics of plastics for extrusion
- Utilize effects of pressure, temperature, and flow
- Analyze optimizing extruder controls - Parts 1 & 2
- Analyze single screw safety, pre-start, start-up, procedures
- Analyze single screw steady state operation, shutdown, and maintenance procedures
- Analyze single screw extruder troubleshooting
- Analyze sheet extrusion line: Parts and Operation

Analyze sheet extrusion dies  
 Analyze controlling plastics flow in the die  
 Analyze plastics behavior in the sheet extrusion line  
 Analyze sheet line pre-start, start-up, and steady state operating procedures  
 Analyze sheet line safety and shutdown procedures  
 Analyze troubleshooting the sheet extrusion line  
 Practice Output Test on extrusion process  
 Practice extrusion compounding  
 Practice extrusion sheet line processing

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

#### **PLST 2017 - Extrusion Molding Processes II (4)**

This course is a continuation of Extrusion Molding Processes I and introduces students to additional single screw extrusion. Content includes compounding with the twin screw extruder which covers basic operations to advanced troubleshooting. This course also includes the usage of plastics drying technology operation, control, and maintenance instruction. This course utilizes an interactive training program using CD-ROM based (software). Emphasis will be placed on startup, setup, operation, teardown, shutdown, and troubleshooting of several extrusion dies, down steam equipment, and plastics molding materials in an effort to produce a quality product.

Prerequisite: PLST2011

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify twin screw - Parts and Operation  
 Characterize structure and properties of plastics raw materials  
 Measure effect of pressure, temperature, and flow  
 Analyze plastics behavior in the compounding twin screw extruder  
 Determine optimization of twin screw extruder controls  
 Analyze twin screw safety, pre-start, and startup procedures  
 Figure out steady-state twin screw procedures  
 Analyze twin screw extruder troubleshooting  
 Analyze principles of drying  
 Practice dryer operation control and maintenance  
 Practice tubing free extrusion  
 Practice twin screw compounding extrusion  
 Practice profile extrusion  
 Practice blown film extrusion

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab

credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

### **PLST 2030 - Systematic Medical Device Protocol (3)**

This course introduces students to the concepts, principles and specific requirements regarding Food and Drug Administration (FDA) and Good Manufacturing Practices (GMP) that strictly regulate how organizations must adhere to a systematic approach to the production of medical devices.

Prerequisite: Instructors approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify quality system regulations

Identify with quality systems

Identify with design controls

Identify with process validation

Identify with equipment and calibration

Complete device master records

Determine document change control

Analyze product evaluations

Show awareness of quality system audits

Show awareness of factory inspections

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **PLST 2035 - Medical Device Polymer Processes (3)**

This course introduces students to the concepts, principles and specific requirements regarding Food and Drug Administration (FDA) and Good Manufacturing Practices (GMP) that strictly regulate how organizations are to produce medical devices as relates to the extrusion and injection molding processes.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate basics of micro-bore tooling
- Identify extrusion downstream equipment
- Use offline dimensional and functional metrology
- Identify medical grade polymers
- Determine proper material drying methods
- Demonstrate injection molding operations
- Demonstrate extrusion molding operations
- Demonstrate procedures used for injection molding processes
- Demonstrate procedures used for injection molding auxiliary equipment
- Demonstrate injection molding troubleshooting techniques
- Demonstrate extrusion molding troubleshooting techniques

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **PLST 2128 - Injection Molding Process I (4)**

This course is designed to introduce the student to Basic Injection Molding machine operations and operating controls. Content includes Plastics Drying Technology Operation, Control, and Maintenance. Content includes SkillBuilder, a CD-ROM based interactive lab simulator for Basic Injection Molding Technology. Content includes Advanced Injection Molding with emphasis on the relationship between machine controls, plastics behavior during molding and finished part properties. Content includes Optimizing Machine Control Settings 1, 2, 3 and 4. This course utilizes Paulson Training Programs' interactive CD-ROM based (software). This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Examine basic injection molding machine operation: part I & II
- Analyze basic injection molding lessons I - V
- Practice principles of drying operation
- Practice skillbuilder basic injection molding lab
- Analyze advanced injection molding lessons I - VI
- Optimize machine control settings I - IV
- Practice injection molding process safety procedures
- List all components of a conventional mold
- List all parameters used to cycle in a mold

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

### **PLST 2138 - Injection Molding Process II (4)**

This course is a continuation of Injection Molding Process I and is designed to introduce the student to ten (10) lessons of Understanding Materials for Profitable Molding. Each lesson describes the properties and molding characteristics that will improve processing of that material. Lessons include PC, PP, PE, PA, ABS, PS, PMMA, POM, PBT, and TPE. Content includes SimTech, an injection molding machine simulator. Content includes two-sessions on efficient mold setting designed to instruct personnel on proper mold storage, installation, start-up, safety and shut-down procedures. This course utilizes Paulson Training Programs interactive CD-ROM based (software). Hands on training in set-up, tear-down, operation and troubleshooting of several molds to produce a quality product will be emphasized. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

**Prerequisite:** PLST2128

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Characterize ten thermoplastic materials for profitable molding

Practice SimTech the injection molding simulator

Demonstrate efficient mold setting installation and setup procedures

Figure out efficient mold setting troubleshooting removal and storage

Develop an injection molding tear-down checklist

Develop an injection molding setup checklist

Demonstrate setting up a conventional two-plate mold

Demonstrate setting up a three-plate mold

Demonstrate setting up a hot sprue bushing mold

Demonstrate setting up a master unit die mold

Demonstrate setting up a hot manifold mold

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

**PLST 2143 - Injection Molding Process III (4)**

This course is a continuation of Injection Molding II and is designed to introduce the student to injection molded part problems and solutions. Part defects are described and analyzed to show how each develops. Topics also include an explanation of the cause and effect method of problem analysis used in analyzing and solving all types of production problems. This course utilizes Paulson Training Programs' interactive CD-ROM based software. Content includes set-up, operation and troubleshooting of several types of Injection Molding Machines, Molds and Materials to produce quality plastics molded parts. Optimization of setting and started the mold will be emphasized. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: PLST2138

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Figure out injection molded part problems and solutions
- Practice setting and starting the mold
- Develop injection molding machine setup procedures
- Prepare plastics molding materials
- Select materials process temperature control parameters
- Determine mold measurements
- Practice transporting and installing the mold
- Figure out programmable logic control system
- Figure out clamp end mechanisms
- Figure out injection end mechanisms
- Determine mold cooling channels circuitry
- Determine mold temperature control parameters
- Assemble mold cooling system to the mold
- Complete molded plastics part setup
- Optimize molded plastics part parameters and conditions
- Measure molded plastics parts
- Demonstrate mold care and protection procedures
- Determine setting up auxiliary process equipment
- Analyze mold and process setup
- Demonstrate setting and starting two-plate molds
- Demonstrate setting and starting three-plate molds
- Demonstrate setting and starting hot manifold molds
- Demonstrate setting and starting hot sprue bushing molds
- Demonstrate setting and starting master unit die molds

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

**PLST 2150 - Design of Experiments (DOE) for Injection Molding (4)**

This course is intended to introduce the student to the Design of Experiments. Content includes an overview of how to develop an experiment by explaining common terminology and exploring various DOE techniques, all in an injection molding environment. This course utilizes DOE Wisdom Jr. software, which helps you properly layout the experiments. The book, Design of Experiments for Injection Molding will further enhance your understanding of DOEs. This course also utilizes an interactive training program using CD-ROM based software.

