



Hennepin Technical CollegeSM

CATALOG

2017-2018

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.

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Welcome

Welcome to Hennepin Technical College (HTC). You have chosen one of Minnesota's most affordable institutions that is changing the face of the workforce and economy. Students have access to excellent academic programs that prepare them for in-demand and high-paying employment possibilities. HTC offers degrees in over 45 programs such as manufacturing & engineering technology, practical nursing, dental assistant, and law enforcement.

Our technical education programs create long-term career opportunities. Classes are offered both day and evening at the Brooklyn Park and Eden Prairie campuses in addition to our virtual education programs. The quality of the education at HTC is enriched by its faculty who are experts in their fields. HTC services a growing diverse student population in a caring environment. HTC is a place where staff and faculty know your name, teach you up-to-date skills, engage you discussions about your career aspirations, and most of all, care about you and your success.

We have created dynamic partnerships with school districts, legislators, and within private industry. HTC maintains continuing relationships with our alumni. Our alumni remain active with the college by taking advantage of our career center and life-long learning opportunities. Join us and let us ignite your career.

Hennepin Technical College—igniting opportunity through advanced technology, leadership, and diverse communities.

2017-18 Academic Calendar

Fall Term 2017

August 21 - December 15

Fall term tuition due.....	July 31
Fall term begins.....	August 21
Fall Welcome Week Activities	August 21-25
Last day for 5-day add/drop period (100% Refund)	August 25
Federal Pell Grant Census Date	August 25
Labor Day Holiday (College Closed)	September 4
Workshop Day (College Closed)	September 5
Financial aid disbursement for fall term.....	September 8
Application for Award forms for spring graduates due to Registrar for priority registration.....	September 8
Spring Advising Month (October 1-31)	October 1-31
No Classes (Faculty Assigned Duty Day and Education Minnesota Days)	October 18-22
Priority registration begins for Spring 2016	October 23
Student Success Day at Eden Prairie Campus	October 25
New student and PSEO registration begins for Spring 2016.....	October 30
No Classes (Workshop Day, Faculty Assigned Duty Day, & Faculty Holiday)	November 20-22
Thanksgiving Holiday Break (College Closed)	November 23-26
Spring term tuition due.	December 14
Fall term ends	December 15
Term Break (No Classes).....	December 16-January 7

Spring Term 2018

January 8 - May 16

Spring term begins	January 8
Spring Welcome Week Activities.....	January 8-12
Last day for 5-day add/drop period (100% Refund)	January 12
Federal Pell Grant Census Date	January 12
Martin Luther King Jr. Day Holiday (College Closed)	January 15
Financial aid disbursement for spring term.....	January 26
Application for Award forms for summer/fall graduates due to Registrar for priority registration	February 2
Student Success Day at Brooklyn Park Campus	February 13
No Classes (Faculty Assigned Duty Day).....	February 14
President's Day Holiday (College Closed).....	February 19
Summer/Fall Advising Month	March 1-31
No Classes (Workshop Day).....	March 2
Spring Break (No Classes).....	March 12-18
Priority registration begins for Summer and Fall 2016.....	March 19
New student and PSEO registration begins for Summer and Fall 2016.....	March 26
Workshop Day (College Closed)	April 5
Summer term tuition due.....	May 11
Spring term ends.....	May 16
Commencement.....	May 17
Term Break (No Classes).....	May 17-June 3
Memorial Day Holiday, College Closed.....	May 28

Summer Term 2018

June 4 – July 26 (projected)

Summer term begins (projected).....	June 4
Last day for 5-day add/drop period (100% Refund)	June 8
Federal Pell Grant Census Date	June 8
Independence Day Holiday, College Closed.....	July 4
Summer term ends (projected).....	July 6/7

The dates listed above may change. Refer to the Hennepin Technical College website for specific registration dates and up-to-date information at: hennepintech.edu/news/item/

Contact Information

Department	Brooklyn Park	Eden Prairie
Agency Funding	(763) 488-2517	
Campus Security	(952) 995-1525	
Security Desk	(763) 488-2655	(952) 995-1433
Campus Store	(763) 488-2665	
Career Experiences/Internships	(763) 488-2441	
Career Services	(763) 488-2411	
Centers for Student Achievement:		
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
Clubs	(952) 995-1377	
Disability Services	(763) 488-2477	(952) 995-1544
Diversity/Affirmative Action Officer	(763) 488-2633	
Enrollment Services	(952) 995-1300	
Enrollment Advisors Appointments		
Counseling Appointments		
Health Programming/Insurance Questions	(952) 995-1377	
Instructor	See your syllabus or D2L for instructor contact information	
Library	(763) 488-2929	(952) 995-1535
Reception Desk	(952) 995-1300	
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	(763) 488-2605	
Transfer Center	(952) 995-1455	
TRIO Student Support Services	(763) 488-2777	(952) 995-1677
Tuition Office	(763) 488-2496	(952) 995-1466
Veterans Certifying Official	(763) 488-2489	
Veterans Resource Center	(763) 488-2529	(952) 995-1509

About HTC

Our Mission

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

Our Vision

Embracing quality and innovation in career and technical education, workforce development, and lifelong learning

Our Values

Trust, Integrity, Pride, Passion, Respect, Collaboration, Innovation, Continuous Improvement, and Diversity that Foster Quality Service, Employee Engagement, Student Success

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 and Written Communication
- Critical Thinking and Problem Solving
- Technological Literacy
- Mathematical and 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 (HLC) of the North Central Association of Colleges and Schools.

HLC's website is: www.ncahigherlearningcommission.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. Persons needing accommodations should contact Disability Services on either campus.

Brooklyn Park	Eden Prairie
Sara Laviolette	Jean Kreutter
Disability Services	Disability Services
(763) 488-2477	(952) 995-1544
MN Relay 711	

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

Diversity

Hennepin Technical College recognizes, respects, and honors diversity existing in society due to an individual's culture, race, ethnicity, religion, gender, sexual orientation, gender identity, gender expression, and level of ability or disability. The college is committed to creating a curriculum and a 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. In 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/htcpolicy

HTC's designated officer, Jean Maierhofer, Director of Diversity and Affirmative Action, can be contacted at (763) 488-2633. Her office is located in Brooklyn Park campus, room F160 and Eden Prairie campus, room F140.

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 "Discrimination and Harassment Complaint Form" at:

hennepintech.edu/faculty/pages/787

HTC's designated officer, Jean Maierhofer, Director of Diversity and Affirmative Action, can be contacted at (763) 488-2633. Her office is located in Brooklyn Park campus, room F160 and Eden Prairie campus, room F140. Her main office is located at the Brooklyn Park campus in room F160.

Academic Advising

A primary goal of Hennepin Technical College is to assist students in making maximum progress toward their educational, career, and personal goals. In order to assist students to be successful, the following services are provided:

Counselors

Professional counselors serve the college community by providing academic, career, and personal counseling to students in a confidential setting. Students visit with counselors regarding a wide variety of concerns, including managing stress, developing career goals, creating academic plans, and understanding college policies. Counselors may refer students to the appropriate campus and/or community resources to best serve the needs of the student.

Enrollment Advisors

Enrollment 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. Enrollment 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

Centers for Student Achievement

The Learning Resource (LRC), Math, and Writing Centers offer free tutoring to registered students on a walk-in basis or by appointment. The centers are staffed by professional tutors and trained peer tutors. Individual and group sessions and workshops are available. Contact the centers for more information.

Learning Resource Centers:

Brooklyn Park Campus	Room G241	Phone 763-488-2451
Eden Prairie Campus	Room E150	Phone 952-995-1548

Math Centers:

Brooklyn Park Campus	Room G227	Phone 763-488-2592
Eden Prairie Campus	Room D125	Phone 952-995-1357

Writing Centers:

Brooklyn Park Campus	Room G221	Phone 763-488-2467
Eden Prairie Campus	Room D125	Phone 952-995-1495

TRIO Student Support Services (SSS)

The TRIO SSS program helps students to be academically successful, acquire 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. This free service includes academic advising, tutoring, mentoring, career counseling, financial assistance information and workshops. For more information and to receive an application contact TRIO Student Support Services.

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. Bus passes are sold at a reduced rate at the Tuition Office at the start of the semester. They can be purchased by cash, debit card, or credit card by currently enrolled students.

Campus Store

The Campus Store is a retail service facility operated to meet the needs of students 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 at bookstore.hennepintech.edu. Computer software may be purchased online.

Career Services

HTC provides free Career Services to current and former students and graduates. The Career Services Office is available to assist students in finding full- or part-time employment. Career Services offers assistance in creating job search strategies, resume and cover letter critiques and guidance, interviewing preparation, such as mock interviews, and a library of resources on careers and employment skills. Career Services also offers career fairs or employer tables throughout the year.

Career Services and faculty work closely with employers to provide job opportunities for students in all programs. The College Central Network (CCN) website is available for all students and graduates to conveniently view current job opportunities. The CCN can be accessed from the HTC website. To contact the Career Services Director, email careerservices@hennepintech.edu or call (763) 488-2411.

Access job opportunities, internships, or find job readiness tools through the College Central Network at: hennepintech.edu/jobs

Career Exploration

HTC 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.

Disability Services

If you are an individual with a disability, the first step in seeking accommodations at Hennepin Technical College is to contact a Disability Services Director. 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 contact one of the directors below to schedule an appointment.

Brooklyn Park Campus
Sara Laviolette, Disability Services Director
(763) 488-2477

Eden Prairie Campus
Jean Kreutter, Disability Services Director
(952) 995-1544

MN Relay 711

English Speakers of Other Languages (ESOL)

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

On Campus Food Service

Meals are available for purchase in the Café on each campus. Grab & Go items are also available for purchase at the campus coffee shop. The campus Café' and Coffee Shop are open on all days when classes are in session in the Fall and Spring semesters. Hours vary by campus. Vending machines are also available around campus.

Library

The HTC Library provides access to a variety of materials that support the curriculum of the college, including print books, online books, online research databases, laptops, tablets, and more. Many current course textbooks are also available to students for a 4-hour checkout (in-building use only). A student ID card is required to check-out any of the print materials or equipment. Our online content can be accessed off-campus, 24/7 through the Library website.

Please visit our website for more information about library resources and services:

hennepintech.edu/library

Testing Centers

The Testing Centers serve students by providing the College Board Placement Test (Accuplacer) for appropriate course placement, as well as makeup testing services for all HTC students. This service is offered for those students who, due to unforeseeable circumstances, are not able to attend the original exam date. Makeup testing is reserved for students on an individual basis and must have prior approval from the instructor. For more information, please visit:

hennepintech.edu/current/pages/349

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 veterans benefits, relax between classes, use the Internet, study, or just get together and talk.

The VRC is staffed by veteran work study students who can provide information on veterans 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

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 & 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: hennepintech.edu/htcpolicy

Attendance

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

- Students with an LDA are locked out of their D2L account.
- Students marked with an 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: hennepintech.edu/htcpolicy

Dropping A Class	Withdrawing From A Class
From time of registration through the 5th business day of the semester (or day after class starts for late start classes)	After 5th day of semester (free add/drop period) <ul style="list-style-type: none"> • 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	Processed online through eServices account
Does not appear on transcript	Class appears on transcript with a "W" attached
No financial responsibility for course	Financially responsible for the credits
Does not impact satisfactory academic progress	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: hennepintech.edu/htcpolicy

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 Student Center for Achievement. 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 time frame 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: hennepintech.edu/htcpolicy

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 : <https://hennepintech.edu/administration/policy/42> or <http://www.minnstate.edu/board/policy/index.html>

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 with 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. Min

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, Career Development Center, Student Affairs and academic departments. For more information go to: <https://hennepintech.edu/administration/policy/42>

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 that directory information be kept private by contact the Office of Registrar.

Student Review & 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: www.minnstate.edu/board/policy/index.html

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 Campus Security webpage at: hennepintech.edu/security

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 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.

- Sara Laviolette, Disability Services Director, Brooklyn Park Campus (763) 488-2477
- Jean Kreutter, Disability Services Director, Eden Prairie Campus (952) 995-1544
- Randy Roehrick, Director of Security and Emergency Preparedness, Brooklyn Park Campus, Eden Prairie Campus, and Law Enforcement and Criminal Justice Education Center (952) 995-1525
- Erin Lynne, Safety Director, Brooklyn Park Campus, Eden Prairie Campus, and Law Enforcement and Criminal Justice Education Center (763) 488-2506

Campus Security & Safety

Crime Awareness and Campus Security Act

HTC Campus Security 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 public and students as required by the Clery Act and can be found on the HTC Campus Security webpage at: hennepintech.edu/security

Additionally, the report is available at each campus security office, and copies are available upon request by contacting the HTC Director of Security and Emergency Preparedness at 952-995-1525.

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 & Safety

In an effort to ensure optimal student safety, all students are expected to comply with instructions from HTC faculty, staff, and emergency responders. Emergency Response Guides 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 Campus Security webpage, or a copy can be obtained from the Director of Security and Emergency Preparedness.

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 Security Office at each campus. For further details on Policy 6HTC.3 Abandoned Personal Property, visit: hennepintech.edu/htcpolicy

Accident Reporting

If an injury should occur at the college, it must be reported to security 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: hennepintech.edu/htcpolicy

For a list of community area substance abuse treatment center referrals, visit: hennepintech.edu/current/pages/476

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 child care 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. Anyone 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 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: hennepintech.edu/htcpolicy

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. Campus Security actively enforces parking in the reserved spaces/lots, and will issue \$25 citations for violations. Handicapped parking spaces are available at each campus. Campus Security provides escorts to all campus parking areas on request.

For more information, please see Parking Guidelines and maps at: hennepintech.edu/about/pages/Security

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 hennepintech.edu/htcpolicy

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 HTC. 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: hennepintech.edu/htcpolicy

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.

Consent

Consent is informed, freely given and mutually understood. 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 not consent; this includes conditions due to alcohol or drug consumption, or being asleep or unconscious. Silence does not necessarily constitute consent, and past consent of sexual activities does not imply ongoing future 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 campus security 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: hennepintech.edu/about/pages/1624

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

Tobacco Free Campus

HTC is tobacco free. View Policy 5HTC.6 Tobacco Free Policy at hennepintech.edu/htcpolicy

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:

hennepintech.edu/htcpolicy

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

To access eServices, visit: hennepintech.edu/eservices

Learning Commons

Each campus has a Learning Commons, with 10 computers and the GO Print system. 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

HTC 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 Campus Security staff during New Student Orientation or in the Security 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.

Student Life & 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

At Career Fairs, employers come to our campus to recruit students and alumni for jobs and internships. Most Hennepin Tech Career Fairs are designed to connect students to employers in specific areas. However, many employers recruit from across all majors and train college graduates for a variety of careers. Even if you are not ready to apply now, you can start preparing by networking with recruiters and learning about upcoming opportunities and requirements.

Career Experiences (Internships)

We are working to develop career experiences/internships where none currently exist, supporting faculty with existing opportunities, managing a career experience/internship grant from [Great Lakes Higher Education Guaranty Corporation](#), and partnering with the Brooklyn Bridge Alliance for Youth's - [Brooklyn Summer Youth Employment Program](#). Students interested in a career experience can learn more about opportunities online at: hennepintech.edu/current/pages/1680

College Central Network

Visit www.collegecentral.com/hennepintech/ to:

- Search our exclusive job listings and set up your job agent today
- Create your online resume! It's easy with our resume builder
- Build, update, and forward your online career portfolio to employers
- Read our career-related announcements
- Check out upcoming career events
- Download our schools free career advice documents and podcasts
- Read hundreds of career related articles
- View and apply to jobs on the nations largest entry-level job board

Student Life Center

The Student Life 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 Center, you will find Student Experience Team members as a resource as well as the Student Senate office.

Student Activities & Student Experience Team

Student Life offers many student activities that are all set up so that you can come when you can and leave when you need to! The Student Life staff organizes these activities along with the Student Experience Team. The Student Experience Team is a group of select students who are dedicated to positively representing Hennepin Technical College as peer mentors and assistants 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 & 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 Center) on each campus. Hennepin Technical College also has a number of clubs for students to join. Check out the list on our webpage.

Leadership Series

Leadership is one of the top skills employers are looking for. Gain leadership skills at Hennepin Tech through the Leadership Series which are one hour sessions offered monthly on important topics. Find the list of dates on our webpage.

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 & Events

Visit our webpage for a list of current workshops and events at: hennepintech.edu/current/pages/925

Contact Student Life & Career Development staff at

- studentlife@hennepintech.edu
- careerservices@hennepintech.edu

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 an enrollment 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 wishing 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 may enroll in classes during open registration periods. Visiting students must meet the necessary course prerequisites to be eligible for registration. Please review the course prerequisites on the college website before registration. Students who do not complete the admissions process/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 for Juniors and Seniors

- Must be a high school junior or senior in any 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 class rank requirements:
 - Seniors: Class rank at top half of your class
 - Juniors: Class rank at top third of your class
- OR
 - Students who do not meet class rank requirements are asked to submit a letter of recommendation from a high school counselor or teacher.
- Completion of the HTC Accuplacer Test
- 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 attain a passing score on the 8th grade Minnesota Comprehensive Assessment in reading and meets 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, may enroll in a 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 under this provision while in 10th grade and wishes to enroll in general education courses as an 11th or 12th grade student must take the Accuplacer test and achieve the required scores prior to enrollment in general education courses.

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 and 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. Valid picture identification is required. If you need accommodations based on a disability, contact Disability Services prior to testing.

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

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 at:

hennepintech.edu/testing

Students are allowed to retest once in a three year period in reading, writing, computer literacy, and once in a two year period for mathematics. Students are charged a retest fee of \$10.

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, 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:

hennepintech.edu/transfer

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:

hennepintech.edu/mntc

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: 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 or enrollment advisor or access the information on the HTC website. For additional transfer information, go to www.mntransfer.org

Partner Institutions

Completing a 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 enrollment 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

Tech Prep College Credits are college credits earned in grades 10, 11, or 12 in high school classes which are specifically designated as Tech Prep. High school students who successfully complete the requirements are awarded a certificate through their high school. Students who enroll at Hennepin Technical College may request to have Minnesota High School Tech Prep College Credits, which apply to their major, 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. Semester and cumulative grade point average (GPA) is calculated on A, B, C, D, and F 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, and F 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 the academic advisor.

To obtain a DARS Audit, you must have a declared major.

Visit eServices for your DARS at: hennepintech.edu/eservices

Transcripts

A transcript is the official record of a student's academic history and requires the student's signature for release. Your official academic transcript is available for a fee. You must submit a signed Transcript Request form in order to receive an official transcript. There is no fee for an unofficial transcript.

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 or at the Registration Office. 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 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 insure that you will receive all of the graduation ceremony information: hennepintech.edu/graduation

- 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 Enrollment Services Office if you are not sure if you have completed an Application for Award.
- Submit the Application for Award form to the Enrollment Services Office. 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 at EPC 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 about 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.fafsa.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/getstarted

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 option 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 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 of aid 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 by the tuition payment deadline if the student's registration is not to be 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

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 email at veteransco@hennepintech.edu. The college's role is to report to the VA the student's enrollment information. This is called the Enrollment Certification.

Any changes to the student's declared major, credit level, address, course schedule, etc., must be reported to the Certifying Official. Schedule changes after the initial Enrollment Certification may change the amount of benefits.

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

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

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

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 MN 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 once in a three year period in reading, writing, and computer literacy and once in a two year period for mathematics. 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. You must submit a signed Transcript Request form in order to receive an official transcript. 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 or a counselor 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 planner. Students may view their account balances and pay online by accessing eServices at: hennepintech.edu/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 and 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 general education courses that are numbered 2000 and above, with the exception of computer literacy. Students may apply up to three computer literacy credits toward satisfying the general education requirements for their degree.

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 or a counselor. A course taken for audit will not satisfy a prerequisite.

Adding, Dropping, & 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 counselor or 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. Students are not officially enrolled in a course until the Add/Drop form has been submitted with the required signatures.
- 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 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 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

DEGREES & PROGRAMS

Please visit www.hennepintech.edu/programs for the latest degree and program information.

Building & Landscape

Architectural Technology (ARCH)

Associate of Applied Science Degree	Architectural Technology	(BP/EP)
Diploma	Architectural Technology	(BP/EP)

Carpentry (CARP)

Associate of Applied Science Degree	Residential Remodeling and Design	(BP/EP)
Diploma	Carpentry	(BP/EP)
Occupational Certificate	General Construction Laborer	(BP/EP)

Heating, Ventilation, Air Conditioning (HVAC)

Associate of Applied Science Degree	Heating, Ventilation, Air Conditioning, and Refrigeration	(BP/EP)
Diploma	Commercial Heating, Ventilation, Air Conditioning and Refrigeration	(EP)
Diploma	Residential Heating, Ventilation and Air Conditioning	(BP/EP)

Landscaping and Horticulture (LNDC)

Associate of Applied Science Degree	Greenhouse Management Technician	(BP)
Associate of Applied Science Degree	Landscape Design and Construction	(BP)
Associate of Applied Science Degree	Landscape/Horticulture	(BP)
Associate of Applied Science Degree	Urban Forestry Technician	(BP)
Diploma	Landscape Design and Construction	(BP)
Diploma	Landscape/Horticulture	(BP)
Advanced Technical Certificate	Landscape Computer Design	(BP)
Advanced Technical Certificate	Landscape Construction	(BP)
Occupational Certificate	Arboriculture	(BP)
Occupational Certificate	Greenhouse Technician	(BP)
Occupational Certificate	Professional Gardening	(BP)

Plumbing Technology (PLBG)

Diploma	Plumbing Technology	(EP)
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Public Works (PWRK)

Occupational Certificate	Street, Utility, and Park Maintenance Technician	(BP/EP)
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Woodworking Technology (CBTG)

Associate of Applied Science Degree	Cabinetmaking	(BP)
Diploma	Cabinetmaking	(BP)
Advanced Technical Certificate	CNC Machining for Wood and Plastics	(BP)
Advanced Technical Certificate	Wood Product Engineering	(BP)
Occupational Certificate	Cabinetmaking	(BP)

Associate of Applied Science Degree

Architectural Technology (BP/EP)

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.

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.

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.

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

ENGL2125 Technical Writing 3
 Choose three credits from MnTC Goal Area 1 3
 Choose three credits from MnTC Goal Area 2 3
 Choose three credits from MnTC Goal Area 5 3
 Choose three 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 of Applied Science Degree Credits 72

Diploma

Architectural Technology (BP/EP)

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.

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.

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.

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

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

Associate of Applied Science Degree**Residential Remodeling and Design (BP/EP)****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. Professionals 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.

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.

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

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 1
 or
 ARCH1340 Building Codes: Commercial 2

General Education Required 15 Credits

Choose 15 Credits from MnTC General Education in three different Goal Areas. 15

General Education Elective 0 Credits**Technical Studies Elective 17 Credits**

Choose 17 Credits from ARCH, CARP, CBTG, HVAC, LNDC, or IBEM

Total Associate of Applied Science Degree Credits 60

Diploma

Carpentry (BP/EP)**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.

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.

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.

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 1
 or
 ARCH1340 Building Codes: Commercial 2

General Education Required 2 Credits

MATH1007 Math for the Trades 2

General Education Elective 2 Credits

Any HTC 1000 level or higher general education course may be used to satisfy the elective requirements.

Technical Studies Elective 4 Credits

Recommended:
 CARP1130 Additions and Retrofit 2
 CARP1150 Rafter Framing 3
 CARP1190 Deck Construction 1
 CARP1420 Concrete Stairs, Walks and Drives 1
 CARP1430 Install Concrete Slabs 1
 CARP1760 Cabinet Making 3
 CARP1840 Energy Efficient Construction 1
 CARP1850 Introduction to Computer Assisted Drawing 1
 CARP1900 Specialized Lab 1-4
 CARP2000 Green Building Concepts 3
 CARP2005 Green Building Materials 2
 CARP2010 The House as an Integrated System 4
 CARP2015 Weatherization of New and Existing Homes 3
 CARP2020 Introduction to Home Rating Systems 2
 CARP2025 Carpentry Internship 1-3

Total Diploma Credits 36

Occupational Certificate

General Construction Laborer (BP/EP)

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.

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.

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.

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

Associate of Applied Science Degree

Heating, Ventilation, Air Conditioning, and Refrigeration (BP/EP)**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.

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.

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.

Technical Studies Required 55 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
 MATH1007 Math for the Trades 2

General Education Required 9 Credits

PHYS2001 Introductory Physics 3
 or
 COMM2050 Interpersonal Communication 3
 or
 Choose one course from MnTC Goal Area 1 (Communication) 3

PHIL2100 Critical Thinking 3

or

Choose one course from MnTC Goal Area 2 (Critical Thinking) 3

SOCI2100 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

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

Technical Studies Elective 2 Credits

Recommended:

HVAC1015 Residential Heat Load Calculation 1

HVAC1025 Mini-Split Air Conditioners 1

HVAC1081 Oil Heat Systems 1

HVAC1100 Service Call Completion 1

HVAC1155 Radiant Heat Systems 1

HVAC1160 Air Quality Systems 1

HVAC1175 R-410A Certification Training 1

HVAC1181 MN Class C Boiler Operator License 3

HVAC1185 R-410A Certification Exam 0

HVAC1190 MN Special Boilers License 1

HVAC2020 Pneumatic Controls 2

HVAC2060 Computer Room Air Conditioning 1

HVAC2100 Water Chiller Machines 3

HVAC2165 Air Handling Units 1

Total Associate of Applied Science Degree Credits 72

Diploma

Commercial Heating, Ventilation, Air Conditioning and Refrigeration (EP)

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.

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.

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.

Technical Studies Required **32 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
HVAC2020 Pneumatic Controls 2
HVAC2030 Commercial Ice Making Machines 3
HVAC2041 Gas/Refrigeration (Mechanical) Code 1
HVAC2050 Electrical for Commercial HVAC&R Equipment 2
HVAC2060 Computer Room Air Conditioning 1
HVAC2100 Water Chiller Machines 3
HVAC2111 Low Pressure Steam and Water Boilers 2
HVAC2121 Refrigerated Coolers and Cases 4
HVAC2130 Supermarket Refrigeration 3
HVAC2165 Air Handling Units 1

General Education Required **2 Credits**

CCDS1040 Job Seeking Skills 2
or
COMM1050 Communication in the Workplace 2
or
ENGL1026 Writing for Careers 3

General Education Elective **2 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 36

Diploma

Residential Heating, Ventilation and Air Conditioning (BP/EP)

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.

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.

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.

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 2 Credits

MATH1007 Math for the Trades 2

General Education Elective 2 Credits

Any HTC 1000 level or higher general education course may be used to satisfy the elective requirements.

Technical Studies Elective 1 Credit

Recommended:
 HVAC1015 Residential Heat Load Calculation 1
 HVAC1025 Mini-Split Air Conditioners 1
 HVAC1081 Oil Heat Systems 1
 HVAC1100 Service Call Completion 1
 HVAC1155 Radiant Heat Systems 1
 HVAC1160 Air Quality Systems 1
 HVAC1175 R-410A Certification Training 1
 HVAC1181 MN Class C Boiler Operator License 3
 HVAC1185 R-410A Certification Exam 0
 HVAC1190 MN Special Boilers License 1

Total Diploma Credits 35

Associate of Applied Science Degree

Greenhouse Management Technician (BP)**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.

Career Opportunities

Employment options include greenhouse production, plant propagation, greenhouse management and plant brokering.

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.

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

ENGL2121 Writing and Research 4
 or
 ENGL2125 Technical Writing 3

Choose one course from MnTC Goal Area 2 3

Choose one course from MnTC Goal Area 5 3

General Education Elective 6 Credits

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

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
 LNDC2220 Turf Culture and Management 3
 LNDC2360 Horticulture Internship 1-4

Total Associate of Applied Science Degree Credits 60

Associate of Applied Science Degree

Landscape Design and Construction (BP)

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.

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.

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 plants.
- 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.

Technical Studies Required 54 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
- MATH1007 Math for the Trades 2

General Education Required 12 Credits

- ENGL2121 Writing and Research 4
- or
- ENGL2125 Technical Writing 3

- 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 3 Credits

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

Technical Studies Elective

3 Credits

Recommended:

- LNDC1131 Arboriculture I 3
- 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
- LNDC1900 Specialized Lab 1-4
- LNDC2210 Tropical Plants and Their Uses 2
- LNDC2220 Turf Culture and Management 3
- LNDC2261 Professional Gardening 3
- LNDC2335 Landscape Construction Internship 1-4

Total Associate of Applied Science Degree Credits 72

Associate of Applied Science Degree

Landscape/Horticulture (BP)

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.

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.

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.

Technical Studies Required 49 Credits

LNDC1110 Introduction to Landscape/Horticulture Careers 1
 LNDC1120 Woody Plants I - Trees 4
 LNDC1131 Arboriculture I 3
 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
 LNDC2220 Turf Culture and Management 3
 LNDC2241 Landscape Equipment Operation 3
 LNDC2261 Professional Gardening 3
 MATH1007 Math for the Trades 2

General Education Required 15 Credits

CPLT1100 Computer Essentials in the Digital World 3

 ENGL2121 Writing and Research 4
 or
 ENGL2125 Technical Writing 3

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 3 Credits

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

Associate of Applied Science Degree

Urban Forestry Technician (BP)

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 as well. Extensive employment opportunities are available nationwide. Students will study a variety of required subjects and elective courses allowing them to customize their program.

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 as well.

Award Outcomes

Identify Minnesota native woody plants by botanical/common names.
 Identify Minnesota natural 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.
 Design environmentally sound landscapes.
 Integrate a sustainable approach to landscape installation and maintenance.
 Prepare to take Minnesota Tree Inspector Certification Test.
 Prepare to take ISA Certified Arborist Test (Knowledge Portion).

Technical Studies Required 39 Credits

LNDC1110 Introduction to Landscape/Horticulture Careers 1
 LNDC1120 Woody Plants I - Trees 4
 LNDC1131 Arboriculture I 3
 LNDC1145 Tree Climbing Operations 3
 LNDC1151 Insects and Diseases of Landscape Plants 3
 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
 LNDC2165 Advanced Arboriculture 3
 LNDC2241 Landscape Equipment Operation 3

General Education Required 12 Credits

ENGL2121 Writing and Research 4
 or
 ENGL2125 Technical Writing 3
 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 3 Credits

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

Technical Studies Elective 6 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
 LNDC2155 Advanced Tree Climbing Operations 2
 LNDC2220 Turf Culture and Management 3
 LNDC2261 Professional Gardening 3
 LNDC2345 Arboriculture Internship 1-4

Total Associate of Applied Science Degree Credits 60

Diploma

Landscape Design and Construction (BP)

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.

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.

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.

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 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

- LNDC1131 Arboriculture I 3
- LNDC1141 Nursery Propagation and Production 3
- LNDC1220 Integrated Pest Management 2
- LNDC1900 Specialized Lab 1-4
- LNDC2210 Tropical Plants and Their Uses 2
- LNDC2220 Turf Culture and Management 3
- 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
- LNDC2345 Arboriculture Internship 1-4

Total Diploma Credits 64

Diploma

Landscape/Horticulture (BP)

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.

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.

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.

Technical Studies Required 47 Credits

LNDC1110 Introduction to Landscape/Horticulture Careers 1
 LNDC1120 Woody Plants I - Trees 4
 LNDC1131 Arboriculture I 3
 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
 LNDC2220 Turf Culture and Management 3
 LNDC2241 Landscape Equipment Operation 3
 LNDC2261 Professional Gardening 3

General Education Required 4 Credits

COMM1050 Communication in the Workplace 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 9 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
 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
LNDC2345 Arboriculture Internship 1-4
LNDC2350 Grounds Maintenance Internship 1-4
LNDC2360 Horticulture Internship 1-4

Total Diploma Credits 64

Advanced Technical Certificate

Landscape Computer Design (BP)

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.

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.

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.

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

Advanced Technical Certificate**Landscape Construction (BP)****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.

Career Opportunities

Completion of the construction certificate will lead directly to opportunities with landscape construction and design/building firms.

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.

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

Occupational Certificate**Arboriculture (BP)****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.

Career Opportunities

Students completing the arboriculture certificate may be employed in the tree service industry, park systems and ground maintenance businesses.

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.

Technical Studies Required 23 Credits

LNDC1120 Woody Plants I - Trees 4
LNDC1131 Arboriculture I 3
LNDC1145 Tree Climbing Operations 3
LNDC1151 Insects and Diseases of Landscape Plants 3
LNDC1190 Woody Plants II - Shrubs 4
LNDC2165 Advanced Arboriculture 3
LNDC2341 Arboriculture Internship Certificate 3

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

Total Occupational Certificate Credits 23

Occupational Certificate**Greenhouse Technician (BP)****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.

Career Opportunities

Employment options include greenhouse production, plant propagation, greenhouse management and plant brokering.

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.

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

Occupational Certificate

Professional Gardening (BP)**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.

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.

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 plans.
 Identify Minnesota natural plant communities.
 Communicate effectively with staff and clients.
 Use hand tools safely and efficiently.

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

Diploma

Plumbing Technology (EP)

Overview

The Plumbing Technology program prepares students to begin a career in plumbing and pipefitting. Coursework provides students with the technical understanding and skills development in installation of fixtures, pipe threading, use of tools and equipment, hot and cold water supply, drainage systems, fabrication and testing, maintenance and repair of plumbing and hydronic heat. Through the program, the student will develop skills to work in both a residential and commercial setting.

Career Opportunities

Graduating students will develop skills to work in residential, commercial, industrial and service plumbing. Plumbers must keep informed of latest developments in sanitary science.

Award Outcomes

Obtain OSHA 30 Certification.

Demonstrate knowledge of proper installation of plumbing systems.

Demonstrate the ability to read and interpret blueprints.

Solve problem using analytical thinking.

Demonstrate knowledge of codes, rules and regulations.

Demonstrate proper techniques of installing plumbing fixtures, faucets and water heaters.

Technical Studies Required **31 Credits**

HVAC1005 OSHA 30-Hour Construction Safety Training 2

PLBG1000 Introduction to Piping Procedures 2

PLBG1011 Blueprint Reading and Estimating 3

PLBG1016 Building Sewers and Drain Systems 3

PLBG1020 Copper Pipe Procedures 2

PLBG1025 Plastic Pipe Procedures 2

PLBG1031 Plumbing Calculations 3

PLBG1035 Minnesota State Plumbing Code I 3

PLBG1041 Plumbing Systems 3

PLBG1045 Minnesota State Plumbing Code II 3

PLBG1050 Plumbing Fixture Installation 3

PLBG1055 Internship 2

General Education Required **0 Credits**

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 35

Occupational Certificate

Street, Utility, and Park Maintenance Technician (BP/EP)**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.

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.

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.

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**

Associate of Applied Science Degree**Cabinetmaking (BP)****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.

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.

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.

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 Cabinet Layout and Design 3
 CBTG2320 Cabinet Joinery 3
 CBTG2331 Cabinet Fabrication 4
 CBTG2361 Frameless Cabinetry 4
 CBTG2410 Furniture Design 2
 CBTG2421 Furniture Joinery 4
 CBTG2430 Furniture Fabrication 4
 CBTG2450 Solid Surface Fabrication 2

General Education Required 9 Credits

Choose three credits of General Education from MnTC Goal Area 1 3
 Choose six credits of General Education from any two different MnTC Goal Areas 2-10 6

General Education Elective 6 Credits

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

Technical Studies Elective 0 Credits

Total Associate of Applied Science Degree Credits 72

Diploma

Cabinetmaking (BP)**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.

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.

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.

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 Cabinet Layout and Design 3
 CBTG2320 Cabinet Joinery 3
 CBTG2331 Cabinet Fabrication 4
 CBTG2361 Frameless Cabinetry 4
 CBTG2410 Furniture Design 2
 CBTG2421 Furniture Joinery 4
 CBTG2430 Furniture Fabrication 4
 CBTG2450 Solid Surface Fabrication 2

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 1 Credit

Any Cabinetmaking (CBTG) course not required for this award may be used to satisfy an elective requirement.

Total Diploma Credits 64

Advanced Technical Certificate**CNC Machining for Wood and Plastics (BP)****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.

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.

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.

Technical Studies Required 13 Credits

CBTG1170 AutoCAD 4
 CBTG2522 Advanced CNC Programming 3
 CBTG2532 CNC Router Operation 3
 CBTG2551 Point to Point Machining 3

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

Total Advanced Technical Certificate Credits 13

Advanced Technical Certificate**Wood Product Engineering (BP)****Overview**

This certificate focuses on the layout, design and product development needs for creating manufacturing solutions for the construction of cabinetry, store fixtures, displays and architectural woodworking details. Participants will use the latest in industry software to produce effective drawings, cut lists, and automated machining data for the accurate manipulation of wood materials in the production and assembly of components for the wood product industry.

Prerequisite: Completion of Cabinetmaking AAS degree or Diploma or two years related experience in the woodworking industry.

Career Opportunities

Individuals completing this certificate would be seeking employment in areas of a project management position. This person would be responsible for the product development and production of woodworking products in residential cabinet shops, store fixtures, architectural millwork and trade show companies.

Award Outcomes

- Develop sales and engineering drawings.
- Develop efficient product engineering processes.
- Manage material optimization processes.
- Develop precise component lists.
- Develop automated component processes.
- Use software effectively for product development.

Technical Studies Required 17 Credits

- CBTG1170 AutoCAD 4
- CBTG1220 Blueprint Reading and Shop Drawings 3
- CBTG2440 Mozaik Cabinet Design 3
- CBTG2522 Advanced CNC Programming 3
- CBTG2555 Autodesk Inventor Cabinet Design 2
- CBTG2560 AutoCAD Product Fabrication 2

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

Total Advanced Technical Certificate Credits 17

Occupational Certificate**Cabinetmaking (BP)****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.

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.

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.

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

Business & Information Technology

Accounting (ACCT)

Associate of Applied Science Degree	Accounting	(BP/EP)
Associate of Science	Accounting	(EP)
Diploma	Accounting Technician	(BP/EP)
Occupational Certificate	Accounting	(BP/EP)

Business (BUSN)

Associate of Applied Science Degree	Entrepreneurship	(BP/EP)
Associate of Applied Science Degree	Event and Meeting Management	(BP/EP)
Associate of Applied Science Degree	Management	(BP/EP)
Associate of Applied Science Degree	Marketing and Sales	(BP/EP)
Occupational Certificate	Entrepreneurship	(BP/EP)
Occupational Certificate	Supervisory Management	(BP/EP)

Information Technology (CCIS)

Associate of Applied Science Degree	Data Analyst	(BP/EP)
Associate of Applied Science Degree	Desktop Support	(BP/EP)
Associate of Applied Science Degree	Executive Administrative Professional	(BP/EP)
Associate of Applied Science Degree	Network Administrator/Analyst	(BP/EP)
Associate of Applied Science Degree	.NET Programmer	(BP/EP)
Diploma	Desktop Support Specialist	(BP/EP)
Diploma	Network Support Specialist	(BP/EP)
Diploma	.NET Programmer	(BP/EP)
Diploma	Workplace Administrative Professional	(BP/EP)
Advanced Technical Certificate	Cisco Networking	(BP/EP)
Advanced Technical Certificate	Linux Networking	(BP/EP)
Advanced Technical Certificate	Microsoft Database Specialist	(BP/EP)
Advanced Technical Certificate	.NET Programmer	(BP/EP)
Advanced Technical Certificate	Windows Networking	(BP/EP)
Occupational Certificate	Computer Service Desk Technician	(BP/EP)
Occupational Certificate	Microsoft Office Applications	(BP/EP)
Occupational Certificate	Office Generalist	(BP/EP)
Occupational Certificate	Office Specialist	(BP/EP)
Occupational Certificate	Workplace Administrative Assistant	(BP/EP)

Associate of Applied Science Degree**Accounting (BP/EP)****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.

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.

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.

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 Microsoft Dynamics GP 3
 or
 ACCT1135 QuickBooks 3
 or
 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**

COMM2050 Interpersonal Communication 3
 or
 COMM2060 Small Group Communication 3
 or
 COMM2130 Public Speaking 3
 ECON2200 Principles of Microeconomics 3
 ENGL2121 Writing and Research 4
 or
 ENGL2125 Technical Writing 3
 MATH2050 Applications of Quantitative Reasoning 3
 or
 MATH2150 Introduction to Statistics 3
 or
 MATH2200 College Algebra 4
 Gen Ed Choose one course from MnTC Goal Area 2 3

General Education Elective**0 Credits**

Technical Studies Elective 3 Credits

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

Total Associate of Applied Science Degree Credits 60

Associate of Science

Accounting (EP)**Overview**

This degree is designed to prepare individuals for employment in the accounting profession at the associate accountant level. Students learn the basics of accounting principles, and how these are applied to real-world business settings, along with a variety of software commonly used by accountants. This degree also expands the students' knowledge communication, writing, and critical thinking skills. Upon completion of the degree, the student can analyze financial transactions, record transactions, prepare financial statements and documents, and interpret financial information. This award will transfer to Metro State University and other institutions towards a Bachelor's Degree in Accounting.

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.

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.

Technical Studies Required 29 Credits

ACCT1130 Microsoft Dynamics GP 3
 or
 ACCT1135 QuickBooks 3
 or
 ACCT1150 Sage 50 3
 ACCT2155 Financial Accounting 4
 ACCT2221 Managerial Accounting 4
 ACCT2231 Income Tax 4
 ACCT2950 Accounting Skills Assessment 0
 ACCT-310 Financial Accounting - Metro State University 4
 ACCT-530 Business Taxation - Metro State University 4
 BUSN1140 Business Law 3
 CCIS1080 Microsoft Office 2016 3

General Education Required 31 Credits

COMM2130 Public Speaking 3
 ECON2200 Principles of Microeconomics 3
 ECON2300 Principles of Macroeconomics 3
 ENGL2121 Writing and Research 4
 MATH2150 Introduction to Statistics 3
 MATH2200 College Algebra 4
 Gen Ed Choose three credits from MnTC Goal Area 6 3
 Gen Ed Choose eight credits from two of the following MnTC Goal Areas:2, 3, 7, 8, 9, or 10 8

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

Total Associate of Science Credits 60

Diploma

Accounting Technician (BP/EP)

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.

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.

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.

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 Microsoft Dynamics GP 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

COMM2050 Interpersonal Communication 3
 or
 COMM2060 Small Group Communication 3
 or
 COMM2130 Public Speaking 3

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 3 Credits

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

Total Diploma Credits 31

Occupational Certificate**Accounting (BP/EP)****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.

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.

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.

Technical Studies Required 17 Credits

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

General Education Required 0 Credits

General Education Elective 0 Credits

Technical Studies Elective 0 Credits

Total Occupational Certificate Credits 17

Associate of Applied Science Degree

Entrepreneurship (BP/EP)**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.

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 US.

Award Outcomes

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

Technical Studies Required**45 Credits**

ACCT1000 Introduction to Accounting 3
 ACCT1135 QuickBooks 3
 ACCT1410 Business Finance 3
 BUSN1000 Introduction to Business 3
 BUSN1010 Marketing Concepts and Strategies 4
 BUSN1020 Introduction to Selling 3
 BUSN1051 Introduction to Management 4
 BUSN1100 Supervision 3
 BUSN1140 Business Law 3
 BUSN1200 Managerial Communication 3
 BUSN1510 Entrepreneurship 3
 BUSN2075 Digital Marketing 3
 BUSN2085 Small Business Operations 4
 BUSN2100 Capstone 3

General Education Required**15 Credits**

COMM2130 Public Speaking 3
 ENGL2121 Writing and Research 4
 or
 ENGL2125 Technical Writing 3
 PHIL2100 Critical Thinking 3

Choose any course from Goal 4 (Mathematical/Logical Reasoning) of the Minnesota Transfer Curriculum 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

General Education Elective**0 Credits****Technical Studies Elective****0 Credits****Total Associate of Applied Science Degree Credits 60**

Associate of Applied Science Degree

Event and Meeting Management (BP/EP)

Overview

Event and Meeting Management will prepare you for employment in entry-level positions in event management, meeting planning, convention sales, and hotel and resort companies. You'll learn what is required to plan and manage events from concept to completion including contracts, venue, presentations, menu, marketing, and industry business practices. Effective communication skills, strong human relations abilities, and problem-solving skills will contribute to your success in the program and on the job.

Career Opportunities

Event planning is a growing profession. Many associations and corporations hire people whose main job responsibilities are to arrange, plan and conduct events and meetings in a wide range of venues and locations. There is a high demand for skilled, educated, customer service-oriented employees to enter the events industry.

Award Outcomes

Solve business problems using critical thinking and decision making techniques.

Apply marketing concepts and strategies.

Demonstrate the steps of the sales process.

Recognize different types of supplier contracts and legal issues for events.

Demonstrate the ability to plan a variety of menus.

Demonstrate the ability to set up and run the needs of an event speaker.

Produce a detailed event using audio/visual and lighting elements.

Integrate the use of industry standard technology and design.

Technical Studies Required **45 Credits**

ACCT1000 Introduction to Accounting 3

ACCT1410 Business Finance 3

BUSN1000 Introduction to Business 3

BUSN1010 Marketing Concepts and Strategies 4

BUSN1051 Introduction to Management 4

or

BUSN1100 Supervision 3

BUSN1091 Consultative Selling 3

or

BUSN1510 Entrepreneurship 3

BUSN2040 Introduction to Event Planning 3

BUSN2050 Event Site Sourcing and Contracts 3

CCIS2055 Project Management 3

CPLT1100 Computer Essentials in the Digital World 3

CULA1106 Introduction to the Hospitality Industry 2

CULA1325 Menu Planning 2

CULA1700 Human Relations Management 2

CULA1710 Beverage Management 2

CULA2050 Fundamentals of Wine 2

MMVP1650 Event Technical Production 4

General Education Required **12 Credits**

COMM2050 Interpersonal Communication 3

or

COMM2060 Small Group Communication 3

COMM2130 Public Speaking 3

ENGL2121 Writing and Research 4

or

ENGL2125 Technical Writing 3

PHIL2100 Critical Thinking 3

General Education Elective **3 Credits**

Any course from Goal 3 (Natural Sciences) or Goal 4 (Mathematical/Logical Reasoning) or Goal 5 (History and the Social and Behavioral Sciences) of the Minnesota Transfer Curriculum

Technical Studies Elective **0 Credits**

Total Associate of Applied Science Degree Credits 60

Associate of Applied Science Degree

Management (BP/EP)

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.

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.

Award Outcomes

Solve business problems using critical thinking and decision making techniques.
 Demonstrate interpersonal and team building skills.
 Demonstrate effective oral and written communications skills in business communications.
 Practice professional and ethical behavior.
 Apply marketing concepts and strategies to business decision making.
 Apply management concepts to business problems.
 Utilize financial concepts in analysis of business problems.

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

BUSN1010 Marketing Concepts and Strategies 4

BUSN1020 Introduction to Selling 3

BUSN1051 Introduction to Management 4

BUSN1100 Supervision 3

BUSN1140 Business Law 3

BUSN1150 Introduction to Service and Work Team Strategies 3

BUSN1200 Managerial Communication 3

BUSN1510 Entrepreneurship 3

General Education Required 12 Credits

ENGL2121 Writing and Research 4

or

ENGL2125 Technical Writing 3

Choose one of the following:

COMM2050 Interpersonal Communication 3

COMM2060 Small Group Communication 3

COMM2130 Public Speaking 3

Choose one of the following:

Any course from Goal 2 (Critical Thinking) or Goal 4 (Mathematical/Logical Reasoning) of the Minnesota Transfer Curriculum 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

General Education Elective 3 Credits

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

Technical Studies Elective 10 Credits

Technical Studies Electives: 10 Credits (at least four credits must be from Business (BUSN); the remaining six credits can be from any of the three areas: ACCT, BUSN, and CCIS.)

ACCT1111 Payroll Accounting 3

ACCT1125 Excel 3

ACCT1130 Microsoft Dynamics GP 3

ACCT1135 QuickBooks 3

BUSN1030 Professional Development 3

BUSN1041 Customer Relationship Management (CRM) 3

BUSN1060 Territory/Account Management 3

BUSN1091 Consultative Selling 3

BUSN1170 Supervised Occupational Experience 4

BUSN1300 E-Business 3

BUSN1500 Database Concepts and Data Analysis Tools 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

CCIS1000 Information Systems 3

CCIS1080 Microsoft Office 2016 3

CCIS1101 Windows 10 3

CCIS2055 Project Management 3

CCIS2801 Systems Analysis 4

Total Associate of Applied Science Degree Credits 60

Associate of Applied Science Degree

Marketing and Sales (BP/EP)**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.

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.

Award Outcomes

Develop marketing strategies based on product, price, promotion and place objectives.
Solve marketing and sales problems using critical thinking and decision making techniques.
Apply strategic marketing concepts to develop and implement a marketing plan.
Demonstrate the steps of an interactive sales process.
Collect and analyze consumer data to make informed marketing decisions.
Demonstrate effective oral and written communications skills.
Apply CRM in the concept of account management.
Utilize financial concepts in analysis of business problems.

Technical Studies Required 45 Credits

BUSN1000 Introduction to Business 3
BUSN1010 Marketing Concepts and Strategies 4
BUSN1020 Introduction to Selling 3
BUSN1030 Professional Development 3
BUSN1041 Customer Relationship Management (CRM) 3
BUSN1051 Introduction to Management 4
BUSN1060 Territory/Account Management 3
BUSN1091 Consultative Selling 3
BUSN1150 Introduction to Service and Work Team Strategies 3
BUSN1170 Supervised Occupational Experience 4
BUSN1200 Managerial Communication 3
BUSN2015 Marketing Applications 3
BUSN2075 Digital Marketing 3
CCIS1080 Microsoft Office 2016 3

General Education Required 15 Credits

COMM2130 Public Speaking 3
ENGL2121 Writing and Research 4
or
ENGL2125 Technical Writing 3
PHIL2100 Critical Thinking 3

Choose any course from Goal 4 (Mathematical/Logical Reasoning) of the Minnesota Transfer Curriculum 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

General Education Elective 0 Credits

Technical Studies Elective 0 Credits

Total Associate of Applied Science Degree Credits 60

Occupational Certificate

Entrepreneurship (BP/EP)

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.

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.

Award Outcomes

Solve business problems.
 Demonstrate interpersonal skills.
 Demonstrate oral and written communications skills.
 Demonstrate professional and ethical behavior.
 Apply marketing concepts and strategies.
 Apply supervision concepts to business problems.
 Utilize financial concepts in analysis of business problems.

Technical Studies Required 19 Credits

ACCT1410 Business Finance 3
 BUSN1000 Introduction to Business 3
 BUSN1010 Marketing Concepts and Strategies 4
 BUSN1020 Introduction to Selling 3
 BUSN1100 Supervision 3
 BUSN1510 Entrepreneurship 3

General Education Required 0 Credits

General Education Elective 0 Credits

Technical Studies Elective 0 Credits

Total Occupational Certificate Credits 19

Occupational Certificate**Supervisory Management (BP/EP)****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.

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.

Award Outcomes

Demonstrate interpersonal and team building skills.

Demonstrate effective oral and written communications skills in business communications.

Practice effective supervision techniques.

Solve business problems using fundamental business concepts.

Technical Studies Required 16 Credits

BUSN1000 Introduction to Business 3

BUSN1051 Introduction to Management 4

BUSN1100 Supervision 3

BUSN1140 Business Law 3

BUSN1150 Introduction to Service and Work Team Strategies 3

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

Total Occupational Certificate Credits 16

Associate of Applied Science Degree

Data Analyst (BP/EP)

Overview

Data Analyst compile and analyze data contained in a computer database or elsewhere to identify problems and possible solutions. They might also design and build databases to house the information they need, ensure data accuracy and make recommendations to business managers about how to improve efficiency or quality based on their findings. Students considering this award should have analytical and statistical skills, knowledge of database types and use, plus familiarity with data warehousing and data manipulation.

A Data Analyst must be proficient in data manipulation with excellent attention to detail and the ability to identify inconsistencies in data, an aptitude for learning technology quickly, the ability to take initiative and manage multiple priorities simultaneously. Job Functions could include: data entry and importing, data collection, data validation and scrubbing, data mining, reporting and documentation.

To be a Data Analyst, a person must have other qualities. Some of these qualities include the ability to work close and build relationships with diverse groups of people, the desire to be part of a team, and the ability to work with the unknown. Others include critical thinking, decision-making, problem-solving, questioning, diplomacy, and negotiation, along with excellent oral and written communication skills.

Career Opportunities

This occupational area includes the following career titles: Data Analyst and Technical Process Analyst, to name a few. Data Analysts work within banks, insurance companies, healthcare facilities, government agencies, educational institutions, retail industries, and various service and manufacturing businesses.

Award Outcomes

Utilize software applications to manage data.

Practice essential data analysis techniques.

Apply a variety of statistical models.

Transform data inside of an organization into information critical to business decisions Utilize financial concepts in analysis of business problems.

Demonstrate effective oral and written communications skills in business communications.

Demonstrate project management skills using a group-oriented problem-solving approach.

Create relational databases with an efficient design.

Understand how information technology supports operational and business requirements Review the IS principles and the changing role of the IS professional.

Understand the role, the processes and the structure of an enterprise data warehouse.

Practice professional and ethical behavior.

Technical Studies Required 45 Credits

ACCT1125 Excel 3

ACCT1410 Business Finance 3

BUSN1000 Introduction to Business 3

BUSN1200 Managerial Communication 3

BUSN1500 Database Concepts and Data Analysis Tools 3

CCIS1000 Information Systems 3

CCIS1032 Access 2016 3

CCIS1080 Microsoft Office 2016 3

CCIS1260 Data Analysis I 3

CCIS2055 Project Management 3

CCIS2460 Data Analysis II 3

CCIS2465 Data Analysis III 4

CCIS2701 Database Design and SQL 4

CCIS2801 Systems Analysis 4

General Education Required 15 Credits

ENGL2121 Writing and Research 4

or

ENGL2125 Technical Writing 3

MATH2150 Introduction to Statistics 3

Choose one of the following:

COMM2050 Interpersonal Communication 3

COMM2060 Small Group Communication 3

COMM2130 Public Speaking 3

Choose one of the following:
Any course from Goal 2 (Critical Thinking) of the Minnesota Transfer Curriculum 3

Choose one of the following:
Any course from Goal 9 (Ethics and Civic Responsibility) of the Minnesota Transfer Curriculum 3

General Education Elective 0 Credits

Technical Studies Elective 0 Credits

Total Associate of Applied Science Degree Credits 60

Associate of Applied Science Degree

Desktop Support (BP/EP)

Overview

Desktop Support Specialists provide technical assistance, support, and advice to customers and other users. These troubleshooters interpret problems and provide technical support for hardware, software, and systems. They answer telephone calls, analyze problems and resolve recurring difficulties including issues surrounding computer security in today's highly technological world. Desktop Support Specialists work either within a company that uses computer systems or directly for a computer hardware or software vendor. This person must be an excellent communicator and troubleshooter who can excel in fast paced environment.

Career Opportunities

Positions are available as PC Support Specialists, PC Trainers, PC Coordinators and Computer Lab Assistants.

Award Outcomes

- Compare decision making solutions.
- Understand 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.
- Apply basic networking functions.
- Administer a network operating system.
- Make decisions regarding project task management.
- Exhibit customer service skills.
- Demonstrate integration features of office suite.
- Utilize office suite personal information manager.
- Apply problem-solving methodologies.
- Provide critical-thinking solution strategies.
- Demonstrate effective written communication skills.
- Demonstrate effective oral communication skills.

Technical Studies Required 45 Credits

ACCT1125 Excel 3
 CCIS1000 Information Systems 3
 CCIS1005 Computer Security Awareness 3
 CCIS1032 Access 2016 3
 CCIS1035 Word 2016 3
 CCIS1042 PowerPoint 2016 3
 CCIS1095 Outlook 2016 2
 CCIS1101 Windows 10 3
 or
 CCIS1135 Desktop Linux 3
 CCIS1105 Network Essentials 4
 CCIS1110 Windows Admin 1 3
 or
 CCIS1121 Linux Admin 1 3
 CCIS2055 Project Management 3
 CCIS2065 Help Desk/User Support 3
 CCIS2090 Office 2016 Integration 3
 CCIS2675 A+ Hardware Support 3
 CCIS2680 A+ Software Support 3
 CCIS2875 Workplace Readiness Skills Assessment 0

General Education Required 12 Credits

ENGL2121 Writing and Research 4
 or
 ENGL2125 Technical Writing 3

Choose one of the following:

COMM2050 Interpersonal Communication 3
 COMM2060 Small Group Communication 3
 COMM2130 Public Speaking 3

Choose one of the following:

Any course from Goal 2 (Critical Thinking) or Goal 4 (Mathematical/Logical Reasoning) of the Minnesota Transfer Curriculum
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

General Education Elective 3 Credits

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

Technical Studies Elective 0 Credits

Total Associate of Applied Science Degree Credits 60

Associate of Applied Science Degree

Executive Administrative Professional (BP/EP)

Overview

This program prepares students for a career as an executive's administrative assistant 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 office administration 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: CPLT1000 Computer Keyboarding or comparable course. 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.

Career Opportunities

Positions are available as executive administrative assistant and administrative assistant. Administrative assistants 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 iSeek and Bureau of Labor Statistics websites: www.iseek.org and www.bls.gov.

Award Outcomes

- Record business transactions.
- Compare decision making solutions.
- 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.
- Create variety of publications.
- Make decisions regarding project task management.
- Demonstrate integration features of office suite.
- Utilize office suite personal information manager.
- Identify communication styles.
- Compose business documents.
- Utilize proofreading and editing skills.
- Exhibit detail-oriented skills.
- Demonstrate effective written communication skills.
- Demonstrate effective oral communication skills.

Technical Studies Required

42 Credits

- ACCT1000 Introduction to Accounting 3
- ACCT1125 Excel 3
- CCIS1005 Computer Security Awareness 3
- CCIS1032 Access 2016 3
- CCIS1035_Word 2016 3
- CCIS1042 PowerPoint 2016 3
- CCIS1095 Outlook 2016 2
- CCIS1101 Windows 10 3
- CCIS1310 Publisher 2016 3
- CCIS2055 Project Management 3
- CCIS2090 Office 2016 Integration 3
- CCIS2875 Workplace Readiness Skills Assessment 0

COMM1050 Communication in the Workplace 2
or
ENGL2001 Workplace Correspondence 2

CPLT1005 Advanced Keyboarding and Document Processing 3
ENGL1010 Business English 3

MATH1007 Math for the Trades 2
or
MATH1050 Math Pathways Plus for College and Careers 4
or
MATH1060 Math Pathways for College and Careers 3

General Education Required **12 Credits**

ENGL2121 Writing and Research 4

or

ENGL2125 Technical Writing 3

Choose one of the following

COMM2050 Interpersonal Communication 3

COMM2060 Small Group Communication 3

COMM2130 Public Speaking 3

Choose one of the following:

Any course from Goal 2 (Critical Thinking) or Goal 4 (Mathematical/Logical Reasoning) of the Minnesota Transfer Curriculum 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

General Education Elective **3 Credits**

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

Technical Studies Elective **3 Credits**

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

Recommended:

CCIS1000 Information Systems 3

CCIS1080 Microsoft Office 2016 3

CCIS1105 Network Essentials 4

CCIS1301 HTML & CSS 3

CCIS1515 Programming Overview 3

Total Associate of Applied Science Degree Credits 60

Associate of Applied Science Degree**Network Administrator/Analyst (BP/EP)****Overview**

This degree provides the skills needed to design, manage, troubleshoot and secure a network environment. Platforms include Windows 7 and 8, Windows Server 2008 and 2012, Linux, Cisco and the Internet. Skill development includes data communications, TCP/IP, hardware, software, network operating systems, and security.

Career Opportunities

Positions are available as Network Administrators and Network Developers.

Award Outcomes

Install hardware and software to meet enterprise needs.
 Perform tasks required of a Windows network administrator.
 Provide Technical Support for customers.
 Set up computer networks.
 Perform preventative maintenance.
 Demonstrate safe service of system operation.
 Explain principles of system operation.

Technical Studies Required 42 Credits

CCIS1105 Network Essentials 4
 CCIS1110 Windows Admin 1 3
 CCIS1121 Linux Admin 1 3
 CCIS1421 CCNA 2: Basic Router and Switch Configuration 4
 CCIS1431 CCNA 3: Intermediate Router and Switch Configuration 4
 CCIS1443 CCNA 4: WANs, VPNs, and Enterprise Networks 4
 or
 CCIS1490 CCNA Specialty Fields 3
 CCIS1505 Fundamentals of Programming 4
 or
 CCIS1515 Programming Overview 3
 CCIS2122 Linux Admin 2 4
 CCIS2150 Windows Admin 2 4
 CCIS2161 Linux Admin 3 3
 or
 CCIS2270 Windows Admin 3 4
 CCIS2675 A+ Hardware Support 3
 CCIS2841 Client/Server Computing 4
 CCIS2880 Network Admin Technical Skills Assessment 0

General Education Required 12 Credits

ENGL2121 Writing and Research 4
 or
 ENGL2125 Technical Writing 3

Choose one of the following:

COMM2050 Interpersonal Communication 3
 COMM2060 Small Group Communication 3
 COMM2130 Public Speaking 3

Choose one of the following:

Any course from Goal 2 (Critical Thinking) or Goal 4 (Mathematical/Logical Reasoning) of the Minnesota Transfer Curriculum 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

General Education Elective 3 Credits

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

Technical Studies Elective 3 Credits

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

Recommended:

CCIS1005 Computer Security Awareness 3

CCIS1135 Desktop Linux 3
CCIS1301 HTML & CSS 3
CCIS1480 CCNA (Cisco Certified Network Associate) Exam Prep 1
CCIS2385 IT Internship 28
CCIS2680 A+ Software Support 3
CCIS2685 A+ Exam Prep 1

Total Associate of Applied Science Degree Credits 60

Associate of Applied Science Degree**.NET Programmer (BP/EP)****Overview**

This degree offers the skills necessary for computer application development and design. The .NET framework will be used to design, code, document, and implement computer applications. Exposure to database management systems and Client/Server Computing will further familiarize students with the current trends in distributed processing.

Career Opportunities

Positions are available as Computer Programmers.

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.