Prerequisite: MATH0910 or MATH0920 and METS1050

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Explain the four plastics variables
- Examine the intensification ratio
- Figure out cavity pressure
- Explain fountain flow
- Explain shear heating
- Chart gate sealing time
- Calculate pressure loss
- Examine velocity linearity
- Analyze process diagrams
- Figure out what a factor is
- Figure out what a response is
- Differentiate between constant and control factors
- Examine the full factorial DOE design
- Examine the fractional factorial design
- Characterize a steady state condition
- Figure out what an interaction is
- Identify ANOM
- Identify ANOVA
- Determine how to optimize more than one response
- Utilize DOE software
- Figure out how to start a new project
- Discover how DOE can help with Six Sigma

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

### **PLST 2240 - Scientific Injection Molding I (4)**

This course is designed to introduce the student to Scientific/Decoupled/Traditional molding methodologies and techniques, which are critical in medical device and other plastics manufacturing. Content includes plastics materials, part, mold, and machine considerations. Students will learn molding from the "Plastics Point of View" for design and processing, which includes molding calculations and useful tables, traditional (vs) scientific/decoupled molding, and universal processing parameters. The course also includes practical application of machine control settings, and process monitoring instrumentation. Students also apply their learning on molding problems for practical solutions. This course utilizes Paulson Training Programs, Inc. interactive

web-based training.

Prerequisite: Injection Molding certificate or equivalent experience with instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Examine plastics materials considerations
- Examine part design considerations
- Examine mold design considerations
- Determine molding machine specifications, requirements, calibration
- Determine molding calculations
- Analyze Traditional molding (vs) Scientific/Decoupled molding
- Perform with two-stage molding process controls
- Perform with universal processing parameters
- Perform with Programmable Logic Control Systems
- Optimize machine control settings
- Analyze process monitoring instrumentation
- Analyze molding problems for practical solutions

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

#### **PLST 2245 - Scientific Injection Molding II (4)**

This course is a continuation of Scientific Injection Molding I and is designed to introduce the student to Scientific/Decoupled molding methodologies and techniques, which are critical in medical and other plastics manufacturing. Students will learn Scientific/Decoupled II molding from the "Plastics Point of View", which includes building and documenting a Scientific/Decoupled II process. The course also includes plastics behavior and the molding machine controls, instrumentation devices used in molding, process documentation worksheets with studies and tests. Students will also apply their learning on interpreting machine and cavity pressure curves, and computerized data acquisition devices. This course utilizes Paulson Training Programs, Inc. interactive web-based training.

Prerequisite: PLST2240 and Injection Molding certificate or equivalent with instructor's approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Examine four plastics processing variables
- Analyze inter-relationship of materials, molds, machines, and the molding cycle
- Optimize plastics behavior and molding machine controls
- Determine instrumentation devices for hydraulics and electrics
- Determine in-mold sensor locations and placements
- Build Scientific/Decoupled II process
- Document Scientific/Decoupled II process

Perform zero down "Quality Part" molding cycle  
Complete process worksheets studies and tests  
Interpret machine and cavity pressure curves  
Analyze computerized data acquisition devices  
Differentiate between a Scientific/Decoupled II and a Scientific/Decoupled III process

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477  
Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

**PLST 2250 - Scientific Injection Molding III (4)**

This course is a continuation of Scientific Injection Molding II and is designed to introduce the student to Scientific/Decoupled III molding strategies and techniques, which are critical methods, techniques, and strategies in medical devices and other plastics manufacturing. The content includes practical application of cavity pressure control, instrumentation, and data acquisition to accomplish Scientific/Decoupled III molding and process control. Students will also apply their learning and skills on understanding Scientific/Decoupled III molding practices to produce process repeatability by machine and mold monitoring techniques to achieve the process control solutions.

Prerequisite: PLST2245 and Injection Molding certificate or equivalent experience with instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Analyze the "Four Primary Plastics Conditions" and their effects on molded part properties  
Demonstrate data acquisition device controls  
Setup data acquisition devices  
Analyze data acquisition graphs and templates  
Develop machine and cavity pressure curves  
Connect instrumentation devices  
Evaluate machine process capability performance  
Interpret cavity pressure curves  
Analyze process repeatability and robustness  
Create Scientific/Decoupled III process from a Scientific/Decoupled II process  
Demonstrate template matching methods using save and control techniques  
Determine cost effective benefits of Scientific/Decoupled molding

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

Disability Services assists students with disabilities who need accommodations to access programs, services and college

activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 3 lab: 1

### **PLST 2300 - Plastics Engineering Technology Internship (4)**

This course provides students with an internship experience in Plastics. Students are evaluated by predetermined curriculum objectives agreed upon by the employer, instructor and student. The student is expected to interview for and acquire an internship site.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Exhibit enthusiasm

Demonstrate initiative

Display judgment

Demonstrate courtesy

Display punctuality

Demonstrate dependability

Organize work area

Create successful working relationships

Demonstrate safety

Follow prescribed procedures

Display technical competence

Demonstrate cooperation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: SOE: 4

## **POLI - Political Science**

### **POLI 1000 - Introduction to American Government and Politics (3)**

This course introduces students to the American political system. Topics of study include the following: the United States Constitution, political parties, interest groups, federal bureaucracy, Presidency, Congress, the courts, and civil liberties and rights.

Prerequisite: Qualifying score on writing assessment test OR ENGL0960 and Qualifying score on reading assessment test OR ENGL0921. Basic computer skills recommended.

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Define political terms and concepts
- Identify political characteristics in United States' history
- Identify United States' government institutions
- Identify United States' governmental processes
- Demonstrate political science research methods
- Evaluate diverse political sources and points of view
- Compare political systems across a range of cultural and historical periods
- Describe different approaches to international relations
- Identify challenges related to international relations

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 5 & 9.

## PSYC - Psychology

### PSYC 1000 - General Psychology (3)

Psychology is the scientific study of human behavior and mental processes. This introductory course provides a broad overview of topics including: the evolution of psychology, the biological bases of behavior, sensation and perception, consciousness, learning, memory, intelligence, motivation, emotion, human development, personality, research methods, psychological disorders, treatments of psychological disorders, and social psychology.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe psychology using modern and historical approaches
- Explain why psychology is a scientific discipline
- Describe the major divisions, function, and structures in the human nervous system
- Explain the function and locations of primary structures in the human brain
- Examine sensations and perceptions
- Examine states of consciousness
- Examine major theories, common behaviors, and applications of hypnosis
- Explain classical conditioning
- Apply the principles of operant conditioning

Examine the processes involved in human memory  
 Explain remembering and forgetting  
 Compare theories of intelligence  
 Contrast major theories of motivation  
 Examine the biopsychosocial influences involved in emotion  
 Examine major developmental theories and biopsychosocial influences from infancy to childhood  
 Examine major developmental theories and biopsychosocial influences from adolescence to adulthood  
 Contrast the psychoanalytic, humanistic, trait, and social-cognitive perspectives and theories of personal  
 Contrast projective and objective tests  
 Compare diagnostic criteria and treatments of common dissociative disorders, mood disorders, schizophrenia, and personality disorders  
 Summarize early treatments of mental disorders  
 Compare types of therapists and major approaches used in psychotherapy

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

#### Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

#### Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 5.

### **PSYC 1200 - Psychology Throughout the Lifespan (3)**

This course explores human development across the lifespan. The developmental process will be viewed from the theoretical, physical, cognitive, and psychosocial perspectives. This course will examine the complete lifespan, beginning with prenatal development and progressing through the process of death and dying.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

#### Learning Outcomes:

The following outcomes will be addressed in the course:

- Explore major theories pertaining to human development
- Describe fetal development
- Examine psychosocial, physical, and cognitive development in childhood
- Examine psychological, physical, and cognitive development in adolescence
- Examine psychosocial, physical, and cognitive development in adulthood
- Identify temperamental differences
- Explore the process of aging
- Identify personal views toward death and dying
- Explore abnormal human development
- Explore cultural and familial influences on human development
- Analyze personal views toward death and dying
- Apply theories of development to life experiences
- Apply theories of development to projected life experiences
- Describe current research in developmental psychology

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or

impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 5 & 7.