Technical Studies Required**43 Credits**

CCIS1301 HTML & CSS 3
 CCIS1505 Fundamentals of Programming 4
 CCIS2500 .NET for Mobile Development 4
 CCIS2575 .NET Programming I 4
 CCIS2585 .NET Programming II 4
 CCIS2591 JavaScript 4
 CCIS2645 Introduction to ASP.NET 4
 CCIS2701 Database Design and SQL 4
 CCIS2781 SQL Server - TransactSQL 4
 CCIS2801 Systems Analysis 4
 CCIS2841 Client/Server Computing 4

General Education Required**12 Credits**

ENGL2121 Writing and Research 4
 or
 ENGL2125 Technical Writing 3

Choose one of the following:

COMM2050 Interpersonal Communication 3
 COMM2060 Small Group Communication 3
 COMM2130 Public Speaking 3

Choose one of the following:

Any course from Goal 2 (Critical Thinking) or Goal 4 (Mathematical/Logical Reasoning) of the Minnesota Transfer Curriculum 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

General Education Elective**3 Credits**

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

Technical Studies Elective**2 Credits**

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

Recommended:
 CCIS1000 Information Systems 3
 CCIS2055 Project Management 3
 CCIS2385 IT Internship 2-8
 CCIS2786 SQL Server - System Administration 4

Total Associate of Applied Science Degree Credits 60

Diploma

Desktop Support Specialist (BP/EP)

Overview

Desktop Support Specialists provide technical assistance, support, and advice to customers and other users. These troubleshooters interpret problems and provide technical support for hardware, software, and systems. They answer telephone calls, analyze problems and resolve recurring difficulties including issues surrounding computer security in today's highly technological world. Desktop Support Specialists work either within a company that uses computer systems or directly for a computer hardware or software vendor. This person must be an excellent communicator and troubleshooter who can excel in fast paced environment.

Career Opportunities

Positions are available as PC Support Specialists, PC Trainers, PC Coordinators and Computer Lab Assistants.

Award Outcomes

- Compare decision making solutions.
- Understand 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.
- Apply basic networking functions.
- Make decisions regarding project task management.
- Exhibit customer service skills.
- Demonstrate integration features of office suite.
- Utilize office suite personal information manager.
- Apply problem-solving methodologies.
- Provide critical-thinking solution strategies.
- Identify communication styles.
- Demonstrate effective written communication skills.

Technical Studies Required 42 Credits

ACCT1125 Excel 3
 CCIS1000 Information Systems 3
 CCIS1005 Computer Security Awareness 3
 CCIS1032 Access 2016 3
 CCIS1035 Word 2016 3
 CCIS1042 PowerPoint 2016 3
 CCIS1095 Outlook 2016 2
 CCIS1101 Windows 10 3
 or
 CCIS1135 Desktop Linux 3
 CCIS1105 Network Essentials 4
 CCIS2055 Project Management 3
 CCIS2065 Help Desk/User Support 3
 CCIS2090 Office 2016 Integration 3
 CCIS2675 A+ Hardware Support 3
 CCIS2680 A+ Software Support 3

General Education Required 8 Credits

COMM1050 Communication in the Workplace 2
 ENGL1021 Essay Fundamentals 3
 or
 ENGL1026 Writing for Careers 3
 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 0 Credits

Total Diploma Credits 50

Diploma

Network Support Specialist (BP/EP)

Overview

This degree provides the skills needed to design, manage, troubleshoot and secure a network environment. Platforms include Windows 7 and 8, Windows Server 2008 and 2012, Linux, Cisco and the Internet. Skill development includes data communications, TCP/IP, hardware, software, network operating systems, and security.

Career Opportunities

Positions are available as Network Administrators or Network Developers.

Award Outcomes

Install hardware and software to meet enterprise needs.
 Perform tasks required of a Windows network administrator.
 Provide Technical Support for computers.
 Set up computer networks.
 Perform preventative maintenance.
 Demonstrate safe service and repair practices.
 Explain principles of network operation.

Technical Studies Required 33 Credits

CCIS1000 Information Systems 3
 CCIS1080 Microsoft Office 2016 3
 CCIS1101 Windows 10 3
 or
 CCIS1135 Desktop Linux 3
 CCIS1105 Network Essentials 4
 CCIS1110 Windows Admin 1 3
 CCIS1121 Linux Admin 1 3
 CCIS1421 CCNA 2: Basic Router and Switch Configuration 4
 CCIS2675 A+ Hardware Support 3

Choose one of the following:

CCIS1431 CCNA 3: Intermediate Router and Switch Configuration 4
 CCIS2122 Linux Admin 2 4
 CCIS2150 Windows Admin 2 4

Choose one of the following:

CCIS1505 Fundamentals of Programming 4
 CCIS1515 Programming Overview 3

General Education Required 7 Credits

Choose two of the following:
 CCDS1040 Job Seeking Skills 2
 COMM1050 Communication in the Workplace 2
 COMM2050 Interpersonal Communication 3
 COMM2060 Small Group Communication 3
 COMM2130 Public Speaking 3

Choose one of the following:

ENGL1021 Essay Fundamentals 3
 ENGL1026 Writing for Careers 3
 ENGL2121 Writing and Research 4
 ENGL2125 Technical Writing 3

General Education Elective 0 Credits

Technical Studies Elective 4 Credits

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

Recommended: 3
 CCIS1301 HTML & CSS 3
 CCIS1443 CCNA 4: WANs, VPNs, and Enterprise Networks 4
 CCIS1480 CCNA (Cisco Certified Network Associate) Exam Prep 1
 CCIS1490 CCNA Specialty Fields 3
 CCIS2385 IT Internship 2-8
 CCIS2680 A+ Software Support 3
 CCIS2685 A+ Exam Prep 1

Total Diploma Credits 44

Diploma**.NET Programmer (BP/EP)****Overview**

This degree offers the skills necessary for computer application development and design. The .NET framework will be used to design, code, document and implement computer applications. Exposure to database management systems and client/server theory will further familiarize students with the current trends in distributed processing.

Career Opportunities

Positions are available as Computer Programmers.

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.

Technical Studies Required**35 Credits**

CCIS1301 HTML & CSS 3

CCIS1505 Fundamentals of Programming 4

CCIS2500 .NET for Mobile Development 4

CCIS2575 .NET Programming I 4

CCIS2585 .NET Programming II 4

CCIS2645 Introduction to ASP.NET 4

CCIS2701 Database Design and SQL 4

CCIS2781 SQL Server - TransactSQL 4

CCIS2841 Client/Server Computing 4

General Education Required**8 Credits**

COMM1050 Communication in the Workplace 2

or

ENGL2001 Workplace Correspondence 2

ENGL1021 Essay Fundamentals 3

or

ENGL1026 Writing for Careers 3

MATH1500 Beginning Algebra 3

General Education Elective**0 Credits****Technical Studies Elective****0 Credits****Total Diploma Credits 43**

Diploma

Workplace Administrative Professional (BP/EP)

Overview

The workplace administrative professional is a key member of the office team. This individual will use current software applications in word processing, spreadsheets, databases, and presentations. As a workplace administrative professional, 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: CPLT1000 Computer Keyboarding or comparable course. 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.

Career Opportunities

Positions are available as office managers and assistants. 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 iSeek and Bureau of Labor Statistics websites: www.iseek.org and www.bls.gov.

Award Outcomes

- Record business transactions.
- Compare decision making solutions.
- Describe issues surrounding computer security.
- Construct relational databases with an efficient design.
- Produce variety of business documents.
- Create dynamic presentations.
- Provide solutions using office suite.
- Perform basic operating system functions.
- Utilize office suite personal information manager.
- Compose business documents.
- Differentiate desktop vs. cloud apps.
- Identify communication styles.
- Utilize proofreading and editing skills.
- Exhibit detail-oriented skills.

Technical Studies Required 30 Credits

- ACCT1000 Introduction to Accounting 3
- ACCT1125 Excel 3
- CCIS1005 Computer Security Awareness 3
- CCIS1032 Access 2016 3
- CCIS1035 Word 2016 3
- CCIS1042 PowerPoint 2016 3
- CCIS1095 Outlook 2016 2
- CCIS1101 Windows 10 3
- CCIS2090 Office 2016 Integration 3
- CPLT1005 Advanced Keyboarding and Document Processing 3
- CPLT1095 Office 365 Cloud Apps 1

General Education Required 7 Credits

- COMM1050 Communication in the Workplace 2
- ENGL1010 Business English 3
- MATH1007 Math for the Trades 2
- or
- 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 0 Credits

Total Diploma Credits 37

Advanced Technical Certificate**Cisco Networking (BP/EP)****Overview**

The coursework required for this certificate will prepare students to take the Cisco Certified Network Associate (CCNA) exam. Students will learn to design, build, and maintain computer networks.

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.

Career Opportunities

Positions are available as Network Administrators, Network Analysts, and Network Engineers.

Award Outcomes

Describe how a network works.
 Configure VLANs and interswitch communications.
 Implement an IP addressing scheme and IP services.
 Configure basic router operations.
 Explain appropriate administrative tasks required for a wireless LAN.
 Identify methods to mitigate security threats.
 Implement NAT and Access Lists.
 Implement WAN links.
 Troubleshoot network malfunctions.

Technical Studies Required 19 Credits

CCIS1105 Network Essentials 4
 CCIS1421 CCNA 2: Basic Router and Switch Configuration 4
 CCIS1431 CCNA 3: Intermediate Router and Switch Configuration 4
 CCIS1443 CCNA 4: WANs, VPNs, and Enterprise Networks 4
 CCIS1490 CCNA Specialty Fields 3

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

Total Advanced Technical Certificate Credits 19

Advanced Technical Certificate

Linux Networking (BP/EP)

Overview

This certificate is designed to enable the Linux/Unix computer professional to learn the fundamentals of networking and data communication and to know how to incorporate the latest data communications equipment in the enterprise.

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.

Career Opportunities

Positions are available as Network Administrators and Network Developers.

Award Outcomes

Install hardware and software to meet customer needs.
Perform tasks required of a Linux network administrator.
Set up computer networks.
Perform preventative maintenance.

Technical Studies Required 15 Credits

CCIS2122 Linux Admin 2 4
CCIS2161 Linux Admin 3 3
CCIS2841 Client/Server Computing 4

Choose one of the following:

CCIS2591 JavaScript 4
CCIS2630 PHP 4

General Education Required 0 Credits

General Education Elective 0 Credits

Technical Studies Elective 0 Credits

Total Advanced Technical Certificate Credits 15

Advanced Technical Certificate**Microsoft Database Specialist (BP/EP)****Overview**

This certificate is designed for computer professionals to learn the fundamentals of database application development and database administration in a Microsoft environment.

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.

Career Opportunities

Positions are available as Microsoft SQL Server Database Administrators and Microsoft Application Developers.

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.

Technical Studies Required 23 Credits

CCIS1032 Access 2016 3

CCIS2575 .NET Programming I 4

CCIS2701 Database Design and SQL 4

CCIS2781 SQL Server - TransactSQL 4

CCIS2786 SQL Server - System Administration 4

CCIS2841 Client/Server Computing 4

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

Total Advanced Technical Certificate Credits 23

Advanced Technical Certificate**.NET Programmer (BP/EP)****Overview**

This certificate is designed to enable computer professionals to acquire knowledge to be a contributor in a client server environment. The skills include client server concepts, database and analysis and design.

Career Opportunities

Positions are available as Computer Programmers and Application Designers.

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.

Technical Studies Required**24 Credits**

CCIS2575 .NET Programming I 4

CCIS2585 .NET Programming II 4

CCIS2645 Introduction to ASP.NET 4

CCIS2701 Database Design and SQL 4

CCIS2781 SQL Server - TransactSQL 4

CCIS2841 Client/Server Computing 4

General Education Required**0 Credits****General Education Elective****0 Credits****Technical Studies Elective****0 Credits****Total Advanced Technical Certificate Credits 24**

Advanced Technical Certificate**Windows Networking (BP/EP)****Overview**

This certificate is designed to enable the Windows computer professional to learn the fundamentals of networking and data communication and to know how to incorporate the latest data communications equipment in the enterprise.

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.

Career Opportunities

Positions are available as Network Administrators and Network Developers.

Award Outcomes

Install hardware and software to meet enterprise needs.
Perform tasks required of a Windows network Administrator.
Set up computer networks.
Perform preventative maintenance.

Technical Studies Required 16 Credits

CCIS2150 Windows Admin 2 4
CCIS2270 Windows Admin 3 4
CCIS2841 Client/Server Computing 4

Choose one of the following:

CCIS2591 JavaScript 4
CCIS2645 Introduction to ASP.NET 4

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

Total Advanced Technical Certificate Credits 16

Occupational Certificate

Computer Service Desk Technician (BP/EP)**Overview**

The Computer 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: 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 registering for these courses.

Career Opportunities

Positions are available as a Computer Service Desk Technician, Computer System Specialist, and PC Technician.

Award Outcomes

Understand changing role of IS Professionals.
Describe issues surrounding computer security.
Provide solutions using office suite.
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.

Technical Studies Required 24 Credits

CCIS1000 Information Systems 3
CCIS1005 Computer Security Awareness 3
CCIS1080 Microsoft Office 2016 3
CCIS1095 Outlook 2016 2
CCIS1101 Windows 10 3
or
CCIS1135 Desktop Linux 3
CCIS2065 Help Desk/User Support 3
CCIS2675 A+ Hardware Support 3
CCIS2680 A+ Software Support 3
CPLT1095 Office 365 Cloud Apps 1

General Education Required 0 Credits

General Education Elective 0 Credits

Technical Studies Elective 0 Credits

Total Occupational Certificate Credits 24

Occupational Certificate

Microsoft Office Applications (BP/EP)

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 Office Suite of products that can be applied in business situations. Some courses can be taken online. A course completed while earning a certificate may also be applied to the Desktop Support or Executive Administrative Professional A.A.S. degrees or diplomas.

NOTE: This certificate may qualify for the Workforce Investment Act (WIA).

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.

Career Opportunities

This certificate is designed to improve the computer skills of office personnel.

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.

Technical Studies Required 21 Credits

- ACCT1125 Excel 3
- CCIS1032 Access 2016 3
- CCIS1035 Word 2016 3
- CCIS1042 PowerPoint 2016 3
- CCIS1095 Outlook 2016 2
- CCIS1310 Publisher 2016 3
- CCIS2090 Office 2016 Integration 3
- CPLT1095 Office 365 Cloud Apps 1

General Education Required 0 Credits

General Education Elective 0 Credits

Technical Studies Elective 0 Credits

Total Occupational Certificate Credits 21

Occupational Certificate**Office Specialist (BP/EP)****Overview**

This certificate provides students with Microsoft Word, Excel, PowerPoint and Access computer skills expected by most employers in a variety of business and industry office settings. These courses create a pathway for the Microsoft Office Specialist (MOS) certification exams, as well as address communication styles in the workplace. Students may apply this certificate towards advanced certificates, diplomas or A.A.S. degrees in Workplace and Desktop careers. Courses for this certificate may be delivered in the classroom and/or online. Certificate may qualify for the Workforce Investment Act.

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 registering for these courses.

Career Opportunities

Information on careers, salary and employment outlook, is available on the iSeek and Bureau of Labor Statistics websites: www.iseek.org and www.bls.gov. Search suggestion: General Office Clerk

Award Outcomes

Compare decision making solutions.
Construct relational databases with an efficient design.
Produce variety of business documents.
Create dynamic presentations.
Identify communication styles.

Technical Studies Required 12 Credits

ACCT1125 Excel 3
CCIS1032 Access 2016 3
CCIS1035 Word 2016 3
CCIS1042 PowerPoint 2016 3

General Education Required 2 Credits

COMM1050 Communication in the Workplace 2

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

Total Occupational Certificate Credits 14

Occupational Certificate

Workplace Administrative Assistant (BP/EP)**Overview**

The workplace administrative 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. Workplace administrative assistants will use current software applications in preparing business documents. Basic accounting procedures and excellent interpersonal skills are essential.

Prerequisite: Basic computer literacy, familiarity with the Internet, college-level reading ability, and proficiency in basic mathematics. CPLT1000 or 20 net words a minute on keyboarding assessment test. All students must pass the Computer Literacy assessment test before registering for these courses.

Career Opportunities

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 iSeek and Bureau of Labor Statistics websites: www.iseek.org and www.bls.gov.

Award Outcomes

Record business transactions.
 Compare decision making solutions.
 Produce variety of business documents.
 Provide solutions using office suite.
 Utilize office suite personal information manager.
 Differentiate desktop vs. cloud apps.
 Compose business documents.
 Identify communication styles.
 Utilize proofreading and editing skills.
 Exhibit detail-oriented skills.

Technical Studies Required 18 Credits

ACCT1000 Introduction to Accounting 3
 ACCT1125 Excel 3
 CCIS1035 Word 2016 3
 CCIS1080 Microsoft Office 2016 3
 CCIS1095 Outlook 2016 2
 CPLT1005 Advanced Keyboarding and Document Processing 3
 CPLT1095 Office 365 Cloud Apps 1

General Education Required 7 Credits

COMM1050 Communication in the Workplace 2
 ENGL1010 Business English 3
 MATH1007 Math for the Trades 2
 or
 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 0 Credits**

Total Occupational Certificate Credits 25

Emergency & Public Service

Emergency Medical Services

Advanced Technical Certificate	Community Paramedic	(BP/EP)
Occupational Certificate	Emergency Medical Services Specialist	(BP/EP)
Occupational Certificate	Emergency Room Technician	(EP)
Occupational Certificate	Emergency Medical Technician	(BP/EP)

Environmental Health and Safety

Occupational Certificate	Hazardous Materials Technology	(EP)
Occupational Certificate	Safety Coordinator	(BP/EP)

Fire Protection

Associate of Applied Science Degree	Fire Science Technology	(EP)
Diploma	Fire Protection Technician	(EP)
Advanced Technical Certificate	Company Officer	(EP)
Occupational Certificate	Fire Inspection/Investigation	(EP)
Occupational Certificate	Fire Suppression Technician	(EP)
Occupational Certificate	NFPA 1001 Firefighting	(EP)

Law Enforcement

Advanced Technical Certificate	Law Enforcement	(BP)
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Advanced Technical Certificate

Community Paramedic (BP/EP)

Overview

The Community Paramedic 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 Paramedics 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.

For additional information, please go to: <https://hennepintech.edu/cts/pages/1224>

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.

Career Opportunities

Job opportunities are available in any organization that provides community health care, emergency medical services, and public health.

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.

Technical Studies Required 14 Credits

EMSV2001 Role Advocacy and Outreach 3

EMSV2005 Community Assessment 2

EMSV2011 Care and Prevention Development Strategies 4

EMSV2020 Community Paramedic Clinicals 5

General Education Required 0 Credits

General Education Elective 0 Credits

Technical Studies Elective 0 Credits

Total Advanced Technical Certificate Credits 14

Occupational Certificate

Emergency Medical Services Specialist (BP/EP)

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.

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.

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.

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

COMM2050 Interpersonal Communication 3
 or
 COMM2060 Small Group Communication 3

General Education Elective 0 Credits

Technical Studies Elective 0 Credits

Total Occupational Certificate Credits 28

Occupational Certificate

Emergency Room Technician (EP)**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. Students are required to pass the Nursing Assistant written and skills tests. Cleared criminal background check and completed TB skin test required.

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.

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.

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

COMM2050 Interpersonal Communication 3

or

COMM2060 Small Group Communication 3

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

Total Occupational Certificate Credits 24

Occupational Certificate**Emergency Medical Technician (BP/EP)****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.

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.

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.

Technical Studies Required	9 Credits
EMSV1050 Emergency Medical Responder (First Responder) 3	
EMSV1100 Emergency Medical Technician - Basic 6	

General Education Required	0 Credits
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General Education Elective	0 Credits
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Technical Studies Elective	0 Credits
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Total Occupational Certificate Credits 9

Occupational Certificate**Hazardous Materials Technology (EP)****Overview**

This certificate is designed to develop basic applied skills required for management of hazardous materials and wastes in the industrial environment. This program is designed to develop minimum entry-level skills and knowledge for individuals working with these materials.

Career Opportunities

Hazardous Materials Technology graduates find employment in the areas of emergency response and hazardous materials/waste management.

Award Outcomes

- Select safe work practices.
- Recognize compliance with relevant regulations.
- Compare technical and procedural information.
- Categorize chemical/physical properties.
- Resolve unanticipated or changing conditions.
- Resolve hazardous materials release.
- Utilize response principles.
- Select personal protective equipment.

Technical Studies Required 10 Credits

- ENHS1020 Hazard Recognition and Control 3
- ENHS1110 Chemistry of Hazardous Materials 3
- ENHS1120 Hazardous Materials Management and Handling 1
- ENHS1130 Personal Protective Equipment 2
- ENHS1140 Incident Management for Business and Industry 1

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

Total Occupational Certificate Credits 10

Occupational Certificate**Safety Coordinator (BP/EP)****Overview**

Safety Coordinators are a key position with great responsibility within many organizations. Safety Coordinators can save companies tens of thousands of dollars while protecting their most important asset, their employees. Safety Coordinators are responsible for the health and safety of employees, which includes organizational safety policies, procedures, practices and administrative controls for safety. Safety Coordinators are responsible for employee training and compliance in such areas as hazard recognition and control, industrial hygiene, fire protection, accident investigations, regulatory inspections, and laws, regulations, and standards.

Career Opportunities

This program will prepare individuals to understand, implement, and lead organizations in the area of Occupational compliance. There is a wide range of employment as well as advancement opportunities for the individual who seeks a career in becoming a Safety Coordinator. Graduates of this program will be able to advance or enter a career path in the safety fields.

Award Outcomes

Select safe work practices.
 Recognize compliance with relevant regulations.
 Compare technical and procedural information.
 Categorize chemical/physical properties.
 Resolve unanticipated or changing conditions.
 Manage hazardous materials release.
 Utilize response principles.
 Select personal protective equipment.
 Recognize compliance with relevant regulations.

Technical Studies Required 30 Credits

ENHS1005 Introduction to Industrial Processes 3
 ENHS1010 Introduction to Safety and Health 3
 ENHS1015 Fire Protection 3
 ENHS1020 Hazard Recognition and Control 3
 ENHS1025 Industrial Hygiene 3
 ENHS1030 Ergonomics 3
 ENHS1035 Safety and Health Program Management 3
 ENHS1040 Safety Laws, Regulations, and Standards 3
 ENHS1045 Modern Theories of Safety Programming 3
 ENHS1050 Internship 3

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

Total Occupational Certificate Credits 30

Associate of Applied Science Degree

Fire Science Technology (EP)**Overview**

The A.A.S. degree in Fire Science Technology prepares students to perform the duties of a line officer. As students progress, they will also complete the requirements for two certificates; Fire Suppression Technician and Company Officer. Students typically complete the Fire Suppression Technician certificate first which qualifies them for a lead firefighter position with most fire departments. As students gain experience and continue their education they will earn a Company Officer certificate. The course work also prepares students to take promotional exams.

Student must be 18 years of age or meet the requirements for eligibility under Hennepin Technical College's Post-Secondary Enrollment Options (PSEO) standards.

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.

Award Outcomes

Analyze principles of fire control.

Utilize personnel, equipment and extinguishing agents on the fire ground.

Demonstrate an understanding of the principle of fire development.

Apply knowledge of hydraulic principles for water supply.

Identify principles for leadership.

Utilize knowledge of building construction principles, fire protection systems and fire prevention codes to affect a safe community.

Identify hazardous materials and properties.

Outline effective emergency scene operations.

Apply information management concepts to fire protection administration.

Utilize effective written communication.

Demonstrate effective incident management practices.

Technical Studies Required 40 Credits

FRPT1060 Fire Department Occupational Health & Safety 2

FRPT1100 Fire Fighter I 5

FRPT1105 Fire Fighter II 2

FRPT1110 Fire Instructor I 2

FRPT1120 Fire Officer I 2

FRPT1125 Fire Investigation I 2

FRPT1130 Fire Inspector I 2

FRPT1136 Principles of Emergency Services 2

FRPT1155 Fire Protection Systems 2

FRPT1161 Building Construction for the Fire Service 3

FRPT1165 Apparatus Operator 3

FRPT1176 Hazardous Materials First Responder Operational 2

FRPT2110 Strategy and Tactics 2

FRPT2115 Fire Officer II 2

EMSV1050 Emergency Medical Responder (First Responder) 3

CCDS1020 Interviewing Skills 1

CPLT1100 Computer Essentials in the Digital World 3

General Education Required 15 Credits

COMM2130 Public Speaking 3

ENGL2121 Writing and Research 4

or

ENGL2125 Technical Writing 3

PHIL2100 Critical Thinking 3

or

Choose one course from MnTC Goal Area 2 (Critical Thinking) 3

PHIL2200 Ethics 3

or

PHIL2400 Medical Ethics 4

Choose one course from MnTC Goal Area 5 (History and the Social and Behavioral Sciences) 3

General Education Elective **0 Credits**

Technical Studies Elective **5 Credits**

- Recommended:
- FRPT1240 Emergency Response Operations 1
 - FRPT2105 Fire Instructor II 2
 - FRPT2120 Fire Investigation II 2
 - FRPT2125 Fire Inspector II 2
 - FRPT2130 Fire Officer III 2
 - FRPT2140 Personnel Management for Fire Department Services 3
 - EMSV1100 Emergency Medical Technician - Basic 6

Total Associate of Applied Science Degree Credits 60

Diploma

Fire Protection Technician (EP)

Overview

The Fire Protection Technician diploma is designed to provide students with the skills necessary to progress in the fire service field. Fire suppression techniques and company officer training will be covered.

Student must be 18 years of age or meet the requirements for eligibility under Hennepin Technical College's Post-Secondary Enrollment Options (PSEO) standards.

Career Opportunities

Students who complete this diploma will have the knowledge and skills necessary to serve as a lead firefighter, apparatus operator and line officer.

Award Outcomes

Demonstrate full-range of fire fighter skill.

Operate fire apparatus.

Exhibit basic supervisory skills.

Identify how fire affects construction systems of buildings.

Demonstrate effective oral and written communication.

Technical Studies Required 32 Credits

FRPT1060 Fire Department Occupational Health & Safety 2

FRPT1100 Fire Fighter I 5

FRPT1105 Fire Fighter II 2

FRPT1110 Fire Instructor I 2

FRPT1120 Fire Officer I 2

FRPT1130 Fire Inspector I 2

FRPT1136 Principles of Emergency Services 2

FRPT1155 Fire Protection Systems 2

FRPT1161 Building Construction for the Fire Service 3

FRPT1165 Apparatus Operator 3

FRPT1176 Hazardous Materials First Responder Operational 2

FRPT2110 Strategy and Tactics 2

EMSV1050 Emergency Medical Responder (First Responder) 3

General Education Required 8 Credits

CCDS1020 Interviewing Skills 1

CCDS1040 Job Seeking Skills 2

COMM1050 Communication in the Workplace 2

CPLT1100 Computer Essentials in the Digital World 3

General Education Elective 0 Credits

Technical Studies Elective 8 Credits

Recommended:

FRPT1240 Emergency Response Operations 1

FRPT2105 Fire Instructor II 2

FRPT2120 Fire Investigation II 2

FRPT2125 Fire Inspector II 2

FRPT2130 Fire Officer III 2

FRPT2140 Personnel Management for Fire Department Services 3

EMSV1100 Emergency Medical Technician - Basic 6

Total Diploma Credits 48

Advanced Technical Certificate**Company Officer (EP)****Overview**

This certificate 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.

Prerequisite: Graduate of the Fire Suppression Certificate or equivalent.

Career Opportunities

Firefighters who complete this certificate are qualified to perform company officer duties.

Award Outcomes

Demonstrate basic supervisory and management skills.
 Identify effective managerial behavior.
 Identify the components of the incident management system.
 Demonstrate knowledge of fire ground strategy and tactics.
 Perform the required duties of a fire company officer.

Technical Studies Required 13 Credits

FRPT1110 Fire Instructor I 2
 FRPT1120 Fire Officer I 2
 FRPT1125 Fire Investigation I 2
 or
 FRPT1130 Fire Inspector I 2
 FRPT1161 Building Construction for the Fire Service 3
 FRPT2110 Strategy and Tactics 2
 FRPT2115 Fire Officer II 2

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

Total Advanced Technical Certificate Credits 13

Occupational Certificate**Fire Inspection/Investigation (EP)****Overview**

This certificate prepares firefighters, building officials, building inspectors, insurance inspectors, electrical engineers and lawyers to be able to perform fire inspections and investigations. It meets the requirements of NFPA 102 and 1031.

Career Opportunities

Completion of this certificate qualifies firefighters, building officials, building inspectors, electrical engineers and lawyers to perform fire investigations and inspections.

Award Outcomes

Demonstrate knowledge of fire protection systems.
Perform the duties of a fire inspector.
Identify effective investigative behavior.
Perform the duties of a fire investigator.
Demonstrate knowledge of buildings and fire codes.
Perform the skills of company officer.

Technical Studies Required 10 Credits

FRPT1125 Fire Investigation I 2
FRPT1130 Fire Inspector I 2
FRPT1136 Principles of Emergency Services 2
FRPT2120 Fire Investigation II 2
FRPT2125 Fire Inspector II 2

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

Total Occupational Certificate Credits 10

Occupational Certificate

Fire Suppression Technician (EP)

Overview

The Fire Suppression Technician certificate will prepare the student to perform lead firefighter and apparatus operator functions. Students learn firefighter techniques, company functions, hazardous materials functions and emergency medical procedures. Team work is emphasized throughout the program.

Student must be 18 years of age or meet the requirements for eligibility under Hennepin Technical College's Post-Secondary Enrollment Options (PSEO) standards.

Career Opportunities

This certificate completes the job entry requirements as a firefighter for most fire departments.

Award Outcomes

Demonstrate full-range of fire fighter skills.
 Perform the duties of an emergency medical responder.
 Operate fire apparatus.
 Demonstrate tactical firefighting skills.
 Perform effective response to hazardous materials.

Technical Studies Required	15 Credits
EMSV1050 Emergency Medical Responder (First Responder)	3
FRPT1100 Fire Fighter I	5
FRPT1105 Fire Fighter II	2
FRPT1165 Apparatus Operator	3
FRPT1176 Hazardous Materials First Responder Operational	2

General Education Required	1 Credit
CCDS1020 Interviewing Skills	1

General Education Elective	0 Credits

Technical Studies Elective	0 Credits

Total Occupational Certificate Credits 16

Occupational Certificate**NFPA 1001 Firefighting (EP)****Overview**

This certificate will provide the student with the required entry level skills to become employed as a firefighter. 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.

Career Opportunities

The student will have the required knowledge and skills to be employed as an entry level firefighter with career and paid on call fire departments throughout Minnesota and on a national level.

Award Outcomes

Demonstrate firefighting skills.
Perform basic hazardous materials skills.
Demonstrate tactical firefighting skills.

Technical Studies Required	9 Credits
FRPT1100 Fire Fighter I 5	
FRPT1105 Fire Fighter II 2	
FRPT1176 Hazardous Materials First Responder Operational 2	

General Education Required	0 Credits
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General Education Elective	0 Credits
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Technical Studies Elective	0 Credits
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Total Occupational Certificate Credits 9

Advanced Technical Certificate

Law Enforcement (BP)

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.

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.

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 MN 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 MN 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.

Technical Studies Required	22 Credits
LAW2225 Criminal Investigation 3	
LAW2230 Legal Issues for Law Enforcement 3	
LAW2231 MN Criminal and Traffic Codes 3	
LAW2235 Police Report Writing/Interview 2	
LAW2241 Police Response 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

Health

Dental Assistant

Associate of Applied Science Degree	Dental Assistant	(BP/EP)
Diploma	Dental Assistant	(BP/EP)
Health Science (Broad Field)		
Associate of Science	Health Science (Broad Field)	

Health Unit Coordinator & Nursing Station

Diploma	Nursing Station Technician	(BP)
Occupational Certificate	Health Unit Coordinator	(BP)

Medical Assistant

Associate of Applied Science Degree	Medical Assistant	(EP)
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Medical Office

Associate of Applied Science Degree	Medical Administrative Assistant	(BP/EP)
Diploma	Medical Administrative Assistant	(BP/EP)
Diploma	Medical Coding Specialist	(BP/EP)
Occupational Certificate	Medical Receptionist	(BP/EP)

Pharmacy Technology

Associate of Applied Science Degree	Pharmacy Technician	(BP/EP)
Diploma	Pharmacy Technician	(BP/EP)

Practical Nursing

Associate of Applied Science Degree	Practical Nursing	(BP/EP)
Diploma	Practical Nursing	(BP/EP)

Associate of Applied Science Degree

Dental Assistant (BP/EP)

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 is accredited by the American Dental Association, Commission on Dental Accreditation and approved by the Minnesota State Board of Dentistry.

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, COMM2050 or COMM2060, DNTL1121, ENGL2121, EMSV1020 or currently certified in CPR for the Healthcare Provider.

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.

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.
 Exhibit organizational skills.

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

COMM2050 Interpersonal Communication 3
 or
 COMM2060 Small Group Communication 3
 ENGL2121 Writing and Research 4
 PHIL2200 Ethics 3
 or
 PHIL2400 Medical Ethics 4

General Education Elective 8 Credits

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

Technical Studies Elective 0 Credits

Total Associate of Applied Science Degree Credits 60

Diploma

Dental Assistant (BP/EP)**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 is accredited by the American Dental Association, Commission on Dental Accreditation and approved by the Minnesota State Board of Dentistry.

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, COMM2050 or COMM2060, DNTL1121, ENGL2121, EMSV1020 or currently certified in CPR for the Healthcare Provider.

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.

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.

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

COMM2050 Interpersonal Communication 3

or

COMM2060 Small Group Communication 3

ENGL2121 Writing and Research 4

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

Total Diploma Credits 49

Associate of Science

Health Science (Broad Field) (BP/EP)**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.

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.

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.

Technical Studies Required 0 Credits

General Education Required 55 Credits

Science Core Courses

BIOL2003 Nutrition and Health 3

BIOL2005 General Biology I 4

BIOL2125 Anatomy and Physiology I 4

BIOL2225 Anatomy and Physiology II 4

BIOL2235 Microbiology 4

CHEM2000 Introduction to Chemistry 4

or

CHEM2200 Essentials of General, Organic and Biochemistry 5

General Education Core Courses

COMM2020 Intercultural Communication 3

or

COMM2050 Interpersonal Communication 3

ENGL2121 Writing and Research 4

MATH2150 Introduction to Statistics 3

MATH2200 College Algebra 4

PHIL2200 Ethics 3

or

PHIL2400 Medical Ethics 4

PSYC2300 General Psychology 3

PSYC2310 Psychology Throughout the Lifespan 3

SOCI2100 Introduction to Sociology 3

Choose one course from MnTC Goal Area 1 (Communication) 3

Choose one course from MnTC Goal Area 6 (Humanities/Fine Arts) 3

General Education Elective 0 Credits

Technical Studies Elective 5 Credits

Technical Studies Courses may be used to satisfy elective credits

OR

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

Total Associate of Science Credits 60

Diploma

Nursing Station Technician (BP)

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.

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.

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.

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 in the Digital World 3
- COMM2050 Interpersonal Communication 3
- PSYC2310 Psychology Throughout the Lifespan 3

General Education Elective 0 Credits

Technical Studies Elective

0 Credits

Total Diploma Credits 36

Occupational Certificate

Health Unit Coordinator (BP)**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.

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.

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.

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 in the Digital World 3

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

Total Occupational Certificate Credits 17

Associate of Applied Science Degree**Medical Assistant (EP)****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, BIOL2045 or HLTH1010, ENGL2121, COMM2020 or COMM2050 or COMM2060, HLUC1020 and qualifying score reading, writing, math, computer literacy and keyboarding assessment tests.

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.

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.

Technical Studies Required**44 Credits**

BIOL2045 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

MAST2021 Lab II 2

MAST2035 Clinical Procedures II 5

MAST2041 Practicum 6

EMSV1155 Phlebotomy Techniques 3

General Education Required**16 Credits**

COMM2020 Intercultural Communication 3

or

COMM2050 Interpersonal Communication 3

or

COMM2060 Small Group Communication 3

ENGL2121 Writing and Research 4

PHIL2200 Ethics 3

or

PHIL2400 Medical Ethics 4

PSYC2310 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 of Applied Science Degree Credits 60

Associate of Applied Science Degree

Medical Administrative Assistant (BP/EP)

Overview

Medical administrative assistants 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 transcription of reports and correspondence, appointment and meeting scheduling, patient file and office record maintenance, billing and insurance processing. This career requires excellent communication skills and knowledge of patient confidentiality laws. This degree provides students with a broad general education in addition to the technical component to maximize employment opportunities and potential.

Prerequisite: Qualifying score on computer literacy assessment test OR CPLT1100.

Prerequisite: CPLT1000 Computer Keyboarding or qualifying score on keyboarding assessment test.

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.

Award Outcomes

Apply medical terminology.
 Utilize appropriate software.
 Transcribe medical reports and correspondence.
 Key business correspondence.
 Communicate proper English and grammar.
 Apply medical coding principles.
 Document telephone communication.
 Schedule appointments.
 Demonstrate accounting principles.
 Illustrate professional behavior.
 Demonstrate insurance and billing procedures.
 Interpret HIPAA regulations.
 Utilize electronic health record.

Technical Studies Required 39 Credits

ACCT1000 Introduction to Accounting 3
 or
 ACCT1102 Principles of Accounting I 4
 ACCT1125 Excel 3
 CCIS1035 Word 2016 3
 CCIS1080 Microsoft Office 2016 3
 CCDS1040 Job Seeking Skills 2
 CPLT1005 Advanced Keyboarding and Document Processing 3
 ENGL1010 Business English 3
 OFCR1301 Medical Terminology 4
 OFCR1317 Medical Office Procedures 4
 OFCR1331 Medical Document Processing 4
 OFCR1335 Medical Coding and Reimbursement Fundamentals 4
 OFCR1340 Medical Office Management 3

General Education Required 19 Credits

BIOL2045 Human Biology 4
 COMM2050 Interpersonal Communication 3
 ENGL2125 Technical Writing 3
 PHIL2100 Critical Thinking 3
 PHIL2200 Ethics 3
 or
 PHIL2400 Medical Ethics 4
 PSYC2300 General Psychology 3
 or
 PSYC2310 Psychology Throughout the Lifespan 3

General Education Elective 0 Credits

Technical Studies Elective

2 Credits

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

Recommended:

EMSV1020 CPR/First Aid 1

Total Associate of Applied Science Degree Credits 60

Diploma

Medical Administrative Assistant (BP/EP)

Overview

Medical administrative assistants 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 transcription of reports and correspondence, appointment and meeting scheduling, patient file and office record maintenance, billing and insurance processing. This career requires excellent communications skills and knowledge of patient confidentiality laws.

Prerequisite: CPLT1000 Computer Keyboarding or qualifying score on keyboarding assessment test.

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.

Award Outcomes

Apply medical terminology.
 Utilize appropriate software.
 Transcribe medical reports and correspondence.
 Key business correspondence.
 Communicate proper English and grammar.
 Apply medical coding principles.
 Document telephone communication.
 Schedule appointments.
 Demonstrate accounting principles.
 Illustrate professional behavior.
 Demonstrate insurance and billing procedures.
 Interpret HIPAA regulations.
 Utilize electronic health record.

Technical Studies Required 37 Credits

ACCT1000 Introduction to Accounting 3
 or
 ACCT1102 Principles of Accounting I 4
 ACCT1125 Excel 3
 CCIS1035 Word 2016 3
 CCIS1080 Microsoft Office 2016 3
 CPLT1005 Advanced Keyboarding and Document Processing 3
 ENGL1010 Business English 3
 OFCR1301 Medical Terminology 4
 OFCR1317 Medical Office Procedures 4
 OFCR1331 Medical Document Processing 4
 OFCR1335 Medical Coding and Reimbursement Fundamentals 4
 OFCR1340 Medical Office Management 3

General Education Required 4 Credits

CCDS1040 Job Seeking Skills 2
 COMM1050 Communication in the Workplace 2

General Education Elective 3 Credits

Any HTC college level general education course may be used to satisfy the elective requirement.

Technical Studies Elective 4 Credits

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

Recommended:
 EMSV1020 CPR/First Aid 1

Total Diploma Credits 48

Diploma

Medical Coding Specialist (BP/EP)

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 or by calling 763-576-4700.

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.

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.

Technical Studies Required 34 Credits

ADSC1252 Professional Practice for Coding Specialists (Anoka) ~ 3

CPLT1005 Advanced Keyboarding and Document Processing 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

BIOL2045 Human Biology 4

or

HLTH1005 Anatomy and Physiology (Anoka) ~ 4

OFCR1301 Medical Terminology 4

General Education Required 9 Credits

CCDS1100 Student Success 3

Choose six credits from two of the discipline areas below: 6

SPCH (Anoka), ENGL (Anoka or HTC), or COMM (HTC)

General Education Elective 0 Credits

Technical Studies Elective 0 Credits

Total Diploma Credits 43

Occupational Certificate**Medical Receptionist (BP/EP)****Overview**

The medical receptionist 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 communication skills and knowledge of patient confidentiality laws.

Prerequisite: CPLT1000 Computer Keyboarding or qualifying score on keyboarding assessment test.

Career Opportunities

The medical receptionist will find job opportunities in a variety of health care settings.

Award Outcomes

- Utilize appropriate software.
- Apply medical terminology.
- Key business correspondence.
- Communicate proper English and grammar.
- Document telephone communication.
- Schedule appointments.
- Demonstrate accounting principles.
- Illustrate professional behavior.
- Interpret HIPAA regulations.
- Utilize electronic health record.
- Demonstrate insurance and billing procedures.
- Apply medical coding principles.

Technical Studies Required 24 Credits

ACCT1000 Introduction to Accounting 3
or
ACCT1102 Principles of Accounting I 4
CCIS1080 Microsoft Office 2016 3
CPLT1005 Advanced Keyboarding and Document Processing 3
ENGL1010 Business English 3
OFCR1301 Medical Terminology 4
OFCR1317 Medical Office Procedures 4
OFCR1335 Medical Coding and Reimbursement Fundamentals 4

General Education Required 4 Credits

CCDS1040 Job Seeking Skills 2
COMM1050 Communication in the Workplace 2

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

Total Occupational Certificate Credits 28

Associate of Applied Science Degree

Pharmacy Technician (BP/EP)**Overview**

The ASHP accredited pharmacy technology program prepares graduates for entry level careers working under the direction of registered pharmacists in retail, clinic, and hospital settings. Pharmacy technicians play an integral role in assisting pharmacists with prescription processing. The pharmacy technician complies with standard written procedures and guidelines under the direct supervision of a registered pharmacist. Pharmacy technicians assist the pharmacist with medication preparation and administrative duties and provide front-line customer service in the pharmacy setting. Graduates are prepared for the Pharmacy Technician Certification Board exam, which is necessary for certification.

Career Opportunities

Pharmacy technicians are employed in a variety of health care settings which include retail, hospital, and mail-order pharmacies. In addition, there are employment opportunities in insurance companies.

Award Outcomes

Demonstrate an understanding of all policies and procedures that govern pharmacy technicians.

Perform duties as a pharmacy technician in the retail, industry and hospital environments.

Demonstrate the ability to prepare and interpret pharmacy orders accurately.

Exhibit work ethic characteristics of professionalism, responsibility and dependability.

Apply knowledge of basic sciences to the practice of pharmacy technology.

Demonstrate ability to communicate with patients, health care providers and colleagues.

Technical Studies Required 35 Credits

PHRM1000 Medical and Pharmacy Terminology 2

PHRM1010 Pharmacy Law and Ethics 2

PHRM1020 Pharmaceutical Calculations 2

PHRM1030 Pharmacology 3

PHRM1040 Principles of Pharmacy Practice I 4

PHRM1050 Pharmacotherapy and Epidemiology of Disease Processes 3

PHRM1060 Principles of Pharmacy Practice II 5

PHRM1080 Pharmacy Technician Externship I 3

PHRM1090 Pharmacy Technician Externship II 3

PHRM1100 Chemistry for Pharmacy Technicians 4

BIOL2045 Human Biology 4

or

HLTH1010 Anatomy and Physiology 4

General Education Required 9 Credits

COMM2050 Interpersonal Communication 3

Choose one course from MnTC Goal Area 2 3

Choose one course from MnTC Goal Area 5 3

General Education Elective 16 Credits

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

Technical Studies Elective 0 Credits

Total Associate of Applied Science Degree Credits 60

Diploma

Pharmacy Technician (BP/EP)

Overview

The Pharmacy Technician Diploma program prepares graduates for entry level careers working under the direction of Registered Pharmacists in retail, clinic, and hospital inpatient settings. The pharmacy technician provides an integral role in assisting pharmacists with prescription processing. The pharmacy technician complies with standard written procedures and guidelines under the direct supervision of a Registered Pharmacist. Pharmacy technicians assist the pharmacist with medication preparation, administrative duties, and provide front line customer service in the pharmacy setting. The program prepares graduates for the Pharmacy Technician Certification Board exam which is necessary for certification.

Prerequisite: Qualifying score on reading, writing, math and computer literacy assessment tests.

Career Opportunities

Pharmacy Technicians work in retail, clinic, online, and hospital pharmacies.

Award Outcomes

Demonstrate an understanding of all policies and procedures that govern pharmacy technicians.

Perform duties as a pharmacy technician in the retail, industry and hospital environments.

Demonstrate the ability to prepare and interpret pharmacy orders accurately.

Exhibit work ethic characteristics of professionalism, responsibility and dependability.

Apply knowledge of basic sciences to the practice of pharmacy technology.

Demonstrate ability to communicate with patients, health care providers and colleagues.

Technical Studies Required **35 Credits**

PHRM1000 Medical and Pharmacy Terminology 2

PHRM1010 Pharmacy Law and Ethics 2

PHRM1020 Pharmaceutical Calculations 2

PHRM1030 Pharmacology 3

PHRM1040 Principles of Pharmacy Practice I 4

PHRM1050 Pharmacotherapy and Epidemiology of Disease Processes 3

PHRM1060 Principles of Pharmacy Practice II 5

PHRM1080 Pharmacy Technician Externship I 3

PHRM1090 Pharmacy Technician Externship II 3

PHRM1100 Chemistry for Pharmacy Technicians 4

BIOL2045 Human Biology 4

or

HLTH1010 Anatomy and Physiology 4

General Education Required **3 Credits**

COMM2050 Interpersonal Communication 3

General Education Elective **0 Credits**

Technical Studies Elective **0 Credits**

Total Diploma Credits 38

Associate of Applied Science Degree

Practical Nursing (BP/EP)**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 HTC. 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.

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; NAHA1002 or currently on the Minnesota Department of Health Registry for Nursing Assistants; BIOL2045 or BIOL2125 and BIOL2225, ENGL1050, NURS1015 or BIOL2003 or HLTH2001, and qualifying scores in reading, writing, math and computer literacy assessment tests. Application to the Practical Nursing Program is required after successful completion of the prerequisites. Students are accepted into the program through the application process.

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.

Award Outcomes

Provide 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.

Technical Studies Required**36 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

BIOL2003 Nutrition and Health 3

or

HLTH2001 Nutrition and Health 2

ENGL1050 Writing for Health Care 3

General Education Required**14 Credits**

BIOL2045 Human Biology 4

or

BIOL2125 Anatomy and Physiology I 4

and

BIOL2225 Anatomy and Physiology II 4

ENGL2121 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**10 Credits**

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

Technical Studies Elective**0 Credits**

Total Associate of Applied Science Degree Credits 60

Diploma

Practical Nursing (BP/EP)

Overview

The courses listed 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. 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.

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; NAHA1002 or currently on the Minnesota Department of Health Registry for Nursing Assistants; BIOL2045 or BIOL2125 and BIOL2225, ENGL1050, NURS1015 or BIOL2003 or HLTH2001, and qualifying scores in reading, writing, math and computer literacy assessment tests. Application to the Practical Nursing Program is required after successful completion of the prerequisites. Students are accepted into the program through the application process.

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.

Award Outcomes

Provide 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.

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

BIOL2003 Nutrition and Health 3

or

HLTH2001 Nutrition and Health 2

General Education Required

7 Credits

BIOL2045 Human Biology 4

or

BIOL2125 Anatomy and Physiology I 4

and

BIOL2225 Anatomy and Physiology II 4

ENGL1050 Writing for Health Care 3

General Education Elective

0 Credits

Technical Studies Elective

0 Credits

Total Diploma Credits 40

Manufacturing & Engineering Technology

Automation Robotics Engineering Technology

Associate of Applied Science Degree	Automation Robotics Engineering Technology	(EP)
Diploma	Automated Machinery Adjuster	(EP)
Diploma	Automated Machinery Systems	(EP)
Diploma	Controls Engineering Technician	(EP)
Diploma	Mechatronics	(EP)
Advanced Technical Certificate	Mechatronics	(EP)
Occupational Certificate	Automation Technologies	(BP/EP)
Occupational Certificate	Production Technologies	(BP/EP)

Electronics Technology

Associate of Applied Science Degree	Electronics Technology	(BP)
Diploma	Electronics Technology	(BP)

Engineering CAD Technology

Associate of Applied Science Degree	Engineering CAD Technology	(BP/EP)
Diploma	Engineering CAD Technology	(BP/EP)
Advanced Technical Certificate	AutoCAD Operator	(BP/EP)
Advanced Technical Certificate	Pro/ENGINEER Operator	(BP/EP)
Advanced Technical Certificate	SolidWorks Operator	(BP/EP)

Fluid Power Engineering Technology

Associate of Applied Science Degree	Fluid Power Engineering Technician	(BP/EP)
Associate of Applied Science Degree	Hydraulic Engineering Technician	(BP/EP)
Associate of Applied Science Degree	Pneumatic Engineering Technician	(BP/EP)
Diploma	Fluid Power Engineering Technician	(BP/EP)
Diploma	Fluid Power Mechanic	(BP/EP)
Diploma	Hydraulic Engineering Technician	(BP/EP)
Diploma	Pneumatic Engineering Technician	(BP/EP)
Advanced Technical Certificate	National Certified Fluid Power Specialist	(BP/EP)
Occupational Certificate	Industrial Maintenance Mechanic	(BP/EP)

Industrial Building Engineering and Maintenance

Diploma	Industrial Building Engineering and Maintenance	(BP)
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Machine Tool Technology & Quality Assurance

Associate of Applied Science Degree	Computer Numerical Control (CNC) Technician	(BP)
Associate of Applied Science Degree	Tool and Die/Moldmaking	(BP)
Diploma	Computer Numerical Control (CNC) Technician	(BP)
Diploma	Tool and Die/Moldmaking	(BP)
Advanced Technical Certificate	Computer Numerical Control (CNC) Setup Technician	(BP)
Advanced Technical Certificate	CNC Swiss Turning Center Technician	(BP)
Occupational Certificate	CNC Operator	(BP)
Occupational Certificate	Quality Assurance	(BP)

Manufacturing Engineering Technology

Associate of Applied Science Degree	Manufacturing Engineering Technology	(BP/EP)
Occupational Certificate	Manufacturing Fundamentals (M-Powered)	(BP/EP)
Occupational Certificate	Manufacturing Technician	(BP/EP)

Plastics Engineering Technology

Diploma	Plastics Engineering Technology	(BP)
Advanced Technical Certificate	Scientific Injection Molding Specialist	(BP)
Occupational Certificate	Extrusion Molding	(BP)
Occupational Certificate	Injection Molding	(BP)
Occupational Certificate	Medical Device - Plastics Technology	(BP)

Welding & Metal Fabrication

Diploma	Welding	(BP)
Occupational Certificate	GMAW Production Welder (MIG)	(BP)
Occupational Certificate	GTAW Production Welder (TIG)	(BP)
Occupational Certificate	Structural Iron Fabrication and Repair	(BP)

Associate of Applied Science Degree

Automation Robotics Engineering Technology (EP)

Overview

Successful completion of training in Automation Robotics Engineering Technology leads to excellent 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.

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.

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.

Technical Studies Required 45 Credits

- ARET1125 Power Transmission and Mechanical Systems 4
- ARET1130 Maintenance Operations 2
- ARET1140 Computer Integrated Manufacturing 3
- ARET1155 Automation Controls 3
- ARET1160 Packaging Machinery Systems 4
- ARET1165 Vision Systems for QA/SPC 3
- ARET1170 Troubleshooting Packaging Machinery 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
- ARET2100 Advanced Automation Controls 4
- ARET2105 Fluid Power Motion Control 2
- ARET2110 Advanced Programmable Logic Controllers 4
- ARET2150 Engineering Design and Fabrication 2

General Education Required 12 Credits

- ENGL2121 Writing and Research 4
- or
- ENGL2125 Technical Writing 3
- MATH2050 Applications of Quantitative Reasoning 3
- or
- MATH2200 College Algebra 4
- PHIL2100 Critical Thinking 3
- PHYS2001 Introductory Physics 3

General Education Elective 3 Credits

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

Technical Studies Elective 0 Credits

Total Associate of Applied Science Degree Credits 60

Diploma**Automated Machinery Adjuster (EP)****Overview**

The automated machinery operator/set-up person is skilled in the hands-on operation and changeover of automated production and packaging machines used in manufacturing. The person is competent in basic mechanical skills and standard operation procedures.

Career Opportunities

Career opportunities are entry-level positions in manufacturing companies.

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.

Technical Studies Required 28 Credits

ARET1125 Power Transmission and Mechanical Systems 4

ARET1130 Maintenance Operations 2

ARET1140 Computer Integrated Manufacturing 3

ARET1155 Automation Controls 3

ARET1160 Packaging Machinery Systems 4

ARET1165 Vision Systems for QA/SPC 3

ARET1170 Troubleshooting Packaging Machinery 3

ARET1175 Industrial Electricity and Electronics I 3

ARET1180 Industrial Electricity and Electronics II 3

General Education Required 4 Credits

COMM1050 Communication in the Workplace 2

or

PHYS1000 Fundamentals of Physics 2

MATH1007 Math for the Trades 2

or

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 1 Credit**

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

Total Diploma Credits 33

Diploma

Automated Machinery Systems (EP)

Overview

Successful completion of training in Automation Robotics Engineering Technology leads to excellent 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.

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.

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.

Technical Studies Required **50 Credits**

- ARET1125 Power Transmission and Mechanical Systems 4
- ARET1130 Maintenance Operations 2
- ARET1140 Computer Integrated Manufacturing 3
- ARET1155 Automation Controls 3
- ARET1160 Packaging Machinery Systems 4
- ARET1165 Vision Systems for QA/SPC 3
- ARET1170 Troubleshooting Packaging Machinery 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
- ARET2100 Advanced Automation Controls 4
- ARET2105 Fluid Power Motion Control 2
- ARET2110 Advanced Programmable Logic Controllers 4
- ARET2150 Engineering Design and Fabrication 2
- ARET2200 FANUC Robotics Operations 2
- ARET2250 FANUC Vision Systems 1

General Education Required **4 Credits**

- COMM1050 Communication in the Workplace 2
- or
- PHYS1000 Fundamentals of Physics 2
- MATH1007 Math for the Trades 2
- or
- MATH1050 Math Pathways Plus for College and Careers 4
- or
- MATH1060 Math Pathways for College and Careers 3

General Education Elective **2 Credits**

Any HTC 1000 level or higher general education course may be used to satisfy the elective requirements.

Technical Studies Elective

4 Credits

Recommended:
ARET1900 Specialized Lab 14
ARET2181 Internship 14

Total Diploma Credits 60

Diploma

Controls Engineering Technician (EP)

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.

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.

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.

Technical Studies Required **54 Credits**

ARET1125 Power Transmission and Mechanical Systems 4

ARET1140 Computer Integrated Manufacturing 3

ARET1155 Automation Controls 3

ARET1165 Vision Systems for QA/SPC 3

ARET1170 Troubleshooting Packaging Machinery 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

ARET2100 Advanced Automation Controls 4

or

CMAE1556 Analog Circuits 3

ARET2110 Advanced Programmable Logic Controllers 4

or

CMAE1556 Analog Circuits 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

ENG1160 Inventor 4

or

ENG1250 SolidWorks I 4

METS1200 Industry Practices and Procedures 3

or

CMAE1514 Safety Awareness 2

General Education Required **6 Credits**

ENGL2121 Writing and Research 4

or

ENGL2125 Technical Writing 3

MATH2150 Introduction to Statistics 3

or

MATH2200 College Algebra 4

General Education Elective **0 Credits**

Technical Studies Elective 0 Credits

Total Diploma Credits 60

Diploma

Mechatronics (EP)**Overview**

Mechatronics is a rapidly growing field that integrates electronics, mechanics, pneumatics, hydraulics, 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 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 Diploma 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.

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.

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.

Technical Studies Required**54 Credits**

ARET1125 Power Transmission and Mechanical Systems 4
 ARET1155 Automation Controls 3
 ARET1165 Vision Systems for QA/SPC 3
 ARET1170 Troubleshooting Packaging Machinery 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
 ARET2100 Advanced Automation Controls 4
 ARET2105 Fluid Power Motion Control 2
 or
 FLPW1150 Pneumatic Components 4
 ARET2110 Advanced Programmable Logic Controllers 4
 ARET2200 FANUC Robotics Operations 2
 ARET2300 Mechanical Components I Certificate Review 3
 ARET2320 Industrial Electricity I Certificate Review 3
 FLPW1101 Fluid Power Technology I 3
 FLPW1106 Fluid Power Technology II 4

Choose one of the following:

ARET2330 Industrial Electricity II Certificate Review 3
 ARET2340 Programmable Logic Controllers I Certificate Review 3
 ARET2360 Automated Fluid Power I Certificate Review 3
 ENGC1160 Inventor 4
 ENGC1250 SolidWorks I 4

General Education Required**6 Credits**

ENGL2121 Writing and Research 4
 or
 ENGL2125 Technical Writing 3

 MATH2150 Introduction to Statistics 3
 or
 MATH2200 College Algebra 4

General Education Elective 0 Credits

Technical Studies Elective 0 Credits

Total Diploma Credits 60

Advanced Technical Certificate

Mechatronics (EP)

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.

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.

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.

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

Occupational Certificate

Automation Technologies (BP/EP)

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, you'll gain skills that provide you 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. Use the credits you earn to continue your education and have a great return on your investment!

For additional information on this award and the 360 Degree programs please go to: www.360etech.org

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.

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.

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
- CMAE1550 DC Power 3
- CMAE1552 AC Power 3
- CMAE1554 Digital Electronics 3
- CMAE1556 Analog Circuits 3
- CMAE1558 Motor Control 3

General Education Required 0 Credits

General Education Elective 0 Credits

Technical Studies Elective 0 Credits

Total Occupational Certificate Credits 30

Occupational Certificate

Production Technologies (BP/EP)**Overview**

This certificate will provide students with the 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 engage in coursework topics of career success skills, technical mathematics, introductory computer skills, print interpretation, manufacturing processes, quality control, maintenance, and safety.

The nationwide Manufacturing Skills Standards Council (MSSC) System, based upon industry-defined and federally-endorsed national standards, offers both entry-level and incumbent workers the opportunity to demonstrate that they have acquired the skills increasingly needed in the high-growth, technology-intensive jobs of the 21st century. The MSSC System awards certificates to individuals who pass any of its four Production modules: Safety; Quality Practices & Measurement; Manufacturing Processes & Production; and Maintenance Awareness and a full Certified Production Technician (CPT) Certification to those who pass all four. Students completing the Production Technologies Certificate will have gained the knowledge required to pass the MSSC full-certified Production Technician Certification.

For additional information on this award and the 360 Degree programs please go to: www.360etech.org

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.

Award Outcomes

Identify and apply appropriate safety procedures.
 Use technical mathematics to solve problems.
 Demonstrate use of common computer software.
 Analyze and apply specific manufacturing process procedures.
 Identify and apply specific quality procedures.
 Interpret symbols and blueprints accurately for a variety of projects.
 Identify appropriate and inappropriate professional behavior.

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

Associate of Applied Science Degree

Electronics Technology (BP)

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.

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.

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.

Technical Studies Required

51 Credits

- ELEC1000 DC Circuits 4
- ELEC1050 AC Circuits 4
- ELEC1100 Complex AC Circuits 3
- ELEC1150 Diodes and Rectifiers 2
- ELEC1200 Soldering Skills 1
- 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 in the Digital World 3
- or
- METS1000 Computers in Manufacturing 3

General Education Required

9 Credits

- ENGL2121 Writing and Research 4
- or
- ENGL2125 Technical Writing 3

MATH2050 Applications of Quantitative Reasoning 3
or
MATH2150 Introduction to Statistics 3
or
MATH2200 College Algebra 4
PHIL2100 Critical Thinking 3

General Education Elective **6 Credits**

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

Technical Studies Elective **6 Credits**

Recommended:
ELEC1900 Specialized Lab 1-4
ELEC2100 Motor and Motor Controllers 3
ELEC2300 Troubleshooting Computers 3
ELEC2400 Industrial Controls 2
ELEC2420 Telemetry 2

Total Associate of Applied Science Degree Credits 72

Diploma

Electronics Technology (BP)

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.

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.

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.

Technical Studies Required

48 Credits

ELEC1000 DC Circuits 4
 ELEC1050 AC Circuits 4
 ELEC1100 Complex AC Circuits 3
 ELEC1150 Diodes and Rectifiers 2
 ELEC1200 Soldering Skills 1
 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

COMM1050 Communication in the Workplace 2
 CPLT1100 Computer Essentials in the Digital World 3
 or
 METS1000 Computers in Manufacturing 3

MATH2150 Introduction to Statistics 3
 or
 PHIL2100 Critical Thinking 3
 or
 PHYS2001 Introductory Physics 3

General Education Elective

0 Credits

Technical Studies Elective

8 Credits

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

Associate of Applied Science Degree

Engineering CAD Technology (BP/EP)**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 products, 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.

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 a Engineering CAD Technician. Experienced technicians with CAD skills are in demand.

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.