**PSYC 1300 - Abnormal Psychology (3)**

This course explores psychopathology using a multidimensional approach. Emphasis will be on etiology, classification, assessment, terminology, and treatment of major psychological disorders, and content will be organized using the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). Mental disorders will be explored along a continuum of abnormality, and in the context of their overlapping biological, developmental, psychological, and sociocultural influences.

Prerequisite: Qualifying score on reading assessment OR ENGL0921 and Recommended: PSYC1000 or PSYC2300. Basic computer literacy skills required

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Describe abnormality using historical, modern, and biopsychosocial perspectives

Apply the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) criteria to case studies and scenarios which depict persons with mental disorders

Identify the correlates of major mental disorders, including symptoms, course, incidence, prevalence, etiology, prognosis, and treatments

Describe protective factors, risk factors and prevention strategies that may reduce onset of mental disorders

Compare the major perspectives used to explain etiology, assessment, and treatment of psychopathology (biological, psychodynamic, humanistic, cognitive-behavioral, and sociocultural models)

Identify assessment techniques and research methods used to diagnose abnormal behavior and mental disorder

Describe demographic and sociocultural factors that influence the expression, course, development and treatment, and prevalence of maladaptive behavior and psychiatric illness

Summarize the benefits, critiques, limitations, risks and implications of diagnosis and classification

Identify common types and qualifications of mental health professionals treating persons with mental disorders

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 5 & 7.

# PWRK - Public Works

## **PWRK 1001 - Introduction to Public Works Employment (3)**

This course is designed to give a general overview of Public Works. The course will also give an overview of the systems typically managed and called upon by public works professionals. The course will focus on the employee's role in providing support and service delivery to the public.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and Qualifying score on writing assessment test OR ENGL0930

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Define the roles of Public Works employees
- Identify communications styles
- Complete a job application
- Examine conflict in the workplace
- Describe effective problem solving methods
- Describe customer service

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.  
Brooklyn Park Campus - 763-488-2477  
Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

## **PWRK 1005 - Introduction to Maintenance Operations and Activities (3)**

This course prepares the student to qualify for an entry level position in public works. The course examines public works departments and reviews the purpose and work expectations of these departments.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and Qualifying score on writing assessment test OR ENGL0930

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Develop a list of maintenance activities related to facilities
- Review trends in maintenance and operations
- Define customer expectations
- Identify processes involved with storm water control
- Manage work related activities
- Identify activities designed to protect public investment
- Identify methods to ensure employee safety

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

**Credit Details:** lecture: 3

### **PWRK 1010 - OSHA 510 (2)**

This course provides a variety of training for safety responsibilities including: introduction to OSHA, recordkeeping basics, regulations and general safety and health provisions. This course will also cover fall protection, the hazards of electrical operations, hazards of falling objects, and confined space and collapse hazards. Personal protective and life saving equipment, health hazards in construction, and stairways and ladders are also included.

**Prerequisite:** Qualifying score on reading assessment test OR ENGL0901

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Identify OSHA construction regulations

Identify general safety and health provisions

Identify requirements for competent persons

Prepare OSHA recordkeeping forms

Recognize the electrical safety requirements

Recognize fall protection hazards

Demonstrate use of personal protective and lifesaving equipment

Demonstrate use of hand and power tools

Recognize excavation hazards

Recognize stairway and ladder safety issues

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

**Credit Details:** lecture: 2

### **PWRK 1015 - Emergency Response for Public Workers (2)**

This course is designed to develop operational skills and procedures for individuals to recognize, evaluate, and provide support services in an emergency or disaster situation, understand the purpose and use of the National Incident Management System (NIMS) and the Incident Command System (ICS), and perform job related responsibilities in compliance with Federal, State, and

Local regulations. Students will learn how to manage an emergency medical situation through basic First Aid, CPR and AED until emergency personnel arrive.

Prerequisite: Students must have a CURRENT OSHA 510 - 30 Hour for Construction OR OSHA 511 - 30 Hour for General Industry course certification card from an OSHA training institute class provider. Students must bring your CARD for verification to the FIRST class

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify OSHA Regulations

Evaluate a disaster site

Assign disaster worker responsibilities using an Incident Command Structure (ICS)

Identify disaster site safety and health hazards

Identify Chemical, Biological, Radiological, Nuclear and Explosive (CBRNE) agents and symptoms

Demonstrate proper procedures for use of personal protective equipment

Demonstrate proper use of respiratory protection equipment

Identify symptoms of traumatic incident stress syndrome

Demonstrate CPR with use of Automatic External Defibrillator (AED)

Manage basic first aid emergencies

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2

### **PWRK 1020 - Basic Engine Repair (3)**

In this course, students will study the theory of two and four cycle engines and perform basic maintenance on common outdoor power equipment used in public works. Students will learn the proper names and uses of tools used in industry. Students will diagnose engine problems, inspect and identify system components. Topics of shop safety, fuels, tune-ups and basic electricity will also be covered.

Prerequisite: Must have Public Works as a declared Major

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate safety practices

Perform engine maintenance

Diagnose engine problems

Compare the difference between a two-stroke and a four-stroke engine

Explain engine component functions

Identify parts of an engine

Explain 2 stroke theories

Explain 4 stroke theories

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

[bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html)

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

**Credit Details:** lecture: 2 lab: 1

### **PWRK 1025 - Street Maintenance, Materials and Applications (3)**

The purpose of this course is to provide students with an introductory knowledge and understanding of the basic aspects of street and roadway design, construction and maintenance.

**Prerequisite:** Qualifying score on reading assessment test OR ENGL0901 and must have Public Works as a declared Major

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Describe the different public works principles as they relate to street and roadway design, construction and maintenance

Identify the safety considerations that must be considered when working in traffic and the right-of-way

Identify and select the proper high visibility garments needed for roadway and right-of-way work

Evaluate various roadway designs and their ability to manage intended traffic and weather patterns

Identify the individual components of street and roadway geometric designs and how they are implemented

Demonstrate the basic aspects of horizontal and vertical field surveying

Identify the physical materials properties for soils, concrete and asphalt

Demonstrate the proper inspection techniques for soils, concrete and asphalt

Demonstrate procedures and processes used for street and roadway maintenance and construction

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

**Credit Details:** lecture: 3

### **PWRK 1030 - Trenching/Excavation Safety (3)**

This program is designed to train the students about trenching and excavating, and the equipment used in the day to day operations. Students will learn the safety procedures and hazards associated with the equipment and trenching and excavating in general.

**Prerequisite:** None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate around excavation sites
- Complete daily safety checks
- Identify defects on equipment
- Provide proper usage of the equipment
- Manage work related activities
- Provide maintenance on the equipment
- Analyze the soil being excavated
- Characterize dangers around an excavation site

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **PWRK 1035 - Confined Space Safety (3)**

This course is designed to enable students to recognize, evaluate, prevent, and abate safety and health hazards associated with confined space entry. Technical topics include the recognition of confined space hazards, basic information about instrumentation used to evaluate atmospheric hazards, and ventilation techniques. This course features workshops on permit entry classification and program evaluation.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify confined space regulations
- Identify general safety and health provisions
- Identify the requirements of the competent person
- Prepare confined space record keeping forms
- Recognize potential hazards such as electrical and falls
- Demonstrate the use of personal protective and life saving equipment
- Demonstrate the use of monitoring equipment

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

### **PWRK 1040 - Mechanized Equipment Operation (3)**

This program is designed to get students more familiar with mechanized equipment used in day to day operations of the public works department. Students will learn how to properly use equipment in order to prevent potential hazards.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Use mechanized equipment safely

Administer daily safety checks

Identify defects on equipment

Conduct general maintenance on equipment

Identify proper usage of equipment

Conduct work related activities

Prepare maintenance records

Uphold safety policies and procedures

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **PWRK 1045 - Practical Skills for Public Works (4)**

This class will introduce basic skills with practical application of industry safety principles. Instruction will include tube and pipe fabrication, sheet metal fabrication, and construction of series and parallel electrical circuits. Students will also be introduced to the material necessary for obtaining a State of MN Special Boilers License.