Technical Studies Required 54 Credits

ENGC1011 Engineering Drawing 3
 ENGC1021 Working Drawings 3
 ENGC1041 Geometric Dimensioning & Tolerancing 3
 ENGC1100 AutoCAD 4
 ENGC1160 Inventor 4
 ENGC1201 Industrial CAD Project 3
 ENGC1250 SolidWorks I 4
 ENGC1255 SolidWorks II 4
 ENGC2011 Special Fields of Drafting 3
 ENGC2075 Engineering Design Project 3
 ENGC2100 Basic Creo Parametric (Pro/ENGINEER) 4
 ENGC2110 Advanced Creo Parametric (Pro/ENGINEER) 4
 MACH1056 Blueprint Reading I 3
 METS1000 Computers in Manufacturing 3
 METS1020 Industrial Manufacturing Processes 3
 METS2000 Engineering Design Principles 3

General Education Required 9 Credits

ENGL2121 Writing and Research 4
 or
 ENGL2125 Technical Writing 3
 MATH2050 Applications of Quantitative Reasoning 3
 or
 MATH2200 College Algebra 4
 PHIL2100 Critical Thinking 3
 or
 PHYS2001 Introductory Physics 3

General Education Elective 6 Credits

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

Technical Studies Elective 3 Credits

ARET1200 Introduction to Robotics 2
 ENGC1050 Additive Manufacturing 3
 ENGC1900 Specialized Lab 1-4
 ENGC2050 AutoCAD Upgrade Training 1

ENGC2200 Engineering CAD Technology Internship 34
FLPW1101 Fluid Power Technology I 3
MACH1205 Machine Tool Technology 3
METS2100 Statics and Strength of Materials 3

Total Associate of Applied Science Degree Credits 72

Diploma

Engineering CAD Technology (BP/EP)**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 products, 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.

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 a Engineering CAD Technician. Experienced technicians with CAD skills are in demand.

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.

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
 ENGC2000 Mechanical Design 4
 or
 METS2000 Engineering Design Principles 3
 ENGC2011 Special Fields of Drafting 3
 ENGC2075 Engineering Design Project 3
 ENGC2100 Basic Creo Parametric (Pro/ENGINEER) 4
 ENGC2110 Advanced Creo Parametric (Pro/ENGINEER) 4
 MACH1056 Blueprint Reading I 3
 METS1020 Industrial Manufacturing Processes 3

General Education Required 8 Credits

COMM1050 Communication in the Workplace 2
 MATH1500 Beginning Algebra 3
 METS1000 Computers in Manufacturing 3

General Education Elective 0 Credits**Technical Studies Elective 2 Credits**

ARET1200 Introduction to Robotics 2
 FLPW1101 Fluid Power Technology I 3
 ENGC1900 Specialized Lab 1-4
 ENGC2050 AutoCAD Upgrade Training 1
 ENGC2200 Engineering CAD Technology Internship 3-4
 MACH1205 Machine Tool Technology 3
 MACH2425 Geometry/Trigonometry for Machinists 2
 METS2100 Statics and Strength of Materials 3

Total Diploma Credits 64

Advanced Technical Certificate

AutoCAD Operator (BP/EP)

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.

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.

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.

Technical Studies Required	14 Credits
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ENGC1021 Working Drawings 3

ENGC1100 AutoCAD 4

ENGC1160 Inventor 4

ENGC2075 Engineering Design Project 3

General Education Required	0 Credits
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General Education Elective	0 Credits
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Technical Studies Elective	3 Credits
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Recommended:

ENGC1011 Engineering Drawing 3

ENGC1041 Geometric Dimensioning & Tolerancing 3

ENGC1050 Additive Manufacturing 3

ENGC1250 SolidWorks I 4

ENGC1255 SolidWorks II 4

ENGC1900 Specialized Lab 1-4

ENGC2000 Mechanical Design 4

ENGC2100 Basic Creo Parametric (Pro/ENGINEER) 4

ENGC2110 Advanced Creo Parametric (Pro/ENGINEER) 4

MACH2410 CAD/CAM 3

METS1000 Computers in Manufacturing 3

METS1020 Industrial Manufacturing Processes 3

Total Advanced Technical Certificate Credits 17

Advanced Technical Certificate

Pro/ENGINEER Operator (BP/EP)

Overview

The Pro/ENGINEER 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.

Career Opportunities

Most Pro/ENGINEER 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. Jobs in this field pay well but are difficult to obtain. Employers prefer students with machining and/or mechanical design experience.

Award Outcomes

- Capture design intent.
- Create solid models.
- Generate drawings from solid models and assemblies.
- Apply tolerances to drawings.
- Utilize Pro/ENGINEER software interface.

Technical Studies Required	14 Credits
ENG1021 Working Drawings 3	
ENG2075 Engineering Design Project 3	
ENG2100 Basic Creo Parametric (Pro/ENGINEER) 4	
ENG2110 Advanced Creo Parametric (Pro/ENGINEER) 4	

General Education Required	0 Credits
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General Education Elective	0 Credits
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Technical Studies Elective	3 Credits
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Recommended:

- ENG1011 Engineering Drawing 3
- ENG1041 Geometric Dimensioning & Tolerancing 3
- ENG1050 Additive Manufacturing 3
- ENG1100 AutoCAD 4
- ENG1160 Inventor 4
- ENG1201 Industrial CAD Project 3
- ENG1250 SolidWorks I 4
- ENG1255 SolidWorks II 4
- ENG1900 Specialized Lab 1-4
- ENG2000 Mechanical Design 4
- MACH2410 CAD/CAM 3
- METS1000 Computers in Manufacturing 3
- METS1020 Industrial Manufacturing Processes 3

Total Advanced Technical Certificate Credits 17

Advanced Technical Certificate

SolidWorks Operator (BP/EP)

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.

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.

Award Outcomes

Capture design intent.
 Create solid models.
 Generate drawings from solid models and assemblies.
 Apply tolerances to drawings.
 Utilize SolidWorks software interface.

Technical Studies Required	14 Credits
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ENG1021 Working Drawings 3	
ENG1250 SolidWorks I 4	
ENG1255 SolidWorks II 4	
ENG2075 Engineering Design Project 3	

General Education Required	0 Credits
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General Education Elective	0 Credits
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Technical Studies Elective	3 Credits
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ENG1011 Engineering Drawing 3	
ENG1041 Geometric Dimensioning & Tolerancing 3	
ENG1050 Additive Manufacturing 3	
ENG1100 AutoCAD 4	
ENG1160 Inventor 4	
ENG1201 Industrial CAD Project 3	
ENG1900 Specialized Lab 1-4	
ENG2000 Mechanical Design 4	
ENG2100 Basic Creo Parametric (Pro/ENGINEER) 4	
ENG2110 Advanced Creo Parametric (Pro/ENGINEER) 4	
MACH2410 CAD/CAM 3	
METS1000 Computers in Manufacturing 3	

Total Advanced Technical Certificate Credits 17

Associate of Applied Science Degree

Fluid Power Engineering Technician (BP/EP)

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.

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.

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.

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 (Pro/ENGINEER) 4

FLPW1400 Engineering Drawings and Schematics 4

General Education Required **9 Credits**

ENGL2121 Writing and Research 4

or

ENGL2125 Technical Writing 3

Choose six Credits from two MnTC Goal Areas 2-10 6

General Education Elective **6 Credits**

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

Technical Studies Elective **0 Credits**

Total Associate of Applied Science Degree Credits 72

Associate of Applied Science Degree**Hydraulic Engineering Technician (BP/EP)****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.

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.

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.

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

General Education Required**12 Credits**

ENGL2121 Writing and Research 4

or

ENGL2125 Technical Writing 3

Choose nine Credits from two MnTC Goal Areas_2-10 9

General Education Elective

3 Credits

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

Technical Studies Elective

0 Credits

Total Associate of Applied Science Degree Credits 60

Associate of Applied Science Degree**Pneumatic Engineering Technician (BP/EP)****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.

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.

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.

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 (Pro/ENGINEER) 4

FLPW1400 Engineering Drawings and Schematics 4

General Education Required**3 Credits**

ENGL2121 Writing and Research 4

or

ENGL2125 Technical Writing 3

General Education Elective 3 Credits

Choose nine Credits from two MnTC Goal Areas_2-10 9

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

Technical Studies Elective 0 Credits

Total Associate of Applied Science Degree Credits 51

Diploma

Fluid Power Engineering Technician (BP/EP)

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.

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.

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.

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 (Pro/ENGINEER) 4

FLPW1400 Engineering Drawings and Schematics 4

General Education Required

3 Credits

METS1000 Computers in Manufacturing 3

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

Diploma

Fluid Power Mechanic (BP/EP)

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.

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.)

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.

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

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

Diploma

Hydraulic Engineering Technician (BP/EP)

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.

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.

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.

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 (Pro/ENGINEER) 4
FLPW1400 Engineering Drawings and Schematics 4

General Education Required **3 Credits**
METS1000 Computers in Manufacturing 3

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

Diploma

Pneumatic Engineering Technician (BP/EP)

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.

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.

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.

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 (Pro/ENGINEER) 4

FLPW1400 Engineering Drawings and Schematics 4

General Education Required

3 Credits

METS1000 Computers in Manufacturing 3

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

Advanced Technical Certificate**National Certified Fluid Power Specialist (BP/EP)****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.

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.

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.

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

Occupational Certificate**Industrial Maintenance Mechanic (BP/EP)****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.

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.

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.

Technical Studies Required 18 Credits

FLPW1101 Fluid Power Technology I 3

FLPW1106 Fluid Power Technology II 4

FLPW1150 Pneumatic Components 4

or

FLPW1181 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

Diploma

Industrial Building Engineering and Maintenance (BP)

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.

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.

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.

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 3

or

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

METS1000 Computers in Manufacturing 3

General Education Elective 0 Credits

Technical Studies Elective 1 Credit

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

Associate of Applied Science Degree

Computer Numerical Control (CNC) Technician (BP)

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.

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.

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.

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

- ENGL2121 Writing and Research 4
- or
- ENGL2125 Technical Writing 3
- MATH2050 Applications of Quantitative Reasoning 3
- or
- MATH2200 College Algebra 4
- PHIL2100 Critical Thinking 3
- or
- PHYS2001 Introductory Physics 3

General Education Elective 6 Credits

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

Technical Studies Elective

7 Credits

Recommended:

MACH1145 Machinists Reference Materials 1

MACH1900 Specialized Lab 1-4

MACH2425 Geometry/Trigonometry for Machinists 2

MACH2445 Heat Treating and Metallurgy 2

MACH2450 Fundamentals of EDM 2

MACH2475 Gibbs CAD/CAM Milling 3

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 of Applied Science Degree Credits 72

Associate of Applied Science Degree

Tool and Die/Moldmaking (BP)

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.

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.

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.

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

- ENGL2121 Writing and Research 4
- or
- ENGL2125 Technical Writing 3

- MATH2050 Applications of Quantitative Reasoning 3
- or
- MATH2200 College Algebra 4

PHIL2100 Critical Thinking 3
or
PHYS2001 Introductory Physics 3

General Education Elective 6 Credits

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

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
MACH2445 Heat Treating and Metallurgy 2
MACH2450 Fundamentals of EDM 2
MACH2475 Gibbs CAD/CAM Milling 3
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 of Applied Science Degree Credits 72

Diploma

Computer Numerical Control (CNC) Technician (BP)

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.

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.

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.

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

- MATH1050 Math Pathways Plus for College and Careers 4
- or
- MATH1060 Math Pathways for College and Careers 3
- MATH1500 Beginning Algebra 3

General Education Elective 0 Credits

Technical Studies Elective 6 Credits

Recommended:

- MACH1145 Machinists Reference Materials 1
- MACH1900 Specialized Lab 1-4
- MACH2445 Heat Treating and Metallurgy 2
- MACH2450 Fundamentals of EDM 2

MACH2470 Advanced CNC Turning Centers 3
MACH2475 Gibbs CAD/CAM Milling 3
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 Diploma Credits 64

Diploma

Tool and Die/Moldmaking (BP)

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.

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.

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.

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

- MATH1050 Math Pathways Plus for College and Careers 4
- or
- MATH1060 Math Pathways for College and Careers 3
- MATH1500 Beginning Algebra 3

General Education Elective 0 Credits

Technical Studies Elective

6 Credits

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

MACH2445 Heat Treating and Metallurgy 2

MACH2475 Gibbs CAD/CAM Milling 3

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 Diploma Credits 64

Advanced Technical Certificate**Computer Numerical Control (CNC) Setup Technician (BP)****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.

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.

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.

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

Advanced Technical Certificate

CNC Swiss Turning Center Technician (BP)

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.

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.

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.

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

Occupational Certificate

CNC Operator (BP)

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.

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.

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.

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 2 Credits

- MATH1007 Math for the Trades 2

General Education Elective 0 Credits

Technical Studies Elective 3 Credits

Recommended:

- METS1000 Computers in Manufacturing 3
- ENGC1050 Additive Manufacturing 3
- ENGC1250 SolidWorks I 4

Total Occupational Certificate Credits 30

Occupational Certificate

Quality Assurance (BP)

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.

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.

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.

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

Associate of Applied Science Degree

Manufacturing Engineering Technology (BP/EP)

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.

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.

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.

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
 and
 ENGC1050 Additive Manufacturing 3
 or
 MACH1205 Machine Tool Technology 3
 and
 PLST1041 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 (Pro/ENGINEER) 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 (Pro/ENGINEER) 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 (Pro/ENGINEER) 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 Micro-bore Extrusion Process 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

ENGL2121 Writing and Research 4
or
ENGL2125 Technical Writing 3
MATH2050 Applications of Quantitative Reasoning 3
or
MATH2150 Introduction to Statistics 3
or
MATH2200 College Algebra 4

Choose one course from MnTC Goal Area 2 3

General Education Elective 6 Credits

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

Technical Studies Elective 0 Credits

Total Associate of Applied Science Degree Credits 60

Occupational Certificate

Manufacturing Fundamentals (M-Powered) (BP/EP)**Overview**

M-Powered is a four part career training program designed to fast-track students into an entry-level manufacturing job and begins a life-long education and career track in manufacturing.

Career Opportunities

Graduates from the M-Powered program may have career opportunities as Computer-Numerical-Control (CNC) mill, lathe, stamping, bending and forming machine operators, assemblers, quality control specialists, research and development specialists, precision stamping and entry-level welders. Machine operators are employed in both small and large manufacturing firms that produce durable goods. Manufacturing Technicians can be employed in areas related to engineering, production, research & development, and or quality. Graduates may pursue jobs in the medical device, aerospace, computer and bioscience manufacturing fields. Excellent opportunities exist for personal and professional growth to high-skill, high-wage positions in these industries.

Award Outcomes

Apply math skills for industry.

Examine the Scientific Method.

Demonstrate use of lab equipment.

Examine safety and awareness compliance procedures.

Categorize terms and methods used to communicate in manufacturing Characterize various metal types and chemicals.

Analyze the manufacturing cycle.

Demonstrate computer usage.

Outline the operating environment for organizational teams.

Demonstrate best practices and compliance to industry benchmarks.

Model positive workplace behaviors.

Identify clean room processes.

Technical Studies Required 11 Credits

METS1100 Manufacturing Fundamentals I 6

METS1105 Manufacturing Fundamentals II 3

METS1150 M-Powered Internship 2

General Education Required 0 Credits**General Education Elective 0 Credits****Technical Studies Elective 5 Credits**

Any ARET, ENGC, ELEC, IBEM, FLPW, MACH, METS, PLST, or WLDG course that is not required for this award may be used as an elective.

Total Occupational Certificate Credits 16

Occupational Certificate

Manufacturing Technician (BP/EP)**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.

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.

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.

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

Diploma

Plastics Engineering Technology (BP)

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.

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.

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.

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 4

or

PLST2011 Extrusion Molding Processes I 3

PLST2017 Extrusion Molding Processes II 4

General Education Required **5 Credits**

COMM1050 Communication in the Workplace 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 Micro-bore Extrusion Process 3

PLST2300 Plastics Engineering Technology Internship 4

Total Diploma Credits 36

Advanced Technical Certificate**Scientific Injection Molding Specialist (BP)****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.

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.

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.

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

Occupational Certificate

Extrusion Molding (BP)

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.

Career Opportunities

This certificate is ideal for a new career or upgrading present knowledge and skills.

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.

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

Occupational Certificate**Injection Molding (BP)****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.

Career Opportunities

This certificate is ideal for a new career or upgrading present knowledge and skills.

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.

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

Occupational Certificate**Medical Device - Plastics Technology (BP)****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.

Career Opportunities

This Medical Device - Plastics Technology Certificate is ideal for new career or upgrading current industry knowledge and skills. Well paying jobs are available in the medical device and bio-manufacturing fields. Excellent opportunities exist for personal and professional growth to high-skill and high-wage positions in these industries.

Award Outcomes

Obtain FDA & GMP requirements and practices.

Demonstrate knowledge of proper installation of medical micro-bore extrusion 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.

Technical Studies Required 20 Credits

FLPW2112 Instrumentation of Fluid Power Systems 3

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 Micro-bore Extrusion Process 3

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

Total Occupational Certificate Credits 20

Diploma

Welding (BP)

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.

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.

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.
 Preform 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.

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 college level general education course may be used to satisfy the elective requirement.

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

Total Diploma Credits 55

Occupational Certificate**GMAW Production Welder (MIG) (BP)****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.

Career Opportunities

There are many employment opportunities available in the following areas: construction, machinery manufacturing, sheet metal industry, and custom job shop.

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.

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

Occupational Certificate**GTAW Production Welder (TIG) (BP)****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.

Career Opportunities

There are many employment opportunities available in the following areas manufacturing areas: medical/pharmaceutical, pipe/tubing, food and aerospace.

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.

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

Occupational Certificate**Structural Iron Fabrication and Repair (BP)****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.

Career Opportunities

There are many employment opportunities available in the following industries: agricultural, construction, heavy equipment repair and manufacturing, tank and pressure vessel repair.

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.

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

Media Communication

Audio Production

Associate of Applied Science Degree	Audio Production Specialist	(EP)
Diploma	Audio Production Specialist	(EP)

Graphic Design

Associate of Applied Science Degree	Graphic Design: Creative	(BP)
Associate of Applied Science Degree	Graphic Design: Web Design	(BP)
Diploma	Graphic Design: Creative	(BP)
Diploma	Graphic Design: Production	(BP)
Diploma	Graphic Design: Web Design	(BP)
Occupational Certificate	Basic Web Technologies	(BP)
Occupational Certificate	Production Technician for Digital Publishing	(BP)

Interactive Video Design Production

Associate of Applied Science Degree	Animation and Motion Graphic Artist	(BP)
Associate of Applied Science Degree	Interactive Designer	(BP)
Associate of Applied Science Degree	Video Production Specialist	(BP)
Diploma	Animation and Motion Graphic Artist	(BP)
Diploma	Interactive Designer	(BP)
Diploma	Video Production Specialist	(BP)
Advanced Technical Certificate	Motion Graphics	(BP)
Occupational Certificate	Media Producer	(BP)

Associate of Applied Science Degree

Audio Production Specialist (EP)**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.

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!

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.

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 Studio Maintenance and Calibration 2
 ARSP2580 Audio Recording Internship I 2
 ARSP2585 Audio Recording Internship II 2

General Education Required 15 Credits

COMM2060 Small Group Communication 3
 ENGL2121 Writing and Research 4
 or
 ENGL2125 Technical Writing 3
 PHIL2100 Critical Thinking 3
 PHIL2200 Ethics 3
 SOCI2100 Introduction to Sociology 3

General Education Elective 0 Credits

Technical Studies Elective 0 Credits

Total Associate of Applied Science Degree Credits 65

Diploma

Audio Production Specialist (EP)

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.

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!

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.

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 Studio Maintenance and Calibration 2
- ARSP2580 Audio Recording Internship I 2
- ARSP2585 Audio Recording Internship II 2

General Education Required 2 Credits

- CCDS1040 Job Seeking Skills 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 2 Credits

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

Total Diploma Credits 60

Associate of Applied Science Degree

Graphic Design: Creative (BP)**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.

Are you a creative problem solver? Are you artistic? Do you work well under pressure? Do you like computers and technology? Do you adapt to change easily and quickly? Are you detail-oriented? Do you communicate well with people? Are you a life-long learner? If so, 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, but want the technical hands-on job training now!

Prerequisites: Testing score equivalent or CPLT1100 Essential Computer Applications, CPLT1200 Introduction to Macintosh.

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.

Award Outcomes

Utilize the elements and principles of design.

Integrate the use of industry standard technology and design.

Develop visual solutions to communicate client 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.

Technical Studies Required**47 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

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**

Choose one of the following:

COMM2050 Interpersonal Communication 3

COMM2060 Small Group Communication 3

COMM2070 Cyber Culture 3

COMM2130 Public Speaking 3

Choose one of the following:

ENGL2121 Writing and Research 4

ENGL2125 Technical Writing 3

ENGL2130 Introduction to Creative Writing 3

Choose one of the following:
PHIL2100 Critical Thinking 3
PHIL2200 Ethics 3

Choose one of the following:
SOC12000 Marriage and Family 3
SOC12100 Introduction to Sociology 3
SOC12130 Food, Culture and Society 3
SOC12200 Racial and Ethnic Relations 3

General Education Elective 3 Credits
Choose three credits from MnTC Goal Areas 3-10

Technical Studies Elective 7 Credits
Any ARSP, CCIS, MGDP, or MMVP course that is not required for this award may be used as an elective.
Recommended:
MGDP2215 Graphic Design Internship 1-12

Total Associate of Applied Science Degree Credits 69

Associate of Applied Science Degree

Graphic Design: Web Design (BP)**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 diploma to take electives in Computer Careers or Creative Graphic Design to enhance student skills.

Prerequisites: Testing score equivalent or CPLT1100 Essential Computer Applications, CPLT1200 Introduction to Macintosh.

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.

Award Outcomes

Utilize the elements and principles of design.
 Integrate the use of industry standard technology and design.
 Develop solutions that meet clients 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.

Technical Studies Required 47 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
 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:
 COMM2050 Interpersonal Communication 3
 COMM2060 Small Group Communication 3
 COMM2070 Cyber Culture 3
 COMM2130 Public Speaking 3

Choose one of the following:
 ENGL2121 Writing and Research 4
 ENGL2125 Technical Writing 3
 ENGL2130 Introduction to Creative Writing 3

Choose one of the following:
 PHIL2100 Critical Thinking 3
 PHIL2200 Ethics 3

Choose one of the following:

- SOCI2000 Marriage and Family 3
- SOCI2100 Introduction to Sociology 3
- SOCI2130 Food, Culture and Society 3
- SOCI2200 Racial and Ethnic Relations 3

General Education Elective 3 Credits

Choose three credits from MnTC Goal Areas 3-10

Technical Studies Elective 7 Credits

Any ARSP, CCIS, MGDP, or MMVP course that is not required for this award may be used as an elective.

Recommended:

MGDP2215 Graphic Design Internship 1-12

Total Associate of Applied Science Degree Credits 69

Diploma

Graphic Design: Creative (BP)

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.

Are you a creative problem solver? Are you artistic? Do you work well under pressure? Do you like computers and technology? Do you adapt to change easily and quickly? Are you detail-oriented? Do you communicate well with people? Are you a life-long learner? If so, 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.

Prerequisites: Testing score equivalent or CPLT1100 Essential Computer Applications, CPLT1200 Introduction to Macintosh.

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.

Award Outcomes

Utilize the elements and principles of design.

Integrate the use of industry standard technology and design.

Develop visual solutions to communicate clients 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.

Technical Studies Required

47 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

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

Choose one of the following:

COMM2050 Interpersonal Communication 3

COMM2060 Small Group Communication 3

COMM2070 Cyber Culture 3

COMM2130 Public Speaking 3

Choose one of the following:

PHIL2100 Critical Thinking 3

PHIL2200 Ethics 3

General Education Elective

0 Credits

Technical Studies Elective

8 Credits

Any ARSP, CCIS, MGDP, or MMVP course that is not required for this award may be used as an elective.

Recommended:

MGDP2215 Graphic Design Internship 1-12

Total Diploma Credits 64

Diploma

Graphic Design: Production (BP)

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: QuarkXPress, 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.

Prerequisites: Testing score equivalent or CPLT1100 Essential Computer Applications, CPLT1200 Introduction to Macintosh.

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.

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.

Technical Studies Required

47 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
MGDP1270 Macintosh Computer Technology 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:
COMM2050 Interpersonal Communication 3
COMM2060 Small Group Communication 3
COMM2070 Cyber Culture 3
COMM2130 Public Speaking 3

Choose one of the following:
PHIL2100 Critical Thinking 3
PHIL2200 Ethics 3

General Education Elective

0 Credits

Technical Studies Elective

1 Credit

Any ARSP, CCIS, MGDP, or MMVP course that is not required for this award may be used as an elective.

Recommended:
MGDP2215 Graphic Design Internship 1-12

Total Diploma Credits 54

Diploma

Graphic Design: Web Design (BP)

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.

Prerequisites: Testing score equivalent or CPLT1100 Essential Computer Applications, CPLT1200 Introduction to Macintosh.

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.

Award Outcomes

Utilize the elements and principles of design.
 Integrate the use of web technologies and design.
 Develop solutions that meet clients 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.

Technical Studies Required **47 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
 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:

COMM2050 Interpersonal Communication 3
 COMM2060 Small Group Communication 3
 COMM2070 Cyber Culture 3
 COMM2130 Public Speaking 3

Choose one of the following:

PHIL2100 Critical Thinking 3
 PHIL2200 Ethics 3

General Education Elective **0 Credits**

Technical Studies Elective

8 Credits

Any ARSP, CCIS, MGDP, or MMVP course that is not required for this award may be used as an elective.

Recommended:

MGDP2215 Graphic Design Internship 1-12

Total Diploma Credits 64

Occupational Certificate

Basic Web Technologies (BP)**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.

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.

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.

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, CCIS, MGDP, or MMVP course that is not required for this award may be used as an elective.

Recommended:

MGDP2215 Graphic Design Internship 1-12

Total Occupational Certificate Credits 30

Occupational Certificate

Production Technician for Digital Publishing (BP)

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.

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.

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.

Technical Studies Required 29 Credits

MGDP1230 Photoshop 3
 MGDP1240 Illustrator 3
 MGDP1270 Macintosh Computer Technology 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 0 Credits

Total Occupational Certificate Credits 29

Associate of Applied Science Degree

Animation and Motion Graphic Artist (BP)**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 good 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.

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, 3D animator, and concept artist.

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.

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

MMVP1600 Introduction to Video Production 4

MMVP2045 Advanced 3D 3

MMVP2560 After Effects 3

MMVP2565 Advanced After Effects 3

MMVP2600 Digital Post Production 4

MMVP2641 Portfolio Production 3

MGDP1240 Illustrator 3

MGDP1340 Advanced Photoshop 3

General Education Required 15 Credits

COMM2130 Public Speaking 3

Choose six credits from MnTC Goal Area 2 6

Choose three credits from MnTC Goal Areas 3-10 3

Choose one of the following:

ENGL2121 Writing and Research 4

ENGL2125 Technical Writing 3

ENGL2130 Introduction to Creative Writing 3

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

Total Associate of Applied Science Degree Credits 60

Associate of Applied Science Degree

Interactive Designer (BP)

Overview

The Interactive Designer is responsible for the creative production of computer generated artwork and presentation materials. The designer must be able to use good 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. This production work may include CD ROMs, interactive programs, web graphics, ad design, 2D and 3D animations, video graphics and print materials.

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.

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.

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
 MMVP2025 Interactive Game Design 3
 MMVP2560 After Effects 3
 MMVP2575 Interactive Mobile Design 3
 MMVP2641 Portfolio Production 3
 MGD1240 Illustrator 3
 MGD1250 Web Design & Development I 3
 MGD1340 Advanced Photoshop 3
 MGD2050 Web Design & Development II 3

General Education Required 15 Credits

COMM2130 Public Speaking 3
 Choose six Credits from MnTC Goal Area 2 6
 Choose three Credits from MnTC Goal Areas 3-10 3

Choose one of the following:

ENGL2121 Writing and Research 4
 ENGL2125 Technical Writing 3
 ENGL2130 Introduction to Creative Writing 3

General Education Elective 0 Credits

Technical Studies Elective 0 Credits

Total Associate of Applied Science Degree Credits 64

Associate of Applied Science Degree

Video Production Specialist (BP)**Overview**

The Video Production Specialist will perform an ever-changing variety of tasks from writing scripts, shooting 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.

Career Opportunities

A Video Production Specialist has the potential for finding employment in the following areas: video production and animation houses, multimedia, CD and 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.

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.

Technical Studies Required 50 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

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

MMVP2610 Avid Non-Linear Editing 3

MMVP2641 Portfolio Production 3

MGDP1230 Photoshop 3

General Education Required 15 Credits

COMM2130 Public Speaking 3

Choose six Credits from MnTC Goal Area 2 6

Choose three Credits from MnTC Goal Areas 3-10 3

Choose one of the following:

ENGL2121 Writing and Research 4

ENGL2125 Technical Writing 3

ENGL2130 Introduction to Creative Writing 3

General Education Elective 0 Credits**Technical Studies Elective 7 Credits**

Choose seven elective credits from Graphic Design (MGDP) or Interactive Design Video Production (MMVP) that are not required for this award. Three (3) credits must come from the Interactive Design Video Production (MMVP) area.

Recommended:

MMVP2630 Advanced Production Lab 1-8

MMVP2650 Interactive Design Video Production Internship 1-8

Total Associate of Applied Science Degree Credits 72

Diploma

Animation and Motion Graphic Artist (BP)

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 good 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.

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, 3D animator, and concept artist.

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.

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

MMVP1600 Introduction to Video Production 4

MMVP2045 Advanced 3D 3

MMVP2560 After Effects 3

MMVP2565 Advanced After Effects 3

MMVP2600 Digital Post Production 4

MMVP2641 Portfolio Production 3

MGDP1240 Illustrator 3

MGDP1340 Advanced Photoshop 3

General Education Required **9 Credits**

CCDS1040 Job Seeking Skills 2

COMM1050 Communication in the Workplace 2

COMM2130 Public Speaking 3

ENGL1026 Writing for Careers 3

or

MATH1007 Math for the Trades 2

General Education Elective **0 Credits**

Technical Studies Elective **0 Credits**

Total Diploma Credits 54

Diploma

Interactive Designer (BP)

Overview

The Interactive Designer is responsible for the creative production of computer generated artwork and presentation materials. The designer must be able to use good 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. This production work may include CD ROMs, interactive programs, web graphics, ad design, 2D and 3D animations, video graphics and print materials.

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.

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.

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

MMVP2025 Interactive Game Design 3

MMVP2560 After Effects 3

MMVP2575 Interactive Mobile Design 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 9 Credits

CCDS1040 Job Seeking Skills 2

COMM1050 Communication in the Workplace 2

COMM2130 Public Speaking 3

ENGL1026 Writing for Careers 3

or

MATH1007 Math for the Trades 2

General Education Elective 0 Credits

Technical Studies Elective 0 Credits

Total Diploma Credits 58

Diploma

Video Production Specialist (BP)

Overview

The Video Production Specialist will perform an ever-changing variety of tasks from writing scripts, shooting 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.

Career Opportunities

A Video Production Specialist has the potential for finding employment in the following areas: video production and animation houses, multimedia, CD and 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.

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.

Technical Studies Required 50 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

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

MMVP2610 Avid Non-Linear Editing 3

MMVP2641 Portfolio Production 3

MGDP1230 Photoshop 3

General Education Required 9 Credits

CCDS1040 Job Seeking Skills 2

COMM1050 Communication in the Workplace 2

COMM2130 Public Speaking 3

ENGL1026 Writing for Careers 3

or

MATH1007 Math for the Trades 2

General Education Elective 0 Credits

Technical Studies Elective 5 Credits

Any MGDP or 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

Advanced Technical Certificate**Motion Graphics (BP)****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.