Prerequisite: Must have Public Works as a declared Major

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate safe practices in accordance with OSHA and industry standards

Construct a tubing and a pipe project

Fabricate series and parallel electrical circuits

Analyze series and parallel electrical circuits  
 Recognize potential hazards associated with public works activities  
 Demonstrate the use of lock out tag out  
 Demonstrate the use of fire suppression equipment

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 4

### **PWRK 1050 - Introduction to Municipal Utilities (3)**

This course is designed to give an individual a general overview of public utilities; its organizational structure, function, responsibilities, operation and maintenance. It will also give an overview of the systems typically managed and called upon by public works professionals to assure responsible service delivery to the public. The course will focus on the public works employee's role in providing support and service delivery to the public.

Prerequisite: Must have Public Works as a declared Major

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the different roles of local, state and federal agencies as they relate to water distribution

Identify different water storage facilities and their roles

Identify materials used in water main construction

Select appropriate Personal Protective Equipment (PPE) necessary for excavation of water lines

Demonstrate location and identification of underground utilities

Demonstrate water sampling and contaminate evaluation

Identify treatment options for contaminated water stores

Identify the components of a city water system

Demonstrate methods used for leak detection, system flushing, locating water main breaks and disinfection

Evaluate emergency plans and inspection records

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

### **PWRK 1055 - Public Works Safety (3)**

This course provides a variety of training for safety responsibilities including; introduction to OSHA (Occupational Safety and Health Hazards). This course is also designed to develop operational skills and procedures for individuals to recognize, evaluate, and provide support services in an emergency. Students will also learn NIMS (National Incident Management System) and what roles they may play within this system.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and Qualifying score on writing assessment test OR ENGL0930

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify OSHA construction regulations
- Administer electrical safety requirements
- Acquire general safety and health provisions
- Categorize fall protection hazards
- Demonstrate use of personal protective and life saving equipment
- Discover proper use of hand and power tools
- Evaluate a disaster site
- Assign disaster worker responsibilities using the National Incident Management System
- Demonstrate CPR with the use of Automatic External Defibrillator (AED)
- Manage basic first aid emergencies

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

### **PWRK 1065 - Introduction to Park Maintenance (3)**

The purpose of this course is to provide students with an introductory knowledge and understanding of the basic aspects of Park and Recreation maintenance and facilities.

Prerequisite: Must have Public Works as a declared Major

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify various park and recreation facilities
- Implement proper safety inspection techniques
- Compare construction methods of facilities
- Use effective safety procedures
- Contrast various work place roles
- Appraise maintenance procedures of facilities
- Employ effective communication methods
- Compare various types of parks

Discover maintenance challenges

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 3

### **PWRK 1070 - Commercial Driver's License Class B Training (2)**

This commercial truck driving course will help the student develop the knowledge and driving skills needed to obtain your Class B driver's training license which is required to operate Public Works vehicles. Students will learn safe driving operations along with knowledge about air brake systems, pre-trip inspections, and defensive driving.

Prerequisite: Must be 18 years of age, possess a valid MN driver's license and meet all qualifications specified by MN Statute

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Evaluate vehicle inspections

Demonstrate safe operation with a snow plow

Administer inspection and operation of various components

Manipulate various driving procedures

Utilize different shifting methods

Implement different seeing challenges

Acquire proper signaling communications methods

Diagnose controlling speed

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **PWRK 1100 - From Line to Leadership: Transitioning from Operations to Supervision (2)**

This class is tailored for the new supervisor and those thinking of taking their career to the next level. Built on solid leadership practices, the session focuses on necessary supervisory skills, tips for developing personal influence, avoiding common pitfalls, and identifying ways to make the most of the leadership opportunity. The open discussion format and problem-solving exercises are an excellent way to prepare new leaders for their changing role.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Demonstrate critical thinking in the assessment of workplace scenarios
- Differentiate between good and poor supervisory actions
- Acquaint self with a distinct leadership profile
- Indicate personal readiness to take on additional responsibility at work
- Employ attributes needed for project management and group interactions
- Summarize a personal response to a given leadership situation

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lecture: 2

### **PWRK 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A `Specialized Lab Training Agreement` must be signed by the student and the instructor and submitted to the registrar at the time of registration.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Course outcomes addressed will depend on the area and type of specialization the student wishes to study, and will be defined in the "Specialized Lab Training Agreement".

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: lab: 1-4

### **PWRK 2000 - Public Works Internship (3)**

This internship will provide the student with on-the-job training within Public Works. The student will use the knowledge and skills learned during course work and apply it to work assignments.

Prerequisite: PWRK1020, PWRK1025, PWRK1045, PWRK1050, and PWRK1065

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Demonstrate awareness of applicable OSHA standards for safe operation during assigned duties

Participate in public works project by the selection and application of appropriate tools, materials and methodology

Perform maintenance on assigned equipment

Operate safely mechanized equipment related to assigned functions

Demonstrate proper use and purpose of specific tools related to assigned public works functions

Participate in a public works project related to the specialization field the student has selected within the program

Explain the importance of accurately completing and filing work orders

Describe appropriate customer service

Describe the difference within public work divisions and its role in local government

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: SOE: 3

## **SOCI - Sociology**

### **SOCI 1100 - Introduction to Sociology (3)**

Sociology is the systematic study of the relationship between the individual and their society. In this course students will be introduced to sociological concepts and theories that explain the impact of culture, social structures, and institutions on individuals, and the impact of individuals on their social world.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and Recommended: Qualifying score on writing assessment test OR ENGL0960. Basic computer skills recommended

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify key concepts of sociology
- Differentiate sociological theories
- Differentiate research methods used in sociology
- Identify the causes and consequences of social inequalities
- Apply a sociological perspective to social issues
- Apply key concepts to real world examples
- Analyze real world examples using sociological theories
- Compare and contrast cultural practices between social groups
- Compare and contrast social structures and institutions

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 2 & 5.

### **SOCI 1200 - Marriage and Family (3)**

Marriage and Family is the sociological study of the relationship of family life and society. This course will introduce the student to historical family perspectives, cross-cultural family perspectives, gender role expectations of the family, gender stratification within families, and societal norms and expectations of the institutions of marriage and family.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and Recommended: Qualifying score on writing assessment test OR ENGL0960. Basic computer skills recommended

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Identify key concepts of marriage and family
- Compare and contrast current family structures
- Differentiate theories within marriage and family
- Compare and contrast historical family structures
- Identify socialization expectations of family members
- Identify consequences of sexual, emotional, and physical abuse within families
- Compare and contrast historical and present day gender roles
- Identify social causes attributed to family status
- Differentiate social research methods used to study marriage and family

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 5 & 7.

### **SOCI 1400 - Race in America (3)**

This course is an introduction to the history and theories of race, ethnicity, and racism in the United States. Students will explore the social construction of race as a concept, the processes by which social institutions create and reproduce racial inequalities, and the role of social movements in bringing about social change. Students will learn to analyze current race relations from multiple perspectives.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and Recommended: Qualifying score on writing assessment test OR ENGL0960. Basic computer skills recommended

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Trace the social construction of race and ethnicity through history

Describe the complexities of racial and ethnic identity

Explain the importance of historical events and processes for current racial and ethnic relations

Identify patterns of inequality between racial and ethnic groups

Explain how systemic racism in social institutions creates and reproduces racial and ethnic inequality

Differentiate between individual prejudice, systemic racism and racist cultural ideologies

Describe the impact of cultural, social, political, and economic change on racial and ethnic relations

Analyze the role of racial and ethnic-based social movements in social change

Demonstrate effective communication about race and ethnicity skills in diverse groups

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 5 & 7.

### **SOCI 1500 - Introduction to Criminal Justice (3)**

This course explores the foundations, organization and function of the criminal justice system in the United States. Topics include crime and victimization, constitutional law, policing, courts, corrections, juvenile justice and current issues in criminal justice.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and Recommended: Qualifying score on writing assessment test OR ENGL0960. Basic computer skills recommended

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe the legal foundations of the criminal justice system

Differentiate between types of crime  
Compare patterns of crime and victimization  
Trace the history of policing  
Differentiate between models of policing  
Apply constitutional law to due process in policing  
Explain the organization of the court system  
Describe the adjudication process  
Differentiate between forms of corrections  
Compare prison culture with life after re-entry  
Explain the relationship between the adult and juvenile justice systems  
Analyze contemporary issues in criminal justice

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477  
Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 5 & 9.

### **SOCI 1600 - Food and Society (3)**

This is a course about the social relations of our food system: how we produce, distribute, prepare and consume our food. Students will explore topics of culture, identity, and history as well as the effects of our food system on public health, social inequality, and the environment on both a local and global level. Students will also explore alternatives to the current food system.

Prerequisite: Qualifying score on reading assessment test OR ENGL0921 and Recommended: Qualifying score on writing assessment test OR ENGL0960. Basic computer skills recommended

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Explain the social construction of food  
Explain the relationship between food and identity  
Trace changes in our food system through human history  
Diagram the parts of the food system  
Analyze the relationship between the food system and public health  
Analyze the relationship between the food system and social inequality  
Analyze the relationship between the food system and the environment  
Differentiate food-based social movements  
Evaluate solutions to food system problems

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college

activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 5 & 10.

### **SOCI 2400 - Juvenile Justice (3)**

This course examines the historical foundations, current philosophies, procedures and characteristics of the juvenile justice system. It will explore theories of delinquency, strategies for working with juveniles and Minnesota statutes that apply specifically to juveniles.

Prerequisite: SOCI1100

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following goals will be addressed in the course.

Trace the development of the juvenile court system

Analyze police responses to juvenile offenders

Discuss strategies for diversion

Differentiate theories of delinquency

Describe pre-adjudication processes for juveniles

Evaluate community-based correctional options for juveniles

Assess juvenile correctional institutions

Contrast status offenses with other types of delinquency

Identify Minnesota statutes related to juvenile offenders

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty-two hours for each lab credit, and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations, or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus and Eden Prairie Campus: 952-995-1300

Credit Details: Lecture: 3

MnTC Goal Areas: 5.

## **WLDG - Welding and Metal Fabrication**

### **WLDG 1000 - Cutting Processes (3)**

This course will cover cutting operations utilizing gas, plasma, carbon-arc and computer numerical control (CNC) plasma cutting table equipment. Students will learn how to cut straight lines, holes and bevels on steel, aluminum and stainless steel. Important health and safety precautions will also be covered. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and

evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Identify important health and safety precautions
- Operate gas cutting equipment
- Cut straight lines, round holes and piercing round holes utilizing the gas cutting process
- Cut forty-five and sixty degree bevels utilizing the gas cutting process
- Operate plasma cutting equipment
- Cut straight lines, round holes and piercing holes utilizing the plasma cutting process on steel
- Cut straight lines, round holes and piercing holes utilizing the plasma cutting process on aluminum
- Cut straight lines, round holes and piercing holes utilizing the plasma cutting process on stainless steel
- Operate carbon-arc equipment
- Perform carbon-arc beveling and straight line cutting
- Operate track torch machines with oxyacetylene gas
- Cut straight line, forty-five and sixty degree bevels with track torch cutting machines
- Program CNC plasma cutting tables
- Perform cutting operations utilizing CNC plasma cutting tables

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

**WLDG 1010 - Practical Application for Estimating and Layout (2)**

This course covers the fundamental information and practices required to properly estimate the amount of materials necessary for various manufacturing processes. The student will use common problem solving methods and will convert units of measure that are utilized in the manufacturing industry. The student will interpret the geometry of commonly used materials and study their manufacturing application trends. Various methods of material layout will also be practiced along with an introduction to the use of basic welding and cutting equipment.

**Prerequisite:** None

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

- Practice industry safety procedures
- Determine material quantities
- Interpret various measuring units
- Identify measuring tools
- Lay out geometric profiles
- Measure geometric features
- Solve problems with equations
- Produce lab projects
- Operate welding and cutting equipment

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

[bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html)

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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**Campus:**

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **WLDG 1075 - Careers in Manufacturing (2)**

This course introduces students to the skills, technology, work environment, potential salary, and job placement for occupations in the fields of Machine Tool Technology, Mechatronics (Automation Robotics, Electronics, Fluid Power), Welding and Metal Fabrication, Plastics Engineering Technology, and Engineering CAD (Computer-Aided Design) Technology. This dynamic course includes industry-specific tours, as well as hands-on projects that familiarize students with field practices and shop safety. A technical aptitude assessment will be administered to assist students in determining if a career in manufacturing fits with their interests and abilities. The steps for enrolling in a program at HTC will be reviewed.

**Prerequisite:** None

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Describe the characteristics of a career in Machine Tool Technology

Describe the characteristics of a career in Mechatronics

Describe the characteristics of a career in Welding and Metal Fabrication

Describe the characteristics of a career in Plastics Manufacturing Technology

Describe the characteristics of a career in Engineering CAD Technology

Apply shop safety principles

Determine the manufacturing career fields best suited to individual attributes and interests

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 1 lab: 1

### **WLDG 1100 - Oxyacetylene Welding (3)**

This course introduces students to the oxyacetylene welding process including terms and safety procedures. Students will learn how to setup, adjust and shut down oxyacetylene equipment. Students will learn how to deposit stringer beads in the flat position. Students will also be able to produce fillet lap and inside corner joint welds in the horizontal and vertical position and

square joint butt welds in the flat, horizontal, vertical and overhead position. Weld inspections will also be covered. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Define welding terms, positions and nomenclature
- Describe the oxyacetylene welding process
- Identify important health and safety precautions
- Operate oxyacetylene welding equipment
- Deposit stringer beads in the flat position without and with filler metal
- Produce fillet weld lap joints in the horizontal position
- Produce fillet weld inside corner joints in the horizontal position
- Produce fillet weld inside corner joints in the vertical up position
- Produce fillet weld lap joints in the vertical up position
- Inspect welds for quality
- Produce square groove butt joint welds in the flat position
- Produce square groove butt joint welds in the vertical up position
- Produce square groove butt joint welds in the overhead position
- Produce square groove butt joint welds in the horizontal position

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **WLDG 1135 - Gas Metal Arc Welding I (3)**

This course teaches students identification and MIG welding equipment, joint design, welding terms and safety procedures. Students will learn setup, operation and perform bead, single and multiple pass butt and tee, lap and outside corner welds in the flat, horizontal positions. Students will also identify and describe personal shop and other related safety rules. The students will be required to identify shop and personal safety rules to 100% accuracy. This course will also require identification and performance of wire type and diameter and equipment on 3/16 inch and thicker plate steel. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Describe welding terms, test positions and nomenclature
- Describe the gas metal arc welding process
- Identify important safety rules
- Operate gas metal arc welding equipment
- Weld in the flat position utilizing surfacing technique
- Produce square groove and fillet welds in the flat position