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.

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.

Technical Studies Required 15 Credits

MMVP1545 3D Basics 3

MMVP1580 Animation 3

MMVP2045 Advanced 3D 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

Occupational Certificate

Media Producer (BP)

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.

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.

Award Outcomes

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.

Apply legal and ethical principles to personal, social, and professional behaviors.

Technical Studies Required 20 Credits

MMVP1500 Concepts of Interactive Media 3

MMVP1562 Audio for Media 3

MMVP1580 Animation 3

MMVP1600 Introduction to Video Production 4

MMVP2560 After Effects 3

MMVP2600 Digital Post Production 4

General Education Required 0 Credits

General Education Elective 0 Credits

Technical Studies Elective 5 Credits

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

Recommended:

MMVP2650 Interactive Design Video Production Internship 1-8

Total Occupational Certificate Credits 25

Service & Education

Child Development

Associate of Applied Science Degree	Child Development	(BP/EP)
Associate of Science	Child Development	(BP/EP)
Diploma	Child Development	(BP/EP)

Culinary Arts

Associate of Applied Science Degree	Culinary Arts	(BP)
Diploma	Culinary Arts	(BP)
Advanced Technical Certificate	Culinary Gourmet Technician	(BP)
Advanced Technical Certificate	Food and Beverage Specialties	(BP)
Occupational Certificate	Culinary Assistant	(BP)

Associate of Applied Science Degree**Child Development (BP/EP)****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. Many employers recognize the benefit from this extensive training and require the degree of the employees at the teacher level.

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.

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.

Technical Studies Required 44 Credits

CDEV1105 Introduction to Early Childhood Careers 3
 CDEV1125 Guiding Children's Behavior 3
 CDEV1130 Learning Environment and Curriculum 4
 CDEV1160 Observation and Assessment 3
 CDEV1500 Child Growth and Development 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
 CDEV2015 Organizational Leadership and Management 2
 CDEV2075 Working with Diverse Families and Children 3
 CDEV2125 Infant/Toddler Development and Learning 3
 CDEV2150 Language and Literacy 3
 CDEV2200 NOCTI Early Childhood Exam 0
 CDEV2230 Preschool Development and Learning 2
 or
 CDEV2255 Schoolage Development and Learning 2
 or
 CDEV2300 Multicultural Learning Experiences 2

General Education Required 16 Credits

ENGL2121 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 of Applied Science Degree Credits 60

Associate of Science

Child Development (BP/EP)**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. Many employers recognize the benefit from this extensive training and require a degree of the employees at the teacher level. This award will transfer to select other institutions towards a Bachelors Degree.

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. 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.

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.

Technical Studies Required 30 Credits

CDEV1105 Introduction to Early Childhood Careers 3
 CDEV1125 Guiding Children's Behavior 3
 CDEV1130 Learning Environment and Curriculum 4
 CDEV1160 Observation and Assessment 3
 CDEV1500 Child Growth and Development 3
 CDEV1530 Health, Safety and Nutrition 3
 CDEV1550 Curriculum Planning 3
 CDEV1725 Practicum I 3
 CDEV2015 Organizational Leadership and Management 2
 CDEV2075 Working with Diverse Families and Children 3

General Education Required 30 Credits

BIOL2001 Biology in Society 4
 ENGL2121 Writing and Research 4
 MATH2200 College Algebra 4
 Gen Ed Choose one additional course from MnTC Goal Area 1 3
 Gen Ed Choose one course from MnTC Goal Area 2 3
 Gen Ed Choose one course from MnTC Goal Area 5 3
 Gen Ed Choose one course from MnTC Goal Area 7 3
 Gen Ed Choose an additional six credits from any MnTC Goal Area 6

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

Total Associate of Science Credits 60

Diploma**Child Development (BP/EP)****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.

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.

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.

Technical Studies Required 25 Credits

CDEV1105 Introduction to Early Childhood Careers 3
 CDEV1125 Guiding Children's Behavior 3
 CDEV1130 Learning Environment and Curriculum 4
 CDEV1160 Observation and Assessment 3
 CDEV1500 Child Growth and Development 3
 CDEV1530 Health, Safety and Nutrition 3
 CDEV1550 Curriculum Planning 3
 CDEV1725 Practicum I 3

General Education Required 4 Credits

ENGL2121 Writing and Research 4

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 32

Associate of Applied Science Degree

Culinary Arts (BP)**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.

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.

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.

Technical Studies Required 50 Credits

CULA1000 Food Service Math 1
 CULA1106 Introduction to the Hospitality Industry 2
 CULA1116 Sanitation and Safety 1
 CULA1126 Basic Baking and Pastry 4
 CULA1136 Basic Garde Manger and Entremétier 4
 CULA1156 Basic Food Preparation 4
 CULA1301 Culinary Arts Nutrition 2
 CULA1321 Decorative Work and Showpieces 2
 CULA1325 Menu Planning 2
 CULA1335 Purchasing and Cost Control 2
 CULA1525 Dining Room Service 4
 CULA1530 Advanced Baking and Pastry 4
 CULA1535 Advanced Garde Manger and Entremétier 4
 CULA1540 Advanced Food Preparation 4
 CULA1700 Human Relations Management 2
 CULA1710 Beverage Management 2
 CULA2056 Global Cuisine 4
 CULA2075 Catering 2

General Education Required 9 Credits

PHIL2100 Critical Thinking 3
 or
 PHIL2200 Ethics 3
 SOCI2130 Food, Culture and Society 3
 Choose any course from MnTC Goal Area1 3

General Education Elective 6 Credits

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

Technical Studies Elective 0 Credits

Total Associate of Applied Science Degree Credits 65

Diploma

Culinary Arts (BP)

Overview

The Culinary Arts diploma prepares individuals for career opportunities in hotels, restaurants, clubs and institutional food service operations. 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.

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 diploma program are eligible to pursue American Culinary Federation certification. The American Culinary Federation accrediting commission nationally accredits the curriculum at Hennepin Technical College.

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.

Technical Studies Required **32 Credits**

CULA1000 Food Service Math 1
 CULA1106 Introduction to the Hospitality Industry 2
 CULA1116 Sanitation and Safety 1
 CULA1126 Basic Baking and Pastry 4
 CULA1136 Basic Garde Manger and Entremétier 4
 CULA1156 Basic Food Preparation 4
 CULA1525 Dining Room Service 4
 CULA1530 Advanced Baking and Pastry 4
 CULA1535 Advanced Garde Manger and Entremétier 4
 CULA1540 Advanced Food Preparation 4

General Education Required **6 Credits**

Choose six Credits from the following:

CCDS1040 Job Seeking Skills 2
 COMM1050 Communication in the Workplace 2
 COMM2050 Interpersonal Communication 3
 ECON2200 Principles of Microeconomics 3
 PHIL2100 Critical Thinking 3
 PHIL2200 Ethics 3
 SOCI2100 Introduction to Sociology 3
 SOCI2130 Food, Culture and Society 3

General Education Elective **0 Credits**

Technical Studies Elective **0 Credits**

Total Diploma Credits 38

Advanced Technical Certificate**Culinary Gourmet Technician (BP)****Overview**

The Culinary Certificate is a hands-on focused award that builds on the culinary fundamentals skills learned in 1st semester. Giving students an opportunity to apply those basic skills, in the campus restaurant where students have an opportunity to plan, organize, prepare and serve their menus to the public.

Prerequisite: Completion of the Culinary Assistant Certificate or completion of the 1st semester of the Culinary Arts A.A.S. degree or Diploma.

Career Opportunities

Career opportunities exist in a variety of food service operations such as health care and family style restaurants. Depending on your skill level and knowledge, you may seek employment as a line cook, cooks' helper, baker and/or pastry chefs' assistant, pantry worker, and fry or vegetable cook. Completion of this certificate will provide you with a solid, although limited, foundation on which to build your culinary career.

Award Outcomes

Prepare high quality food in a cost effective manner.
Execute a variety of menus.
Demonstrate the ability to plan a variety of menus.
Apply mathematical skills essential to the food service industry.
Create a professional career plan.
Perform the duties of operational personnel in food service industry.

Technical Studies Required 16 Credits

CULA1525 Dining Room Service 4
CULA1530 Advanced Baking and Pastry 4
CULA1535 Advanced Garde Manger and Entremétier 4
CULA1540 Advanced Food Preparation 4

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

Total Advanced Technical Certificate Credits 16

Advanced Technical Certificate**Food and Beverage Specialties (BP)****Overview**

The certificate includes select advanced courses included in the AAS degree in addition to advanced techniques. The Advanced Certificate will introduce additional methods and techniques that will increase the student's repertoire of ethnic cuisine, knowledge of the role of wine, beer and spirits in culinary service, current trends in the hospitality industry and bar and beverage management.

Prerequisite:

This certificate is designed for persons who possess one of the following:

- One year hospitality industry experience
- Currently enrolled in a culinary arts program
- Instructor permission

Career Opportunities

Students with an Advanced Technical Certificate will be prepared for careers seeking a global reach in the food and beverage industry. Students will apply leadership skills through professional growth and promotion in a diverse multi-cultural work place.

Award Outcomes

Execute a variety of menus.

Demonstrate the ability to plan a variety of menus.

Prepare high quality food in a cost effective manner.

Apply mathematical skills essential to the food service industry.

Apply analysis and problem solving to food production.

Technical Studies Required 16 Credits

CULA1710 Beverage Management 2

CULA2050 Fundamentals of Wine 2

CULA2056 Global Cuisine 4

CULA2080 Food, Wine and Beer Pairing 4

CULA2085 Current Trends in Beer, Wine and Spirits 4

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

Total Advanced Technical Certificate Credits 16

Occupational Certificate**Culinary Assistant (BP)****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.

Career Opportunities

Career opportunities exist in a variety of food service operations such as health care and family style restaurants. Depending on your skill level and knowledge, you may seek employment as a line cook, cooks` helper, baker and/or pastry chefs` assistant, pantry worker, and fry or vegetable cook. Completion of this certificate will provide you with a solid, although limited, foundation on which to build your culinary career.

Award Outcomes

Prepare high quality food in a cost effective manner.
Apply mathematical skills essential to the food service industry.
Create a professional career plan.

Technical Studies Required 16 Credits

CULA1000 Food Service Math 1
CULA1106 Introduction to the Hospitality Industry 2
CULA1116 Sanitation and Safety 1
CULA1126 Basic Baking and Pastry 4
CULA1136 Basic Garde Manger and Entremétier 4
CULA1156 Basic Food Preparation 4

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

Total Occupational Certificate Credits 16

Transportation

Auto Body Collision Technology

Associate of Applied Science Degree	Auto Body Technician	(BP/EP)
Diploma	Auto Body Technician	(BP/EP)
Advanced Technical Certificate	Structural Repair Technician Assistant	(BP/EP)
Occupational Certificate	Auto Body Estimator	(BP)
Occupational Certificate	Custom Fabrication and Finishing	(BP/EP)
Occupational Certificate	Non-Structural Repair Technician Assistant	(BP/EP)
Occupational Certificate	Refinishing Technician Assistant	(BP/EP)

Automotive Technology

Associate of Applied Science Degree	Automotive Technician	(BP/EP)
Diploma	Automotive Technician	(BP/EP)

Ford ASSET

Associate of Applied Science Degree	Automotive Technology (Ford ASSET)	(BP)
Occupational Certificate	Maintenance Light Repair	(BP)

Light Rail Train Technology

Associate of Applied Science Degree	Light Rail Train Technician	(BP/EP)
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Marine, Motorsport, and Outdoor Power Equipment

Associate of Applied Science Degree	Marine, Motorsport and Outdoor Power Equipment Technician	(EP)
Diploma	Marine, Motorsport and Outdoor Power Equipment Technician	(EP)
Occupational Certificate	General Maintenance Technician	(EP)
Occupational Certificate	Motorcycle Technician	(EP)
Occupational Certificate	Outboard Technician	(EP)
Occupational Certificate	Power Equipment Certificate	(EP)

Medium/Heavy Truck Technology

Associate of Applied Science Degree	Medium/Heavy Truck Technology	(BP)
Diploma	Medium/Heavy Truck Drivetrain Technician	(BP)
Diploma	Medium/Heavy Truck Maintenance Technician	(BP)

Associate of Applied Science Degree

Auto Body Technician (BP/EP)**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.

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.

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.

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

ENGL2121 Writing and Research 4
 or
 ENGL2125 Technical Writing 3

Choose one course from MnTC Goal Area_2 3

Choose one course from MnTC Goal Area_5 3

General Education Elective 6 Credits

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

Technical Studies Elective 0 Credits

Total Associate of Applied Science Degree Credits 72

Diploma

Auto Body Technician (BP/EP)

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.

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.

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.

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

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

Advanced Technical Certificate

Structural Repair Technician Assistant (BP/EP)

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.

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.

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/acetylene torch.

Technical Studies Required	12 Credits
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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
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General Education Elective	0 Credits
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Technical Studies Elective	4 Credits
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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

Occupational Certificate**Auto Body Estimator (BP)****Overview**

This certificate provides students with the skills necessary to begin a career as an estimator in the auto body industry. Students will have the opportunity to learn to properly identify damaged vehicles, necessary components and systems; demonstrate proficiency in estimating processes using both manual techniques and computer software; identify appropriate replacement parts and calculate labor costs; demonstrate effective interpersonal skills in dealing with internal and external customers in the auto body industry and successfully complete an 80 hour industry internship.

Career Opportunities

Auto Body Estimators work for automotive dealerships, independent auto body repair centers and insurance companies.

Award Outcomes

Create damage report utilizing the procedure pages.

Technical Studies Required 9 Credits

ABCT1400 Collision Damage Analysis 3

ABCT1405 Estimating 2

ABCT1410 Customer Management 2

ABCT1415 Estimating Internship 2

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

Total Occupational Certificate Credits 9

Occupational Certificate**Custom Fabrication and Finishing (BP/EP)****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.

Career Opportunities

The student will have the ability to learn how to restore older model vehicles.

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/acetylene torch.

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

Occupational Certificate**Non-Structural Repair Technician Assistant (BP/EP)****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.

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.

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.

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

Occupational Certificate**Refinishing Technician Assistant (BP/EP)****Overview**

Refinishing Assistants buff cars and trucks, install detail, sand, tape, mix paint and paint small jobs and used cars.

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.

Award Outcomes

Solve paint application problems.

Apply primer surfacer to paint company and industry standards.

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

Associate of Applied Science Degree

Automotive Technician (BP/EP)

Overview

The Automotive Technology degree prepares the student in all areas of the automobile and light truck for 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.

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.

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.

Technical Studies Required 57 Credits

ATEC1050 Introduction to the Transportation Trades 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 Electrical Systems I 3
 ATEC1620 Electrical Systems II 3
 ATEC1625 Electrical Systems III 3
 ATEC1705 Heating and Air Conditioning 4
 ATEC1805 Engine Performance I 3
 ATEC1810 Engine Performance II 3
 ATEC1815 Engine Performance III 3
 ATEC1820 Hybrid Electric Vehicle Systems 1
 ATEC2685 Automotive Industry Internship I 5
 ATEC2700 Automotive Externship 3

General Education Required 12 Credits

ENGL2121 Writing and Research 4
 or
 ENGL2125 Technical Writing 3
 PHYS2001 Introductory Physics 3

Choose one course from MnTC Goal Area 5 3

Choose one course from MnTC Goal Area 7 3

General Education Elective 3 Credits

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

Technical Studies Elective 0 Credits

Total Associate of Applied Science Degree Credits 72

Diploma

Automotive Technician (BP/EP)

Overview

The Automotive Mechanics Technician diploma prepares the student in all areas of the automobile and light truck for 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.

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.

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.

Technical Studies Required 59 Credits

ATEC1050 Introduction to the Transportation Trades 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 Electrical Systems I 3
 ATEC1620 Electrical Systems II 3
 ATEC1625 Electrical Systems III 3
 ATEC1705 Heating and Air Conditioning 4
 ATEC1805 Engine Performance I 3
 ATEC1810 Engine Performance II 3
 ATEC1815 Engine Performance III 3
 ATEC1820 Hybrid Electric Vehicle Systems 1
 ATEC2685 Automotive Industry Internship I 5
 ATEC2690 Automotive Industry Internship II 5

General Education Required 6 Credits

CCDS1040 Job Seeking Skills 2
 EMSV1020 CPR/First Aid 1
 PHYS2001 Introductory Physics 3

General Education Elective 0 Credits

Technical Studies Elective 0 Credits

Total Diploma Credits 65

Associate of Applied Science Degree

Automotive Technology (Ford ASSET) (BP)

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.

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.

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.

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 9 Credits

ENGL2121 Writing and Research 4
 or
 ENGL2125 Technical Writing 3

Choose one course from MnTC Goal Area 5 3

Choose one course from MnTC Goal Area 7 3

General Education Elective 6 Credits

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

Technical Studies Elective

0 Credits

Total Associate of Applied Science Degree Credits 96

Occupational Certificate

Maintenance Light Repair (BP)

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.

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.

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.

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

Associate of Applied Science Degree

Light Rail Train Technician (BP/EP)**Overview**

This program will prepare students for working in the emerging career field as electro-mechanical maintenance technicians in light rail transit. Students will learn how to diagnose, test, repair and overhaul rail vehicles' electrical, electronic and mechanical systems and equipment. Students will conduct safety and preventive maintenance inspections on rail systems, train borne electronics testing and communication systems.

Career Opportunities

Career opportunities as a skilled rail vehicle maintenance technician are available with many metropolitan mass transit systems. Students will also be able to work as electro-mechanical maintenance technicians in many industrial settings.

Award Outcomes

Demonstrate safe work habits in accordance with safety guidelines and regulations.
 Identify tools and components that conform to light rail applications.
 Perform preventative maintenance in compliance with manufacturer's procedures.
 Diagnose and repair AC/DC electrical circuits using system schematics.
 Apply hydraulic and pneumatic principles to troubleshoot power transmissions.
 Integrate electrical, programmable logic controller (PLC) and electronic hardware for light rail vehicle components.
 Inspect and repair light rail electro-mechanical systems.

Technical Studies Required 45 Credits

ARET1190 Programmable Logic Controllers 3
 or
 FLPW2000 Programmable Logic Controllers 3
 ARET2105 Fluid Power Motion Control 2
 ATEC1075 Welding for Transportation 2
 ELEC1000 DC Circuits 4
 MHTT1321 Heating and Air Conditioning 3
 LRTT1000 Rail Maintenance Fundamentals 3
 LRTT1015 AC Theory for LRV 3
 LRTT1020 Motors, Generators and Transformers 2
 LRTT1025 LRV Operations: Electronics 2
 LRTT1030 LRV Systems I 3
 LRTT1035 LRV Systems II 3
 LRTT1045 LRV Systems III 3
 LRTT1050 Communications and Networking Fundamentals 3
 LRTT1055 LRV Systems IV 3
 LRTT1065 Light Rail Signals Systems I 3
 LRTT1070 Light Rail Signals Systems II 3

General Education Required 15 Credits

COMM2130 Public Speaking 3
 ENGL2125 Technical Writing 3
 PHIL2000 Introduction to Logic 3
 PHYS2001 Introductory Physics 3
 PSYC2310 Psychology Throughout the Lifespan 3

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

Total Associate in Applied Science Degree Credits 60

Associate of Applied Science Degree

Marine, Motorsport and Outdoor Power Equipment Technician (EP)

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.

Career Opportunities

The Marine, Motorsport and Outdoor Power Equipment Technology Associate of 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.

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.

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 three credits of General Education 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 of Applied Science Degree Credits 72

Diploma

Marine, Motorsport and Outdoor Power Equipment Technician (EP)

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.

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.

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.

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

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

Occupational Certificate**General Maintenance Technician (EP)****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.

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.

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.

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

Occupational Certificate

Motorcycle Technician (EP)

Overview

Motorcycle Technicians service, diagnose and repair motorcycles.

Career Opportunities

Motorcycle Technicians find employment at motorcycle dealerships, distributors and manufacturers. Technicians are also in demand at service repair shops and businesses.

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.

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

Occupational Certificate**Outboard Technician (EP)****Overview**

Outboard Marine Technicians service, diagnose and repair outboard motors.

Career Opportunities

Outboard Marine Technicians find employment at marine dealerships, distributors and manufacturers. Technicians are also in demand at service repair shops and businesses.

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.

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

Occupational Certificate**Power Equipment Certificate (EP)****Overview**

Power Equipment student 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.

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.

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.

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

Associate of Applied Science Degree

Medium/Heavy Truck Technology (BP)

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 drivers 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.

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.

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.

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
- MHTT1321 Heating and Air Conditioning 3
- MHTT1331 Internship/Industry Partnership III 6
- 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
- MHTT1532 Internship/Industry Partnership V 9

General Education Required **15 Credits**

COMM2050 Interpersonal Communication 3

or

Any three credit course from MnTC Goal Area 7 3

ENGL2125 Technical Writing 3

or

Any three credit course from MnTC Goal Area 1 3

PHIL2100 Critical Thinking 3

or

Any three credit course from MnTC Goal Area 2

PHYS2001 Introductory Physics 3

or

Any three credit course from MnTC Goal Area 3

SOCI2100 Introduction to Sociology 3

or

Any three credit course from MnTC Goal Area 5

General Education Elective **0 Credits**

Technical Studies Elective **0 Credits**

Total Associate of Applied Science Degree Credits 94

Diploma

Medium/Heavy Truck Maintenance Technician (BP)

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 drivers 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.

Career Opportunities

Career opportunities as a skilled maintenance technician are available in truck dealerships, leasing companies, trucking fleets, and independent truck repair shops.

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.

Technical Studies Required 39 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
- MHTT1300 Introduction to Diesel Engines 3
- MHTT1321 Heating and Air Conditioning 3

General Education Required 4 Credits

- MATH1007 Math for the Trades 2
- COMM1050 Communication in the Workplace 2

General Education Elective 0 Credits

Technical Studies Elective 0 Credits

Total Diploma Credits 43

Diploma

Medium/Heavy Truck Drivetrain Technician (BP)

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 drivers 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.

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.

Award Outcomes

Repair driveline components.
Overhaul truck transmissions.
Overhaul diesel engines.
Interpret diagnostic tool readings.

Technical Studies Required **40 Credits**

MHTT1210 Clutch and Driveline 3
MHTT1331 Internship/Industry Partnership III 6
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
MHTT1532 Internship/Industry Partnership V 9

General Education Required **0 Credits**

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 44

COURSE DESCRIPTIONS

Please visit www.hennepintech.edu/programs for the latest course descriptions.

*The following course descriptions are alphabetically ordered
by rubric or subject area (ABCT through WLDG).*

Business & Information Technology

Accounting	ACCT
Business	BUSN
Information Technology	CCIS
Medical Office Careers	OFCR

Construction & Building Careers

Architectural Technology	ARCH
Carpentry	CARP
Heating, Ventilation and Air Conditioning	HVAC
Landscape and Horticulture	LNDC
Plumbing Technology	PLBG
Woodworking Technology	CBTG

Education Careers

Child Development	CHLD
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Emergency & Public Service

Emergency Medical Services	EMSV
Environmental Health and Safety	ENHS
Fire Protection	FRPT
Law Enforcement	LAWE
Public Works	PWRK

General Education

Arts	ARTS
Biology	BIOL
Career Development Services	CCDS
Chemistry	CHEM
Communication	COMM
Computer Literacy	CPLT
Economics	ECON
English	ENGL
English for Speakers of Other Languages	ESOL
Health Science (Broad Field)	HLTH
Information Science	INFS
Language	LANG
Mathematics	MATH
Philosophy	PHIL
Physics	PHYS
Psychology	PSYC
Sociology	SOCI

Health Careers

Dental Assistant	DNTL
Emergency Medical Services	EMSV
Health Science (Broad Field)	HLTH
Health Unit Coordinator	HLUC
Medical Assistant	MAST
Medical Office Careers	OFCR
Nursing Assistant	NAHA
Pharmacy Technology	PHRM
Practical Nursing	NURS

Manufacturing & Engineering Technology

Automation Robotics Engineering Technology	ARET
Electronics Technology	ELEC
Engineering CAD Technology	ENGC
Fluid Power Engineering Technology	FLPW
Industrial Building Engineering & Maintenance	IBEM
Machine Tool Technology	MACH
Manufacturing Engineering Technology	METS
Plastics Engineering Technology	PLST
Welding and Metal Fabrication	WLDG
360 Programs	CMAE

Media Communications Careers

Audio Production	ARSP
Graphic Design	MGDP
Interactive Design and Video Production	MMVP

Service Industry

Culinary Arts	CULA
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Transportation Careers

Auto Body Collision Technology	ABCT
Automotive Technology	ATEC
Ford ASSET Program	FDAS & FMLR
Light Rail Train Technology	LRTT
Marine, Motorsport and Outdoor Power Equipment Technology	MMST
Medium/Heavy Truck Technology	MHTT

Auto Body Collision Technology (ABCT)

ABCT1145 Cutting, Heating and MIG Welding

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. (Prereq: Qualifying score on reading assessment test OR Qualifying score on ESL reading assessment test) (BP/EP) 3 cr

ABCT1150 Trim, Moveable Glass and Hardware

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. (Prereq: None) (BP/EP) 2 cr

ABCT1155 Metal Straightening and Body Filler I

This course will cover metal straightening, the purpose of plastic fillers and how to use them for their intended purpose in autobody repair. (Prereq: Qualifying score on reading assessment test OR Qualifying score on ESL reading assessment test) (BP/EP) 4 cr

ABCT1160 Bolt-on, Weld-on Panel Replacement and Alignment

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. (Prereq: None) (BP/EP) 4 cr

ABCT1165 Using Body Filler II

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. (Prereq: None) (BP/EP) 2 cr

ABCT1235 Finish Defects

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. (Prereq: None) (BP/EP) 2 cr

ABCT1240 Detailing

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. (Prereq: None) (BP/EP) 2 cr

ABCT1250 Auto Body Painting Internship

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. (Prereq: None) (BP/EP) 1_to_4 cr

ABCT1255 Environmental Health, Safety and Equipment Preparation for Finishes

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. (Prereq: None) (BP/EP) 4 cr

ABCT1260 Surface Preparing and Finish Application

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. (Prereq: None) (BP/EP) 4 cr

ABCT1265 Tinting and Blending

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. (Prereq: None) (BP/EP) 4 cr

ABCT1300 Auto Body Structural Repair Internship I

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. (Prereq: None) (BP/EP) 4 cr

ABCT1305 Auto Body Structural Repair Internship II

The technician will work in a designated auto body repair facility with a journeyman and repair vehicles to manufacturers specifications. (Prereq: None) (BP/EP) 4 cr

ABCT1400 Collision Damage Analysis

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. (Prereq: None) (BP) 3 cr

ABCT1405 Estimating

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. (Prereq: None) (BP) 2 cr

ABCT1410 Customer Management

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. (Prereq: None) (BP) 2 cr

ABCT1415 Estimating Internship

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. (Prereq: ABCT1400, ABCT1405 and ABCT1410) (BP) 2 cr

ABCT2000 Advanced Welding Methods

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. (Prereq: ABCT1145) (BP/EP) 1 cr

ABCT2006 Stationary Glass Replacement

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. (Prereq: ABCT1150) (BP/EP) 1 cr

ABCT2015 Steering and Suspension

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. (Prereq: None) (BP/EP) 2 cr

ABCT2040 Restraint Systems

This course will teach theory and practical applications of automotive restraint systems along with diagnosis and service. (Prereq: None) (BP/EP) 1 cr

ABCT2051 Damage Analysis and Straightening Structural Parts

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. (Prereq: ABCT1155, ABCT1160, ABCT2150, and ABCT2190) (BP/EP) 4 cr

ABCT2055 Panel Replacement and Restoring Corrosion Protection

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. (Prereq: ABCT1160, ABCT2000, ABCT2006, and ABCT2051) (BP/EP) 4 cr

ABCT2060 Straightening Structural Parts II

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. (Prereq: ABCT2051) (BP/EP) 1 cr

ABCT2110 Creating a Computerized Damage Report

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. (Prereq: None) (BP/EP) 1 cr

ABCT2115 Plastic Identification and Repair Decision

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. (Prereq: None) (BP/EP) 1 cr

ABCT2130 Padded Dash Repairs

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. (Prereq: None) (BP/EP) 1 cr

ABCT2140 Refinishing of Plastics

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. (Prereq: None) (BP/EP) 1 cr

ABCT2146 Electrical and Electronic Systems

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. (Prereq: None) (BP/EP) 2 cr

ABCT2150 Brake Systems

The student will learn different designs of brake systems, will be able to identify all brake parts and understand how brake systems function. (Prereq: None) (BP/EP) 1 cr

ABCT2165 Drivetrains

Theory and practical application of drivetrain components and their assemblies will be covered in this course. (Prereq: None) (BP/EP) 1 cr

ABCT2170 Fuel Intake and Exhaust Systems

This course is designed to apply knowledge of auto fuel intake and exhaust systems theory and service level of protection. (Prereq: None) (BP/EP) 1 cr

ABCT2175 Analyzing Damage/Creating a Manual Damage Report

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. (Prereq: None) (BP/EP) 2 cr

ABCT2185 Plastic Adhesive and Welding Repairs

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. (Prereq: None) (BP/EP) 2 cr

ABCT2190 Air Conditioning and Cooling Systems

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 refigerants. (Prereq: ABCT1160) (BP/EP) 2 cr

ABCT2495 Auto Body Internship I

The student intern will work in a designated auto body repair facility with a journeyman and repair vehicles to manufacturers specifications. (Prereq: Successful completion of all ABCT courses or instructor approval) (BP/EP) 4 cr

ABCT2501 Auto Body Internship II

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. (Prereq: Successful completion of all ABCT courses or instructor approval) (BP/EP) 4 cr

ABCT2505 Auto Body Internship III

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. (Prereq: Successful completion of all ABCT courses or instructor approval) (BP/EP) 3 cr

ABCT2600 Collision Lab

Following collision lab guidelines, the technician will apply knowledge learned in previous successfully completed courses and perform repairs as specified by manufacturers specifications. (Prereq: None) (BP/EP) 1_to_8 cr

Accounting (ACCT)**ACCT1000 Introduction to Accounting**

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. (Prereq: None) (BP/EP) 3 cr

ACCT1102 Principles of Accounting I

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921) (BP/EP) 4 cr

ACCT1107 Principles of Accounting II

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. (Prereq: ACCT1102 with a grade of C or better) (BP/EP) 4 cr

ACCT1111 Payroll Accounting

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. (Prereq: ACCT1000 or ACCT1102 or concurrent) (BP/EP) 3 cr

ACCT1116 Ten-Key Calculator for Accounting

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. (Prereq: None) (BP/EP) 2 cr

ACCT1125 Excel

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. (Prereq: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 or CCIS1035 or CCIS1080) (BP/EP) 3 cr

ACCT1130 Microsoft Dynamics GP

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. (Prereq: ACCT1102) (BP/EP) 3 cr

ACCT1135 QuickBooks

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. (Prereq: ACCT1102) (BP/EP) 3 cr

ACCT1150 Sage 50

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. (Prereq: Recommended: ACCT1102) (BP/EP) 3 cr

ACCT1410 Business Finance

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. (Prereq: Qualifying score on math assessment test OR MATH1050 or MATH1060. And recommended, Qualifying score on reading assessment test OR ENGL0921 and qualifying score on writing assessment test OR ENGL0930) (BP/EP) 3 cr

ACCT2155 Financial Accounting

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. (Prereq: ACCT1000 or ACCT1102) (BP/EP) 4 cr

ACCT2200 Intermediate Accounting I

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. (Prereq: ACCT1107) (BP/EP) 4 cr

ACCT2206 Intermediate Accounting II

This course is an overview of financial accounting and its theoretical foundation including a conceptual framework of accounting for financial statements. (Prereq: ACCT1107) (BP/EP) 3 cr

ACCT2211 Cost Accounting

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. (Prereq: ACCT1107) (BP/EP) 3 cr

ACCT2221 Managerial Accounting

This course is a presentation of how accounting data and concepts may be interpreted and applied by management in planning and controlling business operations. (Prereq:

ACCT2155 AND qualifying score on math assessment test OR MATH1500) (BP/EP) 4 cr

ACCT2231 Income Tax

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. (Prereq: ACCT1102 or ACCT1107) (BP/EP) 4 cr

ACCT2700 Auditing

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. (Prereq: ACCT1107) (BP/EP) 3 cr

ACCT2800 Accounting Internship

This is a cooperative internship program between Hennepin Technical College and an employer to allow the student work experience in the accounting area. (Prereq: Instructor approval) (BP/EP) 1_to_10 cr

ACCT2900 Small Business Accounting Simulation

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. (Prereq: ACCT2200 and ACCT2231) (BP/EP) 3 cr

ACCT2950 Accounting Skills Assessment

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. (Prereq: 75% of required courses are recommended to have been completed) (BP/EP) 0 cr

Architectural Technology (ARCH)

ARCH1008 Architectural Residential Technology I

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. (Prereq: Qualifying score on reading assessment test or ENGL0901 and prerequisite or concurrent enrollment in ARCH1101 and prerequisite or concurrent enrollment in ARCH1203 recommended) (BP/EP) 5 cr

ARCH1011 Architectural Residential Technology II

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. (Prereq: ARCH1008, ARCH1101, and recommended concurrent enrollment in ARCH2370) (EP) 5 cr

ARCH1101 Architectural Residential AutoCAD

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. (Prereq: Qualifying score on reading assessment test or ENGL0901 and prerequisite or concurrent enrollment in ARCH1008 and prerequisite or concurrent enrollment in ARCH1203 recommended) (BP/EP) 5 cr

ARCH1203 Residential Materials and Methods of Construction

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. (Prereq: Qualifying score on reading assessment test or ENGL0901 and prerequisite or concurrent ARCH1101) (BP/EP) 3 cr

ARCH1206 Strength of Materials

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (EP) 3 cr

ARCH1340 Building Codes: Commercial

This course will introduce the student to the organization, use and impact of the International Building Code in the design of buildings. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (EP) 2 cr

ARCH1345 Building Systems

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (BP/EP) 3 cr

ARCH1500 Introduction to Construction Management

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. (Prereq: None) (EP) 2 cr

ARCH1505 LEED GA Preparation

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. (Prereq: None) (EP) 2 cr

ARCH2121 Architectural Commercial Technology I

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. (Prereq: ARCH1011, ARCH2370 and ARCH2466) (EP) 5 cr

ARCH2141 Architectural Commercial Technology II

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. (Prereq: ARCH2121) (EP) 5 cr

ARCH2301 Design with SketchUp

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. (Prereq: Qualifying score on reading assessment test or ENGL0901 and knowledge of computers is recommended) (BP/EP) 2 cr

ARCH2310 Architectural CAD: Introduction to Revit Architecture

This course will introduce students to the basics of producing drawings using the latest release of Autodesk's parametric modeling software, Revit. (Prereq: Knowledge of computers recommended) (EP) 2 cr

ARCH2370 Architectural Residential Revit

In this course, students will learn to use Revit software to create and coordinate building information models (BIM) for construction document production. (Prereq: Qualifying

score on reading assessment test OR ENGL0901. Prerequisite or concurrent ARCH1011) (BP/EP) 4 cr

ARCH2466 Commercial Materials and Methods of Construction

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901 and ARCH1101 OR ARCH2370) (EP) 2 cr

ARCH2562 Capstone: Project Design and Management

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. (Prereq: ARCH1008 AND ARCH1203 AND ARCH1101 OR ARCH2370 OR Previous CAD Experience) (BP/EP) 5 cr

ARCH2640 Architectural History

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. (Prereq: Basic computer skills are required) (EP) 3 cr

ARCH2800 Civil Site Plan Development

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. (Prereq: ARCH1101 or ARCH2370) (BP/EP) 2 cr

ARCH2850 Architectural Technology Advancements

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.