Produce square groove and fillet welds, butt, lap and T-joints in the horizontal position  
 Discuss the effect that gas metal arc welding variables have on the quality of welds  
 Apply square and fillet welds to produce lab project

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **WLDG 1140 - Gas Metal Arc Welding II (3)**

Students will learn how to produce square groove and fillet butt, lap and T-joint welds in the flat, horizontal, vertical and overhead positions to the Guided Test Bend standard. Students will also be able to produce single V-groove butt joint welds in the horizontal and vertical position to the Guided Bend Test standard. The effect of shielding gases on metal transfer will be examined. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: WLDG1135 and WLDG1182 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Produce square groove and fillet butt, lap and T-joint welds in the vertical down position

Produce square groove and fillet butt, lap and T-joint welds in the vertical up position

Examine the effect of shielding gases on metal transfer

Produce square groove and fillet butt, lap and T-joint welds in the overhead position

Produce single V-groove butt joint welds in the horizontal position

Produce single V-groove butt joint welds in the horizontal position to Guided Bend Test standard

Produce single V-groove butt joint weld in the vertical down position

Produce single V-groove butt joint weld in the vertical down position to Guided Bend Test standard

Apply square and single groove welds to produce lab project

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **WLDG 1165 - Gas Metal Arc Welding III (3)**

Students will learn how to produce single V-groove butt joint welds in the vertical up, flat and overhead position. Fillet lap and T-joint welds in the horizontal and vertical down position will be included. Students will also be able to utilize the spray transfer method to produce fillet lap joint welds in the flat and horizontal position and single V-groove welds in the flat position. Students will have the option to further develop their knowledge and skills to prepare for the Gas Metal Arc Welding Welder Qualification Test. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: WLDG1140

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Produce single V-groove welds in butt joints in the vertical up position
- Produce single V-groove welds in butt joints in the flat position
- Produce single V-groove welds in butt joints in the overhead position
- Produce fillet welds in lap joints and T-joints in the horizontal position
- Produce fillet welds in lap joints and T-joints in the vertical down position
- Produce fillet welds in lap joints in the flat position with spray transfer
- Produce fillet welds in lap joints in the horizontal position with spray transfer
- Produce single V-groove welds in the flat position with spray transfer
- Apply single V-groove, fillet lap joint and T-joint welds to produce lab project

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **WLDG 1175 - GMAW Fabrication Methods (3)**

In this course you will learn to combine your gas metal arc welding skills to fabricate various types of weldments using proper layout procedures. Complete drawings with welding symbols, bill of materials and cost estimates will also be required. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: WLDG1140 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

- Design a project that utilizes surfacing, square groove, fillet and single V-groove welds in the flat, horizontal, vertical and overhead positions
- Integrate butt, lap and T-joints into project design and construction
- Integrate cutting, forming, drilling and punching operations into project design and construction
- Identify tools and equipment required to complete the project
- Develop drawings with welding symbols, dimensional accuracy and tolerance requirements for instructor approval
- Develop bill of materials with cost estimates

Develop schedule for project completion with periodic instructor inspections  
 Determine work area for project development  
 Produce project  
 Inspect quality of welds

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **WLDG 1182 - Blueprint Reading for Welders (2)**

This course provides students with the knowledge and skills necessary to identify welding symbols and manipulate fractions, decimals and metric units. Students will be able to convert measurements and determine weld specifications from engineering drawings. Students will also be able to identify, measure and inspect weldment components and assemblies given a bill of materials and a drawing.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Interpret welding symbols

Describe elements of the welding symbol system

Manipulate fractions, decimals and metric units

Convert measurements as required on engineering drawings

Determine location, length, size and contour of welds as specified on drawings

Determine filler metal type and welding procedures

Describe different set-up tools and their applications

Set-up a weldment given a drawing and set-up tools

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2

### **WLDG 1220 - Gas Tungsten Arc Welding I (3)**

This course introduces students to the gas tungsten arc welding process including equipment, terms and safety procedures. Students will learn how to setup, adjust and shut down gas tungsten arc welding equipment. Students will be able to deposit stringer beads in the flat position, produce fillet weld lap joints in the flat and horizontal position and produce fillet weld outside corner joints in the flat position. The metallurgy and weldability of carbon steel will also be covered. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe welding terms, test positions and nomenclature

Describe the gas tungsten arc welding process

Identify important safety rules

Operate gas tungsten arc welding equipment

Deposit stringer beads in the flat position with carbon steel

Describe how the variables of gas tungsten arc welding effect the quality of welds

Produce lap joint fillet welds in the flat and horizontal position with carbon steel

Describe the metallurgy and weldability of carbon steel

Produce outside corner joint fillet welds in the flat position with carbon steel

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **WLDG 1225 - Gas Tungsten Arc Welding II (3)**

This course covers fillet T-joint welds and square-groove welds with carbon steel including destructive testing. Students will learn how to perform gas tungsten arc welding using pulsed current. Students will also be able to produce square groove and fillet welds with stainless steel. Visual inspection tests with stainless steel and the welding characteristics of stainless steel are included. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: WLDG1182 and WLDG1220 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Produce fillet welds in T-joints in the horizontal, vertical up and flat positions using carbon steel

Produce fillet welds in T-joints in the overhead position using carbon steel

Produce square-groove welds in butt joints in the flat position using carbon steel

Perform destructive tests on 1G square-groove welds using carbon steel

Produce square-groove welds in butt joints in the horizontal and vertical up positions using carbon steel

Produce square-groove welds in butt joints in the overhead position using carbon steel

Describe the gas tungsten arc welding process using pulsed current

Produce square-groove welds in butt joints in the flat position using stainless steel

Describe the welding characteristics of stainless steel  
 Produce square-groove welds in butt joints in the horizontal position using stainless steel  
 Produce fillet welds in lap joints in the horizontal and flat positions using stainless steel  
 Produce fillet welds in outside corner joints in the flat position using stainless steel  
 Produce fillet welds in T-joints in the horizontal, vertical up and flat positions using stainless steel  
 Perform visual inspection tests on stainless steel

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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**Campus:**

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

**WLDG 1235 - Gas Tungsten Arc Welding III (3)**

Students will learn how to weld aluminum using the gas tungsten arc welding process. Students will learn how to deposit stringer beads in the flat position. Students will be able to produce outside corner fillet welds in the flat and vertical up position and lap joints in the horizontal and flat position. Square-groove butt welds in the flat position and T-joint fillet welds in the horizontal, flat and vertical up position will also be covered. Visual inspection tests on aluminum are included. Students will have the option to further develop their knowledge and skills to prepare for the Gas Tungsten Arc Welding Welder Qualification Test. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: WLDG1225

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following goals will be addressed in the course:

Describe the characteristics of aluminum  
 Deposit stringer beads in the flat position (Aluminum)  
 Describe the effect of process variables on the welding arc  
 Produce fillet welds in outside corner joints in the flat position (Aluminum)  
 Produce fillet welds in outside corner joints in the vertical up position (Aluminum)  
 Produce fillet welds in lap joints in the horizontal and flat positions (Aluminum)  
 Produce square-groove welds in butt joints in the flat position (Aluminum)  
 Produce fillet welds in T-joints in the horizontal and flat positions (Aluminum)  
 Produce fillet welds in T-joints in the vertical up position (Aluminum)  
 Conduct visual inspection test (Aluminum)

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **WLDG 1245 - GTAW Fabrication Methods (3)**

In this course you will learn to combine your gas tungsten arc welding skills to fabricate various types of weldments using proper layout procedures. Complete drawings with welding symbols, bill of materials and cost estimates will also be required. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: WLDG1182 and WLDG1225 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Design a project that utilizes fillet and square groove welds in the flat, horizontal, vertical and overhead positions

Integrate butt, lap and T-joints into project design and construction

Integrate cutting, forming, drilling and punching operations into project design and construction

Identify tools and equipment required to complete the project

Develop drawings with welding symbols, dimensional accuracy and tolerance requirements for instructor approval

Develop bill of materials with cost estimates

Develop schedule for project completion with periodic instructor inspections

Determine work area for project development

Produce project

Inspect quality of welds

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **WLDG 1310 - Shielded Metal Arc Welding I (3)**

This course introduces students to the shielded metal arc welding process including equipment, terms and safety procedures. Students will learn how to strike and control arc to produce quality welds. Students will learn how to deposit a pad of beads in the flat position. Students will be able to produce lap joint fillet welds in the horizontal position and E6010 pad of beads in the flat position. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: None

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe welding terms, test positions and nomenclature

Describe the shielded metal arc welding process

Identify important safety rules

Describe how the five essentials of shielded metal arc welding effect the quality of welds

Control the arc to produce quality welds  
 Produce pad of beads in flat position  
 Produce lap joint fillet welds in the horizontal position  
 Produce E6010 pad of beads in the flat position  
 Maintain quality control

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **WLDG 1320 - Shielded Metal Arc Welding II (3)**

In this course, students will learn how to produce three-bead T-joint fillet welds, T-joint and lap joint fillet welds and butt joint square -groove welds. Students will also be able to deposit E6010 pad of beads and stringer beads. Electrode selection, power sources, destructive testing and distortion control will be included. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: WLDG1182 and WLDG1310

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Produce three-bead fillet welds in T-joints in the horizontal position  
 Perform destructive test on fillet welds in T-joints in the horizontal position  
 Deposit pad of beads in the horizontal position  
 Produce square-groove welds in butt joints in the horizontal position  
 Perform destructive test on square-groove welds in butt joints in the horizontal position  
 Select electrodes  
 Produce fillet welds in lap joints in the vertical up position  
 Produce fillet welds in T-joints in the vertical up position  
 Produce three-bead fillet welds in T-joints in the vertical up position with 2 weave beads  
 Produce square-groove welds in butt joints in the vertical up position  
 Perform destructive test on square-groove welds in butt joints in the vertical up position  
 Determine power sources  
 Produce fillet welds in lap joints in the overhead position  
 Produce three-bead fillet welds in T-joints in the overhead position  
 Perform destructive test on fillet welds in T-joints in the overhead position  
 Produce square-groove welds in butt joints in the overhead position  
 Describe distortion control

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **WLDG 1330 - Shielded Metal Arc Welding III (3)**

Students will learn how to produce fillet welds in lap and T-joints, stringer beads, and square-groove welds in butt joints using the shielded metal arc welding process. Multi-pass fillet welds in lap and T-joints will also be covered. Low hydrogen electrodes will be included. Students will have the option to further develop their knowledge and skills to prepare for the Shielded Metal Arc Welding Welder Qualification Test. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: WLDG1320

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Produce fillet welds in lap and T-joints in the horizontal and vertical positions

Deposit stringer beads in the flat, horizontal and vertical positions

Produce fillet welds in lap joints in the vertical down position

Produce square-groove welds in butt joints in the flat position and fillet welds in lap and T-joints in the horizontal position

Select low hydrogen electrodes

Produce multi-pass fillet welds in T-joints in the vertical up position

Produce multi-pass fillet welds in T-joints in the overhead position

Produce multi-pass fillet welds in T-joints in the flat, horizontal, vertical and overhead positions

Produce multi-pass fillet welds in lap joints in the horizontal position

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **WLDG 1340 - Structural Iron Fabrication Methods (3)**

In this course you will learn to combine your shielded metal arc welding and flux cored arc welding skills to fabricate various types of weldments using proper layout procedures. Complete drawings with welding symbols, bill of materials and cost estimates will also be required. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: WLDG1182 and WLDG1320 or instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Design a project that utilizes fillet, square-groove and single-V-groove welds in the flat, horizontal, vertical and overhead position utilizing the SMAW and flux cored welding methods  
 Integrate butt, lap, T-joint and multi-pass fillet welds into project design and construction  
 Integrate cutting, forming, drilling and punching operations into project design and construction  
 Identify tools and equipment required to complete the project  
 Develop drawings with welding symbols, dimensional accuracy and tolerance requirements for instructor approval  
 Develop bill of materials with cost estimates  
 Develop schedule for project completion with periodic instructor inspections  
 Determine work area for project development  
 Produce project  
 Inspect quality of welds

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **WLDG 1350 - Flux Cored Arc Welding I (3)**

This course introduces students to the flux cored arc welding process including equipment, terms and safety procedures. Students will learn how to setup, adjust and shut down flux cored arc welding equipment. Students will be able to produce fillet T-joint welds in the horizontal, vertical and overhead position and single-V-groove butt joint welds in the horizontal and vertical position. Students will also be able to classify electrodes and conduct single-V-groove tests. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: WLDG1135

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe welding terms, test positions and nomenclature  
 Describe the flux-cored arc welding process  
 Identify important safety rules  
 Operate FCAW equipment  
 Produce fillet T-joint welds in the horizontal, vertical & overhead positions  
 Explain the American Welding Society electrode classification system  
 Produce single-V-groove butt joint welds in the horizontal position  
 Conduct single-V-groove destructive tests  
 Produce a single-V-groove butt joint weld in the vertical position

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.  
Brooklyn Park Campus - 763-488-2477  
Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **WLDG 1360 - Flux Cored Arc Welding II (3)**

Students will learn how to produce single-V-groove butt joint welds using gas-shielded and self-shielded tubular electrode wire. Students will also produce fillet weld lap joints and single-V-groove butt joints with metal-cored wire and single-V-groove welds in butt joints on pipe. Destructive tests will be performed on selected welds. Students will have the option to further develop their knowledge and skills to prepare for the flux-cored Welder Qualification Test. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: WLDG1182 and WLDG1350

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Produce single-V-groove welds in butt joints in the overhead position with gas shielded and self-shielded electrode wire

Produce single-V-groove weld in butt joints in the horizontal position with gas shielded and self-shielded electrode wire

Produce single-V-groove welds in butt joints in the vertical position with stringers in the uphill direction with gas shielded and self-shielded electrode wire

Perform single-V-groove weld destructive test

Produce single-V-groove weld in butt joints in the flat position with self-shielded electrode wire

Produce fillet welds in lap joints in the flat position with metal-cored electrode wire

Produce single-V-groove welds in butt joints in the flat position with metal-cored wire

Produce single-V-groove welds in butt joints in the horizontal position with pipe

Produce single-V-groove welds in butt joints in the horizontal fixed position with pipe

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **WLDG 1500 - Welding Process Lab (1 - 3)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that are beyond the current scope of existing courses. This course will cover the basics of welding safety as well as the safe use of welding equipment and its startup and shutdown. Dependent on the needs of each individual class, the specific areas of focus will change to meet the needs of the class.