(Prereq: ARCH2370 or previous CAD experience. Recommended ARCH1011, ARCH2121, ARCH2141, and ARCH2466) (BP/EP) 2 cr

ARCH2900 Internship

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. (Prereq: Instructor approval) (EP) 2_to_4 cr

ARCH2920 Photoshop for Architecture

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. (Prereq: Architectural Drafting and Design program student or architectural industry experience with current working knowledge of computers) (EP) 4 cr

ARCH2930 Architectural CAD: 3D Studio Max

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. (Prereq: Architectural Drafting and Design program student or architectural industry experience with current working knowledge of computers) (EP) 4 cr

ARCH2936 Advanced Revit BIM Technology

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. (Prereq: ARCH2370 OR Previous Revit experience) (BP/EP) 4 cr

ARCH2940 Architectural CAD: Revit Structure

This course will introduce BIM (Building Information Modeling) for structural components using the Autodesk Revit Structure software. (Prereq: None) (EP) 1 cr

ARCH2945 Architectural CAD: Revit MEP

This course will introduce BIM (Building Information Modeling) for mechanical, electrical, and plumbing (MEP) using the Autodesk Revit MEP software. (Prereq: None) (EP) 1 cr

ARCH2950 Architectural CAD: Revit Site Development

This course will introduce BIM (Building Information Modeling) for site development using the Autodesk Revit

Architecture software. (Prereq: ARCH2370 or previous Revit experience) (EP) 1 cr

Automation Robotics Engineering Technology (ARET)

ARET1075 Careers in Manufacturing

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. (Prereq: None) (EP) 2 cr

ARET1125 Power Transmission and Mechanical Systems

This course is an introduction to Automation Robotics Engineering Technology. It is designed for persons who will be or are employed as machine assemblers, maintenance mechanics, field service personnel, engineers, manufacturing technicians and those in technical sales. Covered in the course are the basic components of automated machinery systems. They include chains, belts, couplings, gear reducers, shaft alignment, gear trains, linkages, bearings, brakes, clutches and machine timing. Included are hands-on projects in addition to demonstration and lecture on actual packaging machines. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal. (Prereq: None) (EP) 4 cr

ARET1130 Maintenance Operations

In this course the student will learn about drills, drill sharpeners, drill presses, bandsaws, pedestal grinders, sandblasters, oxy-acetylene MIG and Arc welding, and lubrication. Students will build a project from a blueprint. This course also includes the basics of machinery maintenance, lubrication and the use of the machinist's handbook plus equipment manufacturer's catalogs to specify machine components. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal. (Prereq: None) (EP) 2 cr

ARET1140 Computer Integrated Manufacturing

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. (Prereq: None) (EP) 3 cr

ARET1155 Automation Controls

This course is designed for persons in the field of automation. Troubleshooting methods are taught and reinforced by wiring state of the art trainers simulating an automated system. Students will learn the principles of automation and controls by examining current industry devices such as smart relays, control circuits, electro-mechanical devices and electrical controlled systems. Students will learn to read and use ladder line control drawings. (Prereq: None) (EP) 3 cr

ARET1160 Packaging Machinery Systems

In this course students will set-up and troubleshoot packaging machines. Included are manual and automatic cartoners, strappers, case wrappers, and bag closing machines. The basic principles of packaging machinery and materials will be discussed. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal. (Prereq: ARET1125) (EP) 4 cr

ARET1165 Vision Systems for QA/SPC

In this course students will learn how to perform quality control as applied to packaging machines. Students will learn up to date methods using Vision System technology, and how to apply Statistical Process Control. The basic principles of machinery operation will also be discussed. Students will complete a statistical process control chart based on their machine set-up. Included are workbooks and lab exercises providing a background on packaging machines where quality control is used. (Prereq: None) (EP) 3 cr

ARET1170 Troubleshooting Packaging Machinery

This course is designed for persons involved with production machine maintenance, automated packaging machinery systems, machine engineering and manufacturing technologies. Also included are application set-up, troubleshooting and repair of labeling, bar coding, magnetic strip, smart card, conveying, accumulating and palleting equipment. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal. (Prereq: None) (EP) 3 cr

ARET1175 Industrial Electricity and Electronics I

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. (Prereq: None) (EP) 3 cr

ARET1180 Industrial Electricity and Electronics II

This course is designed for persons involved with industrial maintenance on automated production machines, packaging machinery and robots. The students will learn single-phase and three-phase principles, AC motors, DC motors and controls. Also included are stepper and servo motion principles, variable frequency drive, DC variable motor speed controller, vector control, programming and applications. (Prereq: ARET1175) (EP) 3 cr

ARET1185 Sensor Applications

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. (Prereq: None) (EP) 2 cr

ARET1190 Programmable Logic Controllers

The student will be introduced to the Allen Bradley SLC 500 family of PLC's (Programmable Logic Controllers) using current Rockwell RS Logix and Linux windows based software. Students will learn how to use Allen Bradley PLC for fast and accurate troubleshooting of Automated machinery in a manufacturing environment. PLC safety, terminology, hardware configurations, software use, programming methods, addressing, instruction sets, are backed up with practical "real -world" labs. (Prereq: None) (EP) 3 cr

ARET1200 Introduction to Robotics

This course is designed to allow students to program, setup and operate robots and robotic equipment. Teach pendant and PC programming will be utilized. Integration of robots with machine tools, conveyors and other applications will also be explored. (Prereq: None) (EP) 2 cr

ARET2100 Advanced Automation Controls

This course is designed for all persons in the field of automation. Students study the operation of single and three-phase motor controls, solid state control devices, application of electric heat, photoelectric devices and other components related to industrial controls. The student will design, wire and troubleshoot electrical circuits using ladder line logic. The course includes three phase power circuits and programming robots used in automated assembly and packaging. (Prereq: ARET1155) (EP) 4 cr

ARET2105 Fluid Power Motion Control

This course is a study of fundamental principles of fluid power (hydraulic and pneumatic) systems for persons involved with production machine maintenance, automated packaging machinery systems, machine design/drafting, fluid power, machine shop, and C.I.M. engineering and manufacturing technologies. Students will learn using virtual reality 3 D software to build and test circuits on the computer. Next they assemble and test their creations using state of the art trainers in the lab. Setup and troubleshooting of various hydraulic and pneumatic components and functions are discussed using automated machines. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal. (Prereq: None) (EP) 2 cr

ARET2110 Advanced Programmable Logic Controllers

This course is designed using Allen Bradley PLC's and touch screens. Problem solving and troubleshooting factory controls is stressed. This is accomplished using up to date Rockwell RSLogix, RSLinx, and Panel Builder software. Student will acquire an advanced knowledge of Programmable Logic Controllers and touch screens. Logic concepts, programmable controller program development, I/O configuration and translation from hardware to programmed logic. HMI touch screens and tags are introduced. The student will develop, edit and troubleshoot programs employing a large array of instructions found in typical Automation Robotics Engineering Technology Packaging systems, including logic flow, timers, counters, sequencers, math, and specialty functions. Persons involved with automation including robotics should consider this hands-on course. (Prereq: ARET1190) (EP) 4 cr

ARET2150 Engineering Design and Fabrication

This course involves the selection of materials and manufacturing methods for fabricating machinery components. This is accomplished using computer-aided drafting and CNC. It includes sketching, drawing, and machine design. Students will design and build a project using CNC. (Prereq: None) (EP) 2 cr

ARET2181 Internship

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. (Prereq: Completion of at least 50% of your degree or diploma and instructor approval) (EP) 1_to_4 cr

ARET2200 FANUC Robotics Operations

Discover robots and how they are poised to revolutionize manufacturing. This course covers the overall FANUC Spherical Robot Operations. Learners will program, setup and operate the robots and end effector. The FANUC Teach Pendant will be taught & utilized for programming and jogging the robot. 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. Students will set up a specific application, write basic programs, and test them. Upon the successful completion of this course students will be able to take the FANUC Handling Tool certification test. All Manufacturing students including those utilizing CAD/CAM, Electronics, Fluid Power engineering, Machine Design, Packaging of foods, liquids, and medicines would benefit from taking this test. (Prereq: ARET1200) (EP) 2 cr

ARET2250 FANUC Vision Systems

This course introduces the learner to the new world of machine vision. You 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 R-30iA controller application. Discover how FANUC Vision is a key tool for automatically evaluating parts when compared to the engineering drawings. Upon successful completion of the course, learners will be given an opportunity to take a FANUC iRVision certification test. Students in all areas of Manufacturing, including CAD/CAM, Electronics, Fluid Power Engineering, Machine Design, Packaging of foods, liquids, and medicines would benefit from this course. (Prereq: ARET1165 and ARET2200) (EP) 1 cr

ARET2300 Mechanical Components I Certificate Review

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. (Prereq: ARET1125 and ARET1130 or instructor approval) (EP) 3 cr

ARET2320 Industrial Electricity I Certificate Review

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.

(Prereq: ARET1175 or Instructor approval) (EP) 3 cr

ARET2330 Industrial Electricity II Certificate Review

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. (Prereq: ARET1180 and ARET2320 or Instructor approval) (EP) 3 cr

ARET2340 Programmable Logic Controllers I Certificate Review

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. (Prereq: ARET2110 and ARET1185 or Instructor approval) (EP) 3 cr

ARET2360 Automated Fluid Power I Certificate Review

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. (Prereq: ARET2105 or Instructor approval) (EP) 3 cr

ARET2500 Industrial Networks

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). (Prereq: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 or METS1000) (EP) 2 cr

ARET2540 Project Management for Manufacturing

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. (Prereq: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 or METS1000) (EP) 2 cr

ARET2560 Instrumentation and Process Control I

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. (Prereq: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 or METS1000) (EP) 3 cr

ARET2580 Instrumentation and Process Control II

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. (Prereq: ARET2560) (EP) 3 cr

Audio Production (ARSP)

ARSP1100 Introduction to Recording

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921) (EP) 3 cr

ARSP1110 Studio Operations

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921 and concurrent enrollment in ARSP1100 and ARSP1130) (EP) 4 cr

ARSP1130 Audio Transducers

This course covers theory, characteristics and operation of microphones, loudspeakers, crossovers and speaker/room considerations in the monitoring environment. (Prereq: Qualifying score on reading assessment test OR ENGL0921 and concurrent enrollment in ARSP1100 and ARSP1110 or instructor approval) (EP) 3 cr

ARSP1140 Critical Listening

This course introduces the student to listening critically and analytically in order to evaluate sound quality and to analyze common sound problems. (Prereq: None) (EP) 1 cr

ARSP1300 Multitrack Recording Theory I

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. (Prereq: ARSP1100, ARSP1110, ARSP1130 or instructor approval. This course should be taken concurrently with ARSP1310, ARSP1320, ARSP1331, and ARSP2120) (EP) 3 cr

ARSP1310 Multitrack Recording Lab I

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. (Prereq: ARSP1100 and ARSP1110. Prereq. or concurrent ARSP1300 or instructor approval. This course should be taken concurrently with ARSP1300, ARSP1320, ARSP1331, and ARSP2120) (EP) 3 cr

ARSP1320 Audio Signal Processing

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. (Prereq: ARSP1100, ARSP1110 or instructor approval. This course should be taken concurrently with ARSP1300, ARSP1310, ARSP1331, and ARSP2120) (EP) 3 cr

ARSP1331 Introduction to MIDI

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. (Prereq: ARSP1100, ARSP1110, ARSP1130 or instructor approval. This course should be taken concurrently with ARSP1300, ARSP1310, ARSP1320, and ARSP2120) (EP) 3 cr

ARSP1340 Location Recording

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. (Prereq: None) (EP) 2 cr

ARSP1351 Music Fundamentals

This course covers fundamental concepts of rhythm, song structure, note values and the circle of fifths. (Prereq: None) (EP) 1 cr

ARSP1380 Production Lab I

In this course the student will improve production skills learned by working on client based projects. (Prereq: Instructor approval) (EP) 3 cr

ARSP1390 Production Lab II

In this course the student will improve production skills learned by working on client based projects. (Prereq: Instructor approval) (EP) 3 cr

ARSP1500 Multitrack Recording Theory II

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, advanced A for V concepts, and career strategies. (Prereq: ARSP1300 and ARSP1310. Prereq. or concurrent ARSP1320, ARSP1331, ARSP1510 and ARSP2120 or instructor approval) (EP) 3 cr

ARSP1510 Multitrack Recording Lab II

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 projects. (Prereq: ARSP1500 or instructor approval) (EP) 3 cr

ARSP1531 Using MIDI Equipment

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 ADR techniques. (Prereq: ARSP1331 or instructor approval) (EP) 3 cr

ARSP1541 Acoustics and Recording Studio Design

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. (Prereq: Qualifying score on math assessment test OR MATH1050 or MATH1060 and ARSP1100) (EP) 2 cr

ARSP2100 Multitrack Recording Theory III

This course is a continuation of the practical techniques of multitrack recording cover in Multitrack Recording Theory II. Topics include: mastering, beauty reel assembly, advanced session management skills, and specialized equipment applications. (Prereq: ARSP1500 and ARSP1510. This course should be taken concurrently with ARSP2110) (EP) 1 cr

ARSP2111 Multitrack Recording Lab III

This course covers practical applications of techniques and theory covered in Multitrack Recording Theory III. The student will record and mix various projects. (Prereq: ARSP1500 and ARSP1510) (EP) 3 cr

ARSP2115 Audio Mixing Techniques

This course covers advanced mixing techniques on both digital and analogue mixing consoles, and basic digital mastering. (Prereq: ARSP1500 and ARSP1510 or instructor approval) (EP) 2 cr

ARSP2120 Digital Audio Theory (Pro Tools 101/110)

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 AVID 135 certification and the completion of the AVID 135 curriculum. (Prereq: ARSP1100, ARSP1110, ARSP1130 or instructor approval) (EP) 3 cr

ARSP2150 Music Business

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921) (EP) 2 cr

ARSP2325 Digital Audio Theory II (Pro Tools 201/210M)

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 AVID certification and completion of the AVID 235 curriculum. (Prereq: ARSP2120) (EP) 3 cr

ARSP2340 Studio Maintenance and Calibration

This course reviews basic electronics and sound principles and discusses set-up, calibration and operation of recording equipment. Topics include studio layout and signal routing, equipment interface, grounding and maintenance. (Prereq: Qualifying score on math assessment test OR MATH1050 or MATH1060) (EP) 2 cr

ARSP2380 Production Lab III

In this course the student will improve production skills learned by working on client based projects. (Prereq: Instructor approval) (EP) 3 cr

ARSP2390 Production Lab IV

In this course the student will improve production skills learned by working on client based projects. (Prereq: Instructor approval) (EP) 3 cr

ARSP2580 Audio Recording Internship I

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. (Prereq: Completion of 48 credits or instructor approval) (EP) 2 cr

ARSP2585 Audio Recording Internship II

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. (Prereq: Completion of 48 credits or instructor approval) (EP) 2 cr

ARSP2590 Audio Recording Internship III

This is a cooperative effort between Hennepin Technical College and professional audio recording facilities to allow the students employment-like work experience. (Prereq: ARSP2585 and instructor approval) (EP) 2 cr

ARSP2595 Audio Recording Internship IV

This is a cooperative effort between Hennepin Technical College and professional audio recording facilities to allow the students employment-like work experience. (Prereq: ARSP2585 and instructor approval) (EP) 2 cr

Arts (ARTS)

ARTS2000 Elements of Design

MnTC: 6

This course is an overview of basic design processes through a historical perspective. Students will explore how the elements and principles of design have changed and evolved over time and place. Through the application of key design theories and theorists, 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. (Prereq: Qualifying score on reading assessment test OR ENGL0921 and Qualifying score on writing assessment test or ENGL1021) (BP/EP) 3 cr

ARTS2050 Introduction to Art

MnTC: 6 & 8

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. (Prereq: ENGL1021 and ENGL0921 or ESOL0842) (BP/EP) 3 cr

ARTS2120 Photographic Arts

MnTC: 6

This course provides a framework for critically considering significant photographers and their work. Students are expected to describe, interpret, and evaluate the origins, stylistic changes and artistic innovations in the history of photography from the 19th Century through contemporary times. (Prereq: Qualifying score on writing assessment test OR ENGL1021 and Qualifying score on reading assessment test OR ENGL0921 or ESOL0842) (BP/EP) 3 cr

ARTS2130 Digital Photography I

MnTC: 6

This course introduces the art of digital photography, covering various genres in digital photography including nature, portraiture and abstraction. The course also considers composition, perspective, black and white vs. color, light, etc. relative to producing photographs. The focus of the course will be on photography as a fine art, and attention will be given to practical applications within that context. Technical basics, such as equipment purchase and maintenance, camera settings, printing and scanning will also be covered. Finally, the course will ask students to consider the work of important photographers past and present. (Prereq: None) (BP/EP) 3 cr

Automotive Technology (ATEC)

ATEC1010 Car Care for Everyone

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. (Prereq: None) (BP/EP) 1 cr

ATEC1020 Basic Skills for Automotive Mechanics

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. (Prereq: None) (BP/EP) 2 cr

ATEC1050 Introduction to the Transportation Trades

This class is designed for the student who is interested in the transportation trades, or is entering the Auto Mechanics program. This course is suitable for students with little or no mechanical or shop experience. Students will receive information about the trade, safety and shop operations, and will also get hands-on practice using common hand tools and shop equipment. (Prereq:

Qualifying score on reading assessment test OR ENGL0901) (BP/EP) 2 cr

ATEC1075 Welding for Transportation

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. (Prereq: None) (BP/EP) 2 cr

ATEC1105 Engine Repair I

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. (Prereq: ATEC1615) (BP/EP) 3 cr

ATEC1110 Engine Repair II

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. (Prereq: ATEC1105) (BP/EP) 3 cr

ATEC1205 Automatic Transmissions I

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. (Prereq: ATEC1105) (BP/EP) 3 cr

ATEC1210 Automatic Transmissions II

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. (Prereq: ATEC1205) (BP/EP) 3 cr

ATEC1305 Manual Drive Train & Axles

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. (Prereq: ATEC1110, ATEC1405, and ATEC1625) (BP/EP) 4 cr

ATEC1405 Steering and Suspension

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. (Prereq: ATEC1615) (BP/EP) 4 cr

ATEC1505 Brakes

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. (Prereq: ATEC1615) (BP/EP) 4 cr

ATEC1615 Electrical Systems I

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (BP/EP) 3 cr

ATEC1620 Electrical Systems II

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. (Prereq: ATEC1615) (BP/EP) 3 cr

ATEC1625 Electrical Systems III

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. (Prereq: ATEC1620) (BP/EP) 3 cr

ATEC1705 Heating and Air Conditioning

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. (Prereq: ATEC1110, and ATEC1625) (BP/EP) 4 cr

ATEC1805 Engine Performance I

In this course the student will learn theory, operation, diagnosis, and repair of automotive fuel delivery systems. 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. (Prereq: ATEC1205) (BP/EP) 3 cr

ATEC1810 Engine Performance II

In this course the student will learn 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. (Prereq: ATEC1805) (BP/EP) 3 cr

ATEC1815 Engine Performance III

In this course students will learn 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. (Prereq: ATEC1805) (BP/EP) 3 cr

ATEC1820 Hybrid Electric Vehicle Systems

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. (Prereq: ATEC1615) (BP/EP) 1 cr

ATEC2685 Automotive Industry Internship I

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. (Prereq: ATEC1110, ATEC1405, ATEC1505 and ATEC1625) (BP/EP) 5 cr

ATEC2690 Automotive Industry Internship II

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. (Prereq: ATEC1110, ATEC1210, ATEC1305, ATEC1405, ATEC1505, ATEC1625, ATEC1705 and ATEC1815) (BP/EP) 5 cr

ATEC2700 Automotive Externship

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. (Prereq: ATEC2685, ATEC1805, ATEC1810, and ATEC1815) (BP/EP) 3 cr

ATEC2800 Introduction to Hybrid Electric Vehicle Technology

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. (Prereq: ATEC1615, ATEC1620, and ATEC1625 or instructor approval) (BP/EP) 3 cr

ATEC2805 Hybrid Electric Vehicle Batteries

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. (Prereq: ATEC2800 or instructor approval) (BP/EP) 3 cr

ATEC2810 Hybrid Electric Vehicle Machines and Controls

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. (Prereq: ATEC2800 and ATEC2805 or instructor approval) (BP/EP) 3 cr

Biology (BIOL)

BIOL2001 Biology in Society

MnTC: 2, 3 & 10

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.

(Prereq: Qualifying score on reading assessment test OR ENGL0921 and Qualifying score on math assessment test OR MATH0950) (BP/EP) 4 cr

BIOL2003 Nutrition and Health

MnTC: 2, 8 & 10

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921) (BP/EP) 3 cr

BIOL2005 General Biology I

MnTC: 2 & 3

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. (Prereq: Qualifying score on math assessment test OR MATH1500 and Qualifying score on reading assessment test OR ENGL0921) (BP/EP) 4 cr

BIOL2045 Human Biology

MnTC: 2 & 3

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921 and Qualifying score on math assessment test OR MATH1050 or MATH1060) (BP/EP) 4 cr

BIOL2105 General Biology II

MnTC: 3

This course is the second in a two semester general biology course. Topics will include evolution, biological diversity, botany, zoology and introductory concepts of ecology. The laboratory sessions will reinforce concepts discussed in lecture emphasizing anatomy and physiology of selected members of the plant and animal kingdoms. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal. (Prereq: BIOL2005 with a grade of "C" or better) (BP/EP) 4 cr

BIOL2125 Anatomy and Physiology I**MnTC: 2 & 3**

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. (Prereq: BIOL2005 with a grade equivalent of "C" or better OR BIOL2045 with a grade equivalent of "C" or better) (BP/EP) 4 cr

BIOL2215 Human Physiology**MnTC: 3**

This course is the second semester of a lecture and laboratory sequence in human anatomy and physiology. The course provides an in-depth study of the functioning of body systems, including the muscular, nervous, cardiovascular, immune, respiratory, digestive, urinary, endocrine, and reproductive systems. Emphasis is placed on systemic human physiology, which is augmented by discussions of cellular and molecular mechanisms. Applicable principles of chemistry and physics are reviewed in order to enhance understanding of physiological processes. 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 equipment used in the acquisition of physiological data. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal. (Prereq: BIOL2115 with a grade of C or better and qualifying score on math assessment test OR MATH1700) (BP/EP) 4 cr

BIOL2225 Anatomy and Physiology II**MnTC: 2 & 3**

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. (Prereq: BIOL2005 with a grade equivalent of "C" or better and BIOL2125 with a grade equivalent of "C" or better OR BIOL2045 with a grade equivalent of "C" or better AND BIOL2125 with a grade equivalent of "C" or better) (BP/EP) 4 cr

BIOL2235 Microbiology**MnTC: 2 & 3**

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. (Prereq: BIOL2005 with a grade of "C" or better and BIOL2125 with a grade of "C" or better) (BP/EP) 4 cr

Business (BUSN)**BUSN1000 Introduction to Business**

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921 and qualifying score on writing assessment test OR ENGL0930) (BP/EP) 3 cr

BUSN1010 Marketing Concepts and Strategies

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. (Prereq: Qualifying score on writing assessment test OR ENGL0930) (BP) 4 cr

BUSN1020 Introduction to Selling

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. (Prereq: Qualifying score on writing assessment test OR ENGL0930) (BP) 3 cr

BUSN1030 Professional Development

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. (Prereq: Qualifying score on writing assessment test OR ENGL0930) (BP) 3 cr

BUSN1041 Customer Relationship Management (CRM)

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. (Prereq: BUSN1010) (BP/EP) 3 cr

BUSN1051 Introduction to Management

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. (Prereq: Qualifying score on writing assessment test OR ENGL0930) (BP/EP) 4 cr

BUSN1060 Territory/Account Management

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. (Prereq: Qualifying score on writing assessment test OR ENGL0930) (BP) 3 cr

BUSN1091 Consultative Selling

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. (Prereq: BUSN1000) (BP/EP) 3 cr

BUSN1100 Supervision

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. (Prereq: Qualifying score on writing assessment test OR ENGL0930) (BP) 3 cr

BUSN1140 Business Law

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. (Prereq: None) (BP/EP) 3 cr

BUSN1150 Introduction to Service and Work Team Strategies

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. (Prereq: Qualifying score on writing assessment test OR ENGL0930 and Qualifying score on reading assessment test OR ENGL0921) (BP/EP) 3 cr

BUSN1170 Supervised Occupational Experience

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. (Prereq: Completion of at least 16 Business credits with a grade of C or better in each course or an arrangement with instructor) (BP) 4 cr

BUSN1200 Managerial Communication

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. (Prereq: Qualifying score on writing assessment test OR ENGL0930) (BP/EP) 3 cr

BUSN1300 E-Business

This course will teach students how to build a successful e-business. It will take the student through the entire process from strategic planning to actual fulfillment. It will provide the technical, operational and managerial details necessary for success. (Prereq: Qualifying score on computer literacy assessment test OR CPLT0900) (BP/EP) 3 cr

BUSN1400 Business Finance

This course is designed to provide students with the tools, understanding, and processes enabling them to calculate essential Business statistics. These tools will give them and their employer a better understanding of financial and business transactions into which they are about to enter. The analysis of the resulting statistics and improved understanding of financial documents will allow the student to assist the business in improving their decision making process. (Prereq: CCIS1080) (BP) 3 cr

BUSN1500 Database Concepts and Data Analysis Tools

This course is designed to give the student knowledge about database concepts and tools which can be used in business analysis. Students will implement the features in MS Access using case studies that introduce realistic business problems and are focused on business decisions using queried database information. (Prereq: CCIS1080) (BP) 3 cr

BUSN1510 Entrepreneurship

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. (Prereq: BUSN1000) (BP/EP) 3 cr

BUSN2000 Business Analysis

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. (Prereq: CCIS2055) (BP/EP) 4 cr

BUSN2010 Requirements Management with Use Cases

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. (Prereq: BUSN2000) (BP/EP) 3 cr

BUSN2015 Marketing Applications

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. (Prereq: BUSN1010) (BP/EP) 3 cr

BUSN2040 Introduction to Event Planning

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! (Prereq: BUSN1000 and BUSN1010) (BP/EP) 3 cr

BUSN2050 Event Site Sourcing and Contracts

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. (Prereq: BUSN2040) (BP/EP) 3 cr

BUSN2075 Digital Marketing

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. (Prereq: BUSN1010) (BP/EP) 3 cr

BUSN2085 Small Business Operations

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. (Prereq: BUSN1510 required, ACCT1410 recommended) (BP/EP) 4 cr

BUSN2100 Capstone

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. (Prereq: BUSN1000, BUSN1051, BUSN1140, BUSN1200, BUSN1300, CCIS2801, and CCIS2900) (BP/EP) 3 cr