Prerequisite: Instructor approval

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and

evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Construct welding projects independently utilizing an organized work schedule

Examine prescribed procedures utilizing approved drawings, welding symbols, dimensional accuracy and tolerance

Utilize safe working techniques and practices

Integrate previously acquired knowledge and skills

Additional course goals addressed by this course will be dependent on the area and type of specialization that the class chooses to focus on

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

Brooklyn Park Campus - 763-488-2477

Eden Prairie Campus – 952-995-1544

**Campus:**

Brooklyn Park Campus: 952-995-1300

Credit Details: lab: 1-3

**WLDG 1900 - Specialized Lab (1 - 4)**

This course is designed for students who want to enhance their skills and knowledge in order to become more proficient in specialized areas of the curriculum. Specialized lab content must be different from or beyond the expected skill level available in current course offerings. Students will have the ability to direct their efforts, with instructor approval, in curriculum activities that meet their needs. A `Specialized Lab Training Agreement` must be signed by the student and the instructor and submitted to the registrar at the time of registration. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

**Prerequisite:** Instructor approval

**Course Requirements and Evaluation:** Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

**Learning Outcomes:**

The following outcomes will be addressed in the course:

Work independently utilizing an organized work schedule

Follow prescribed procedures utilizing approved drawings, welding symbols, dimensional accuracy and tolerance

Utilize safe working techniques and practices

Integrate previously acquired knowledge and skills

Display good judgement, dependability and professionalism

Keep work area clean and organized

**Text and References:** A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

**Course Scheduling:** The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

**Special Accommodations:**

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lab: 1-4

### **WLDG 2035 - Advanced Gas Metal Arc Welding (3)**

Students will learn how to produce single V-groove butt joint welds in the flat position with the spray transfer method on steel. They will also produce Fillet, Lap and T-joint welds in the horizontal and vertical positions on aluminum material. Students will also be able to utilize the pulse spray transfer method of GMAW welding to produce welds on Lap Joints, T-Joints and Butt Joints in flat, horizontal and vertical positions. Students will have the option to further develop their knowledge and skills to prepare for the Gas Metal Arc Welding Welder Qualification Test. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Instructor Approval or GMAW Certificate or Welding Diploma

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Identify important safety rules

Produce single V-groove welds in butt joints in the flat position

Produce single V-groove welds in butt joints in the horizontal position

Produce single V-groove welds in butt joints in the vertical up position

Produce fillet welds in lap and T-joints in the horizontal position on aluminum

Produce fillet welds in lap and T-joints in the vertical up position on aluminum

Produce fillet welds in lap and T-joints in the flat position with spray transfer on aluminum

Produce fillet welds in lap and T-joints in the horizontal position with pulse spray transfer

Produce fillet welds in lap and T-joints in the vertical position with pulse spray transfer

Produce single V-groove welds in the flat position with pulse spray transfer

Apply single V-groove, fillet lap joint and T-joint welds to produce a lab project

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **WLDG 2045 - Advanced Gas Tungsten Arc Welding (3)**

Students will learn how to prepare and weld steel, stainless steel and aluminum tubing using the Gas Tungsten Arc Welding (GTAW) process. Students will learn how to prepare tubing for single V-groove welds in the 5-G position. Students will also be able to produce welds on stainless steel in the 5-G and 6-G positions. Visual and destructive inspection tests on steel, stainless steel, and aluminum are included. Students will have the option to further develop their knowledge and skills to prepare for the Gas Tungsten Arc Welding Welder Qualification Test. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal.

Prerequisite: Instructor Approval or GTAW Certificate or Welding Diploma

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and

evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.<br />

#### Learning Outcomes:

The following outcomes will be addressed in the course:

Identify important safety rules

Describe the characteristics of ferrous and non-ferrous alloys

Describe the effect of process variables on the welding arc

Prepare material for welding

Produce V-groove welds on round tubing in the 2-G position (Steel)

Produce V-groove welds on round tubing in the 5-G position (Steel)

Produce V-groove welds on round tubing in the 6-G position (Steel)

Produce V-groove welds on round tubing in the 6-G position (Stainless Steel)

Produce V-groove welds on round tubing in the 6-G position (Aluminum)

Conduct visual inspection test (Steel, Stainless Steel, Aluminum)

Text and References: A list of textbooks required for this course is available at the <a rel="noopener noreferrer" href="https://www.hennepintech.edu/finance-operations/campus-store.html" target="\_blank">bookstore</a>.

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.<br />

#### Special Accommodations:

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#### Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **WLDG 2050 - Introduction to Automated Cutting and Welding (3)**

This course is designed to allow students to program, setup and operate semi-automated and fully automated cutting and welding systems. Both PC programming and teach pendants will be utilized. Integration of automated cutting and welding systems with other components will also be explored.

Prerequisite: WLDG1135 and WLDG1140

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.<br />

#### Learning Outcomes:

The following outcomes will be addressed in the course:

Describe safety rules for automated equipment

Produce cutting file for a CNC plasma cutting table

Troubleshoot cutting file for a CNC plasma table

Produce plasma cuts in metal with a CNC plasma table

Identify parts of a Welding Cell (WC)

Create a program for the Welding Cell

Produce fillet welds in lap joints in the flat position with Short Circuit Transfer with WC

Produce fillet welds in Tee joints in the horizontal position with Short Circuit Transfer with WC

Analyze welds produced by automated systems for discontinuities and defects

Adjust automated systems for corrective measures

Text and References: A list of textbooks required for this course is available at the <a rel="noopener noreferrer" href="https://www.hennepintech.edu/finance-operations/campus-store.html" target="\_blank">bookstore</a>.

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or

impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.<br />

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Eden Prairie Campus – 952-995-1544

Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **WLDG 2055 - Advanced Robotic Welding (3)**

This course is designed to allow students to perform advanced programming, setup and operation and troubleshooting. Techniques will be applied to both semi-automated and fully automated cutting and welding systems. Both PC programming and teach pendants will be utilized.

Prerequisite: WLDG2050

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

Describe safety rules for automated equipment

Produce welds with a robotic welding cell

Demonstrate how to reset a Tool Center Point (TCP)

Analyze accuracy of robot Master

Diagnose welding cell problems

Demonstrate welding parameters

Assess steps to recover from e-stop

Analyze welds produced by automated systems for discontinuities and defects

Perform cell operation and safety assessment

Create welding program for Certified Robotic Arc Welding (CRAW) test piece

Use two welding schedules

Perform visual inspection of robotic welds

Perform coordinated movements with robot

Produce fixture design and construction

Create a program for the welding cell while offline

Text and References: A list of textbooks required for this course is available at the <a rel="noopener noreferrer" href="https://www.hennepintech.edu/finance-operations/campus-store.html" target="\_blank">bookstore</a>.

Course Scheduling: <p>The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Course Credits section of this course outline for the credit breakdown.</p>

Special Accommodations:

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: lecture: 2 lab: 1

### **WLDG 2275 - Welding & Metal Fabrication Internship (1 - 4)**

This course allows the student to gain on-the-job experience in the Welding and Metal Fabrication industry. The student is responsible for locating and arranging the internship site. One (1) to four (4) credits can be taken, with each credit requiring 40 hours of time spent on the job. Student performance will be monitored by the instructor and evaluated by the employer. This will be a cooperative training program between Hennepin Technical College and a company. The student will apply competencies learned in the program to an employment-like work experience. Tasks and course goals will be determined by the instructor and the job site supervisor on an individual student basis. All industry internships require you be registered at the college for the internship and have instructor approval.

Prerequisite: Instructor approval and completion of at least 50% of your degree or diploma

Course Requirements and Evaluation: Refer to Course Syllabus for detailed information regarding the requirements and evaluation standards for this course. The Course Syllabus will be distributed the first week of the course.

Learning Outcomes:

The following outcomes will be addressed in the course:

The specific goals of this course will be defined in the 'Internship Agreement' signed by the student, employer and instructor and will be tailored to the experiences available at the internship site

Text and References: A list of textbooks required for this course is available at the [bookstore](https://www.hennepintech.edu/finance-operations/campus-store.html).

Course Scheduling: The scheduled hours of instruction include sixteen hours for each lecture credit, thirty two hours for each lab credit and forty hours for each credit of supervised occupational experience (SOE). Lecture credit may include formal or impromptu lectures, demonstrations or discussions with the entire class or with small groups or individuals. Refer to the Credit Details section of this course outline for the credit breakdown.

Special Accommodations:

Disability Services assists students with disabilities who need accommodations to access programs, services and college activities. If this applies to you, please contact the DS Office on your campus to initiate the accommodations process.

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Campus:

Brooklyn Park Campus: 952-995-1300

Credit Details: SOE: 1-4