Carpentry (CARP)

CARP1101 Introduction to Residential Construction

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. (Prereq: Qualifying score on reading assessment test OR Qualifying score on ESL reading assessment test) (BP/EP) 2 cr

CARP1111 Floor and Wall Framing

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. (Prereq: Qualifying score on reading assessment test OR Qualifying score on ESL reading assessment test) (BP/EP) 5 cr

CARP1130 Additions and Retrofit

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. (Prereq: None) (BP/EP) 2 cr

CARP1140 Engineered Roof Systems

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. (Prereq: Qualifying score on reading assessment test OR Qualifying score on ESL reading assessment test) (BP/EP) 2 cr

CARP1150 Rafter Framing

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. (Prereq: None) (BP/EP) 3 cr

CARP1180 Stair Framing

This course introduces the student to the layout, cutting, and installation of stairs. (Prereq: CARP1511) (BP/EP) 2 cr

CARP1185 Stair Layout

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. (Prereq: One year minimum work experience) (BP/EP) 1 cr

CARP1190 Deck Construction

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. (Prereq: None) (BP/EP) 1 cr

CARP1240 Exterior Finishes

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. (Prereq: Qualifying score on reading assessment test OR Qualifying score on ESL reading assessment test) (BP/EP) 4 cr

CARP1420 Concrete Stairs, Walks and Drives

This course introduces the student to procedures used to form, pour and finish concrete stairs, walks and driveways. (Prereq: None) (BP/EP) 1 cr

CARP1430 Install Concrete Slabs

This course introduces the student to the procedures used to form, pour and finish concrete slabs. (Prereq: None) (BP/EP) 1 cr

CARP1511 Insulation and Drywall

This course introduces the student to the properties of insulation and gypsum wallboard and proper installation of

both. (Prereq: Qualifying score on reading assessment test OR Qualifying score on ESL reading assessment test) (BP/EP) 3 cr

CARP1710 Stair Finishing

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. (Prereq: CARP1511) (BP/EP) 2 cr

CARP1720 Interior Trim

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. (Prereq: CARP1511) (BP/EP) 4 cr

CARP1760 Cabinet Making

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. (Prereq: None) (BP/EP) 3 cr

CARP1810 Residential Blueprint Reading

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. (Prereq: Qualifying score on reading assessment test OR Qualifying score on ESL reading assessment test) (BP/EP) 1 cr

CARP1820 Residential Estimating

This course introduces the student to estimating materials for rough framing and interior and exterior finishing. (Prereq: CARP1511) (BP/EP) 2 cr

CARP1830 Building Code

This course is a study of the parts of the State Building Code that relate to residential construction. (Prereq: CARP1511) (BP/EP) 1 cr

CARP1840 Energy Efficient Construction

This course is a study of the State Energy Code and construction methods and strategies used to build energy efficient houses. (Prereq: None) (BP/EP) 1 cr

CARP1850 Introduction to Computer Assisted Drawing

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. (Prereq: None) (BP/EP) 1 cr

CARP2000 Green Building Concepts

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. (Prereq: None) (BP/EP) 3 cr

CARP2005 Green Building Materials

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. (Prereq: None) (BP/EP) 2 cr

CARP2010 The House as an Integrated System

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, it's various mechanical systems and the environment. (Prereq: None) (BP/EP) 4 cr

CARP2015 Weatherization of New and Existing Homes

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. (Prereq: None) (BP/EP) 3 cr

CARP2020 Introduction to Home Rating Systems

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. (Prereq: None) (BP/EP) 2 cr

CARP2025 Carpentry Internship

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. (Prereq: CARP1511) (BP/EP) 1_to_3 cr

Woodworking Technology (CBTG)

CBTG1000 Wood in Art

In this course the student will design and construct various pieces of art using wood as the medium. Attention will be given to the theme through the use of color, texture, form, and balance. Students will be guided in the safe use of basic woodworking equipment. (Prereq: None) (BP) 1 cr

CBTG1100 Introduction to Woodworking Technology

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. (Prereq: None) (BP) 2 cr

CBTG1110 Joinery

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (BP) 2 cr

CBTG1121 Power Tool Operation

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (BP) 5 cr

CBTG1130 Materials

In this course the student will learn the various wood and wood products used in cabinetmaking. Solid lumbers, 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. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (BP) 1 cr

CBTG1141 Basic Case Construction

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (BP) 4 cr

CBTG1161 Basic Laminating

This course will introduce the student to the various types of plastic laminates available, other materials involved, hand tools, adhesives, preparation procedures necessary for the fabrication and practical application of decorative laminates. Required projects specializing in laminate constructions are emphasized. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (BP) 2 cr

CBTG1170 AutoCAD

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (BP) 4 cr

CBTG1211 Laminated Product Fabrication

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. (Prereq: CBTG1121 and CBTG1161) (BP) 4 cr

CBTG1220 Blueprint Reading and Shop Drawings

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. (Prereq: CBTG1141) (BP) 3 cr

CBTG1230 Wood Finishing

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. (Prereq: CBTG1121) (BP) 2 cr

CBTG1240 Millroom Operations

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. (Prereq: CBTG1121) (BP) 2 cr

CBTG1250 Production Woodwork

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. (Prereq: CBTG1130 and CBTG1141) (BP) 4 cr

CBTG2311 Cabinet Layout and Design

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. (Prereq: CBTG1121, CBTG1141 and CBTG1150) (BP) 3 cr

CBTG2320 Cabinet Joinery

This course will instruct the student on the various methods of cabinet construction, including detailed analysis of each cabinet component part. Efficient as well as effective methods of wood joinery utilized in face frame cabinetry will be stressed. (Prereq: CBTG2311) (BP) 3 cr

CBTG2331 Cabinet Fabrication

This course will teach the student effective and efficient methods of face frame cabinet production. Machining processes, assembly, finishing, handling and installation will be stressed. (Prereq: CBTG2320) (BP) 4 cr

CBTG2361 Frameless Cabinetry

This course will introduce the student to the process of designing, drawing, layout, and production of frameless cabinetry. Efficient and effective methods of joinery and fabrication for frameless cabinets will be the focus. Residential and/or commercial cabinets will be constructed. (Prereq: CBTG2311) (BP) 4 cr

CBTG2410 Furniture Design

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. (Prereq: CBTG1150) (BP) 2 cr

CBTG2421 Furniture Joinery

This course will focus on the joinery and techniques involved in the construction of furniture. Specific project work will be accomplished. (Prereq: CBTG2410) (BP) 4 cr

CBTG2430 Furniture Fabrication

This course is a study of advanced machine operations in furniture construction techniques. Students will be required to construct a piece of furniture of their own design. (Prereq: CBTG2421) (BP) 4 cr

CBTG2440 Mozaik Cabinet Design

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. (Prereq: None) (BP) 3 cr

CBTG2450 Solid Surface Fabrication

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. (Prereq: CBTG1121) (BP) 2 cr

CBTG2522 Advanced CNC Programming

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. (Prereq: CBTG1170 or instructor approval) (BP) 3 cr

CBTG2532 CNC Router Operation

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. (Prereq: CBTG1170) (BP) 3 cr

CBTG2551 Point to Point Machining

This course will cover the operation of a Point to Point Machining Center. Areas of study will include machine safety, start up, tool set up, programming, and fixturing. The student will manufacture a variety of parts through the entirety of this course. (Prereq: CBTG1170) (BP) 3 cr

CBTG2555 Autodesk Inventor Cabinet Design

This course will use Autodesk Inventor software to assist in the development of product designs, mechanical function, fabrication methods and part creation as it relates to cabinetry, store fixtures, displays, architectural millwork and other wood product materials. (Prereq: None) (BP) 2 cr

CBTG2560 AutoCAD Product Fabrication

This course will use AutoCAD software including the use of 3D visualization to assist in the development of product designs, product engineering, fabrication methods and part creation as it relates to cabinetry, store fixtures, displays, architectural millwork and other wood product materials. (Prereq: CBTG1170 or professional experience with this software) (BP) 2 cr

Career Development Services (CCDS)**CCDS0850 Career Transition**

Career Transitions is a career exploration workshop that is offered to adults who are considering a job change that may require some college coursework. The workshop will utilize inventories/testing to help individuals identify their interests, personality type, skills and aptitudes for a changing workplace. Career Transitions will help individuals access computer software for career research and current labor market information to assist them in their decision making. (\$40.00 fee) (Prereq: None) (BP/EP) 0 cr

CCDS1000 College Success Seminar

This course provides students the skills and knowledge to successfully transition to a college level technical education program. The course covers the history and mission of technical education, strategies for navigating the college experience, career and academic planning, time management, diversity and multiculturalism, and skills for life long learning. Topics are explored through lecture, guest speakers, and group activities. (Prereq: None) (BP/EP) 1 cr

CCDS1005 Effective Study Skills

This course focuses on the learning skills necessary to master the training program in which the student is/will be enrolled. This includes time management, textbook reading, listening, notetaking skills and test taking. (Prereq: None) (BP/EP) 1 cr

CCDS1010 Money Matters

This course is intended for students who want to learn strategies on how to manage their money. Special

attention is given to setting financial goals, tracking current spending habits, creating a personal budget, understanding credit, managing debt, and saving for the future. (Prereq: None) (BP/EP) 1 cr

CCDS1020 Interviewing Skills

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. (Prereq: Qualifying score on writing assessment test OR ENGL0930, qualifying score on reading assessment test OR ENGL0921, and successful completion of CCSD1040 strongly recommended) (BP/EP) 1 cr

CCDS1040 Job Seeking Skills

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. (Prereq: None) (BP/EP) 2 cr

CCDS1100 Student Success

Success in college and the workplace requires a wide variety of basic skills. This Student Success course emphasizes three broad areas of skills will better prepare students for success in both the classroom and in life: academic skills, career-building and money management. This course is strongly recommended for all new degree-seeking students and is required for students returning from academic suspension. (Prereq: None) (BP/EP) 3 cr

CCDS1200 Earning Credit for Life and Work Experience

This course guides students through the preparation and compilation of components required for creating a prior learning assessment portfolio. The portfolio provides evidence that students have achieved college level learning outcomes required in courses taught at Hennepin Technical College (HTC). After completing the course and their portfolio, faculty will assess learning outcomes to determine college level credit. (Prereq: Qualifying score on reading assessment OR ENGL0921 and basic computer literacy skills required) (BP/EP) 1 cr

CCDS1500 Individualized Studies Degree Planning

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. (Prereq: None) (BP/EP) 2 cr

CCDS1600 Practical Leadership

In life and work, a common challenge is how to bring together a group of people to complete projects that advance the mission of the organization. This course will introduce students to the practical skills of leadership that are fundamental to successfully meeting this common challenge. These skills include communication, goal setting, collecting and analyzing of relevant data, budgeting, team building, conflict resolution, and mentoring. (Prereq: Qualifying score on writing assessment test OR ENGL1021 and Qualifying score on reading assessment test OR ENGL0921) (BP/EP) 2 cr

Information Technology (CCIS)

CCIS1000 Information Systems

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. (Prereq: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200) (BP/EP) 3 cr

CCIS1005 Computer Security Awareness

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. (Prereq: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 or instructor approval) (BP/EP) 3 cr

CCIS1032 Access 2016

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. (Prereq: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 or instructor approval) (BP/EP) 3 cr

CCIS1035 Word 2016

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. (Prereq: Qualifying score on

keyboarding assessment test OR CPLT1100 or CPLT1200 or instructor approval) (BP/EP) 3 cr

CCIS1042 PowerPoint 2016

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. (Prereq: Qualifying score on keyboarding assessment test OR CPLT1100 or CPLT1200 or instructor approval) (BP) 3 cr

CCIS1080 Microsoft Office 2016

This course provides students with training in the Microsoft Office Suite. 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. (Prereq: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 or instructor approval) (BP/EP) 3 cr

CCIS1095 Outlook 2016

This course helps students become familiar with Outlook and learn the core operations of the program. Outlook is a personal information manager available as a part of the Microsoft Office suite. Although often used mainly as an email application, it also includes a calendar, task manager, contact manager, note taking, a journal and web browsing. This course will prepare students to become more efficient Outlook users by giving them skills to use in both their personal and professional lives. (Prereq: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 or instructor approval) (BP/EP) 2 cr

CCIS1101 Windows 10

This course provides the fundamentals of the Windows operating system and is designed to help students become competent users of Windows 10. Students will be able to manage their own desktop or laptop computers, including installing and running applications, managing files, using the Internet and several media features. securing and customizing a computer, while understanding basic system maintenance and troubleshooting. (Prereq: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 or instructor approval) (BP/EP) 3 cr

CCIS1105 Network Essentials

This course exposes students to networking concepts, technologies and typical network administration/analysis duties found in the workplace. Topics covered include communication models, network protocols, IP addressing and subnetting, physical and logical topologies, transmission media, and network hardware. (Prereq: CCIS1101 or instructor approval) (BP/EP) 4 cr

CCIS1110 Windows Admin_1

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. (Prereq: CCIS1105 or concurrent) (BP/EP) 3 cr

CCIS1121 Linux Admin_1

This course will introduce students to administrative functions of the Linux operating system. Essential elements of the operating system will be explored and understood. At the end of this course, the student will be able to administer a Linux operating system as a standalone device. (Prereq: CCIS1105 and CCIS1135 OR instructor approval) (BP/EP) 3 cr

CCIS1135 Desktop Linux

This course introduces students to the Linux environment. Students will learn to use Linux as an everyday operating system; including basic functions such as installing printers, adding end-user software, and basic troubleshooting. Both the graphical user interface and the command line interface will be explored and used. This course is designed to provide a base working knowledge of Linux and can be used as preparation for Linux Administration I. (Prereq: Qualifying score on computer literacy assessment test OR instructor approval) (BP/EP) 3 cr

CCIS1260 Data Analysis I

Introductory data analyst course using Excel, Access and PowerPoint. Extensive use of Excel spreadsheets including formulas, graphs and pivot tables. Create basic Access queries to gather data. Course covers concepts such as percentages, trends and basic statistical concepts. (Prereq: CCIS1080 - Required. ACCT1125 and MATH2150 - Recommended) (BP/EP) 3 cr

CCIS1301 HTML & CSS

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 and CSS as a technical foundation for later coursework in web application development in JavaScript, .Net or Java. (Prereq: CCIS1000 and CCIS1101) (BP/EP) 3 cr

CCIS1310 Publisher 2016

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. (Prereq: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 or instructor approval) (BP) 3 cr

CCIS1351 Advanced HTML

In this advanced course, students will learn the intermediate and advanced use of styles and layers. Special attention will be paid to accessibility, classes, identifiers, pseudo-elements, and pseudo-classes. Work will include subjects from controlling text and font families to styled lists and forms to the use of multiple style sheets. Web page optimization and search engine placement will also be covered. (Prereq: CCIS1301) (BP/EP) 4 cr

CCIS1421 CCNA_2: Basic Router and Switch Configuration

This is the second of four "Cisco Academy" Courses that will prepare students for the Cisco Certified Network Associate (CCNA) exam. Topics covered include the following: basic router and switch configuration, routed protocols, static and dynamic routing, VLANs, EIGRP, and DHCP. (Prereq: CCIS1105) (BP/EP) 4 cr

CCIS1431 CCNA_3: Intermediate Router and Switch Configuration

This is the third of four "Cisco Academy" Courses that will prepare students for the Cisco Certified Network Associate (CCNA) exam. Topics covered include the following: complex router and switch configuration, classless routing, OSPF, NAT, ACLs, and Wireless LANs. (Prereq: CCIS1421) (BP/EP) 4 cr

CCIS1443 CCNA_4: WANs, VPNs, and Enterprise Networks

This is the fourth of four "Cisco Academy" courses that will prepare students to take and pass the Cisco Certified Network Associate (CCNA) test. Topics covered include the following: WAN design, WAN technology (PPP, Frame Relay, Broadband), multi-area OSPF, VPNs, IPv6, and network troubleshooting. (Prereq: CCIS1431) (BP/EP) 4 cr

CCIS1480 CCNA (Cisco Certified Network Associate) Exam Prep

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. (Prereq: CCIS1442 or instructor approval) (BP/EP) 1 cr

CCIS1490 CCNA Specialty Fields

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. (Prereq: CCIS1431) (BP/EP) 3 cr

CCIS1505 Fundamentals of Programming

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. (Prereq: Microsoft Windows experience) (BP/EP) 4 cr

CCIS1515 Programming Overview

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. (Prereq: Microsoft Windows experience) (BP) 3 cr

CCIS2005 C# and the Microsoft .NET Framework

This is an introduction course to Microsoft's C# programming language and the .NET Framework. Students will learn the fundamentals of the C# programming language, write object-oriented programs, write Windows applications and write programs to access databases. All of this coursework will be done within the Microsoft .NET framework. (Prereq: CCIS1505) (EP) 4 cr

CCIS2055 Project Management

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. (Prereq: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 or instructor approval) (BP/EP) 3 cr

CCIS2065 Help Desk/User Support

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. (Prereq: CCIS1000 or instructor approval) (BP) 3 cr

CCIS2090 Office 2016 Integration

This course provides a practical, project-based capstone for students with an understanding of the Microsoft Office Suite. Students will learn how to integrate Word, Excel, Access, PowerPoint, and Publisher. Students can master the true potential of Office 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. (Prereq: CCIS1032 or CCIS1080 OR instructor approval) (BP) 3 cr

CCIS2122 Linux Admin_2

This course will focus on the network functions of the Linux operating system. Advanced services of the operating system will be installed. In addition, the role of Linux as part of a server environment will be understood. At the end of this course, the student will be able to administer a Linux operating system as part of a network. (Prereq: CCIS1121) (BP/EP) 4 cr

CCIS2150 Windows Admin_2

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. (Prereq: CCIS1110) (BP/EP) 4 cr

CCIS2161 Linux Admin_3

This course will further expand on the topics introduced in Linux Admin 1 and 2. Students will gain experience using current Linux technologies used in modern networks. Students will gain an understanding of Linux services that support enterprise networks. (Prereq: CCIS2122) (BP/EP) 3 cr

CCIS2222 Network Configuration

This course will provide a practical knowledge of network concepts & hardware configuration. The course will give students the opportunity to set up and troubleshoot a variety of networking solutions. Topics covered will include the following: selecting and installing network cabling, configuring workstations, routing, implementing wireless networks, network diagramming, and utilizing networking tools to analyze and maintain a group of computers. (Prereq: CCIS2122 or CCIS2150) (BP/EP) 3 cr

CCIS2270 Windows Admin_3

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. (Prereq: CCIS2150) (BP/EP) 4 cr

CCIS2385 IT Internship

This is a cooperative program between Hennepin Technical College and a participating company to allow the student an employment-like work experience. (Prereq: Instructor approval) (BP/EP) 2_to_8 cr

CCIS2421 CCNA Security

This course will expose students to the array of security features that can be implemented using a company's existing Cisco router. Instruction will include authentication methods, common network attacks and how to safeguard against them, communication security (remote access, e-mail, the web, directory and file transfer, and wireless data), infrastructure security (network devices and media, and the proper use of perimeter topologies such as demilitarized zones (DMZ)s, Extranets, and Intranets to establish network security). Cryptography basics are provided, including the differences between asymmetric and symmetric algorithms, and the different types of Public Key Infrastructure (PKI) certificates and their usage. Operational/organizational security is discussed as it relates to physical security, and disaster recovery. (Prereq: CCIS1431) (BP/EP) 3 cr

CCIS2460 Data Analysis II

Continuation of Data Analysis I with more advanced treatment of data reporting, interpretation, and presentation. Advanced Excel formulas, functions and macros will be created to perform advanced data interpretations. Explore the need and use of data within a variety of industries, such as healthcare and banking. Students should have advanced Excel spreadsheet knowledge. (Prereq: CCIS2150 - Required. CCIS1260 - Recommended) (BP/EP) 3 cr

CCIS2465 Data Analysis III

Project based course with applications to real world industries such as healthcare and banking. Healthcare and financial concepts and industry practice will be studied. Students will analyze data and present his findings using Excel and PowerPoint. (Prereq: ACCT1125 - Required. CCIS2460 - Recommended) (BP/EP) 4 cr

CCIS2500 .NET for Mobile Development

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. (Prereq: CCIS2585) (BP/EP) 4 cr

CCIS2575 .NET Programming I

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. (Prereq: CCIS1505) (BP/EP) 4 cr

CCIS2585 .NET Programming II

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. (Prereq: CCIS2575 and CCIS2701) (BP/EP) 4 cr

CCIS2591 JavaScript

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. (Prereq: CCIS1301 and CCIS1505 or CCIS1515 or previous programming experience) (BP/EP) 4 cr

CCIS2595 Java I

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. (Prereq: CCIS1505, CCIS1301 and any procedural programming language) (BP/EP) 4 cr

CCIS2610 XML I

This course will provide students a thorough understanding of the basics of XML. The class will emphasize hands on instruction and practical usage of XML. This course is for the beginning XML student. It assumes some knowledge of web pages in HTML, and

some previous programming. (Prereq: CCIS1505 or CCIS1515 or previous programming experience) (EP) 4 cr

CCIS2615 XML II

This is a second course in XML, following XML I. Topics include advanced core XML, XLink, and XPath; XQuery; XSL; XForms; XML signatures; parsing; using XML and XSLT with Java; SOAP; and Web Services. (Prereq: CCIS2595, CCIS2610 and CCIS2701 or equivalent) (BP/EP) 4 cr

CCIS2625 AJAX

In this course, students learn advanced JavaScript and AJAX (Asynchronous JavaScript and XML) and how to create high-performance, efficient, interactive Web sites. They will learn the importance of validating forms before storing data and how to search for data using both full and partial search strings. In addition, students will learn about APIs, the Document Object Model, XML Document Object Model, JavaScript Document Object Model, and various AJAX frameworks. Some popular third party AJAX frameworks such as Microsoft Atlas and Dojo will also be covered. (Prereq: CCIS2610) (EP) 4 cr

CCIS2630 PHP

A course designed for students who want to build dynamic web sites using the PHP and Perl programming languages. Since PHP and Perl are such rich and task-specific languages, the course covers in depth the most important range of functions and equips delegates to understand the remaining less essential aspects. (Prereq: CCIS1351 and programming experience) (BP/EP) 4 cr

CCIS2645 Introduction to ASP.NET

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. (Prereq: CCIS1301 and CCIS2585) (EP) 4 cr

CCIS2651 Java II

This course is a continuation of Java I, and prepares students to develop real-world projects using Java. Students will be able to apply the object-oriented approach to develop applications with graphics, exception handling, database handling, I/O, and networking. Object-oriented design topics include the need for design, object-oriented design, design of classes and objects, object relationships, design patterns, and the Unified Modeling Language. (Prereq: CCIS2595) (BP) 4 cr

CCIS2662 Java Server Pages (JSP)

This course is designed to prepare students for a career in e-commerce development. JSP is part of the Java technology family. This technology can be used to develop and maintain dynamic, substantive Web pages that are platform independent and that utilize or interact with other resources, such as the Java API and databases. JSP makes it possible to separate the user interface from the business logic by means of XML-like tags. (Prereq: CCIS1351, CCIS2651 and CCIS2701) (BP) 4 cr

CCIS2675 A+ Hardware Support

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. (Prereq: CCIS1101 or instructor approval) (BP/EP) 3 cr

CCIS2680 A+ Software Support

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. (Prereq: CCIS1101 or instructor approval) (BP/EP) 3 cr

CCIS2685 A+ Exam Prep

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. (Prereq: CCIS2675 and CCIS2680 or instructor approval) (BP/EP) 1 cr

CCIS2701 Database Design and SQL

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, the E-R model, and transaction management. The use of Structured Query Language (SQL) will be emphasized. (Prereq: CCIS1000) (BP/EP) 4 cr

CCIS2751 Oracle SQL and PL/SQL

This course offers students an extensive introduction to data server technology. The class covers the concepts of relational databases and the powerful SQL and PL/SQL programming languages. Students are taught to create and maintain database objects and to store, retrieve, and manipulate data. (Prereq: CCIS2701) (BP/EP) 4 cr

CCIS2772 Oracle Database Fundamentals

This is the first of two courses in Oracle database administration. The course will introduce students to the architecture, administration, backup, and recovery of an Oracle database, including database creation, database

startup and shutdown, user management, file and storage management. (Prereq: CCIS2751) (BP/EP) 4 cr

CCIS2776 Oracle Database Backup and Recovery

This is the second of two courses in Oracle database administration. The course will introduce students to Oracle networking and performance tuning of an Oracle database. Students will learn to recognize and troubleshoot common performance related problems and configure a simple and complex Net8 environment. (Prereq: CCIS2772) (BP/EP) 4 cr

CCIS2781 SQL Server - TransactSQL

This course provides students with the technical skills required to utilize TransactSQL programming solutions within a Microsoft SQL Server client/server database management system. (Prereq: CCIS1032 and CCIS2701) (EP) 4 cr

CCIS2786 SQL Server - System Administration

This course provides students with the knowledge and skills required to install, configure, administer, and troubleshoot Microsoft SQL Server client/server database management system. (Prereq: CCIS1032) (EP) 4 cr

CCIS2801 Systems Analysis

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. (Prereq: CCIS1000) (BP/EP) 4 cr

CCIS2841 Client/Server Computing

This course covers the evolution, impact and services available with Client/Server technology and distributed computing. The characteristics of clients and servers and the role of middleware will be discussed. Students will explore the various type of Client/Server implementations: SQL databases, transaction servers, distributed objects, groupware, Web applications and JAVA. (Prereq: CCIS1105 or CCIS1505 or CCIS2701) (BP/EP) 4 cr

CCIS2875 Workplace Readiness Skills Assessment

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 both the Desktop Support AAS Degree and Executive Administrative Professional AAS Degree. (Prereq: Recommended 75% completion of the required technical courses in the degree area) (BP/EP) 0 cr

CCIS2880 Network Admin Technical Skills Assessment

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. (Prereq: Recommended 75% completion of the required technical courses in the degree area) (BP/EP) 0 cr

Child Development (CHLD)

CDEV1105 Introduction to Early Childhood Careers

The student will examine the various roles and responsibilities of educators who serve children and families in a professional manner. Observations of different types of early childhood programs will be required. (Prereq: None) (BP/EP) 3 cr

CDEV1125 Guiding Children's Behavior

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 must have consistent access to a toddler through school age child for the final project. (Prereq: CDEV1160) (BP/EP) 3 cr

CDEV1130 Learning Environment and Curriculum

The student will gain knowledge and skills related to providing age appropriate curriculum and learning environments for young children. 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 practice language and literacy, social, emotional and sensory learning, art and creativity, and math and science activities. For this course students should either be working with children or have consistent access to a group of children. (Prereq: Qualifying score on writing assessment test OR ENGL1021 or ENGL1026) (BP/EP) 4 cr

CDEV1160 Observation and Assessment

The student will examine the appropriate use of assessment and observation strategies to document development, growth, play and learning. There will be a focus on increasing objectivity in observing and interpreting children's behavior. Recording strategies, rating systems, multiple assessment tools and portfolios are explored. For this course students should have access to a child who is between the ages of 3 and 5. (Prereq: CDEV1500 and ENGL2121) (BP/EP) 3 cr

CDEV1500 Child Growth and Development

The student will examine the major developmental milestones for children from birth through adolescence in the areas of physical, social-emotional, and cognitive development. While studying developmental theory and investigative research methods, students will observe

children and analyze characteristics of development at various stages. (Prereq: Qualifying score on reading assessment test OR ENGL0921) (BP/EP) 3 cr

CDEV1530 Health, Safety and Nutrition

The student will be introduced to the regulations, standards, policies, procedures, prevention techniques, and early childhood curriculum related to health, safety, and nutrition. The key components that ensure physical health, mental health, and safety for both children and staff will be identified, as well as the importance of collaboration with families and health professionals. A focus will be on integrating key components into everyday planning and program development. (Prereq: Qualifying score on writing assessment test OR ENGL1021 or ENGL1026) (BP/EP) 3 cr

CDEV1550 Curriculum Planning

The student will gain an advanced understanding of curriculum planning. Emphasis is on organizing and evaluating developmentally appropriate curricula. (Prereq: CDEV1130 and CDEV1160) (BP/EP) 3 cr

CDEV1725 Practicum I

Students demonstrate early childhood teaching competencies under guided supervision making connections between theory and practice and demonstrating professional behavior. Students develop, implement, and assess curriculum that promote positive development and learning. (Prereq: CDEV1125, CDEV1160 and Instructor approval) (BP/EP) 3 cr

CDEV1750 Practicum II

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. (Prereq: CDEV1725 and Instructor approval) (BP/EP) 3 cr

CDEV2000 Children with Differing Abilities

The student will examine a child with differing abilities in an early childhood or school setting. Students will integrate strategies that support diversity and anti-bias perspectives, provide inclusive programs for young children, and apply legal and ethical requirements including Americans with Disabilities Act (ADA) and Individuals with Disabilities Education Act (IDEA). Students will differentiate between typical and 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. (Prereq: CDEV1160) (BP/EP) 3 cr

CDEV2015 Organizational Leadership and Management

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. (Prereq: CDEV1105 and ENGL2121) (BP/EP) 2 cr

CDEV2075 Working with Diverse Families and Children

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. (Prereq: CDEV1105 and CDEV1160) (BP/EP) 3 cr

CDEV2125 Infant/Toddler Development and Learning

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. (Prereq: CDEV1160 and CDEV1500) (BP/EP) 3 cr

CDEV2150 Language and Literacy

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 this course students should be working with children or have consistent access to a group of children. (Prereq: CDEV1130) (BP/EP) 3 cr

CDEV2200 NOCTI Early Childhood Exam

The NOCTI Early Childhood Care and Education examination is given by Hennepin Technical College and is a nationally recognized student outcome assessment. (Prereq: CDEV1725 to be taken concurrently) (BP/EP) 0 cr

CDEV2230 Preschool Development and Learning

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. (Prereq: CDEV1160 and CDEV1500) (BP/EP) 2 cr

CDEV2255 Schoolage Development and Learning

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. (Prereq: CDEV1160 and CDEV1500) (BP/EP) 2 cr

CDEV2300 Multicultural Learning Experiences

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. (Prereq: CDEV1130 and CDEV2075) (BP/EP) 2 cr

Chemistry (CHEM)

CHEM2000 Introduction to Chemistry

MnTC: 3

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. (Prereq: Qualifying score on math assessment test OR MATH1500) (BP/EP) 4 cr

CHEM2200 Essentials of General, Organic and Biochemistry

MnTC: 3

This lecture/laboratory based course covers the essential concepts, methods, and skills of general, organic, and biochemistry. It builds on general chemistry concepts to develop an understanding of organic and biochemical properties and reactions. (Prereq: Qualifying score on math assessment test OR MATH1500 and BIOL2005 or BIOL2045) (EP) 5 cr

360 Programs (CMAE)

CMAE1502 360 Technical Mathematics

This is an introductory technical math course. The course is designed for students who have basic math skills and for those who need a review of basic technical math concepts. The primary goals of this course are to help individuals acquire a solid foundation in the basic skills of math/shop algebra and geometry. This course will show how these skills can model and solve authentic real-world problems. This is a blended on-line course utilizing Tooling "U", D2L and proctored unit exams. (Prereq: Qualifying score on the reading assessment test OR ENGL0901) (BP/EP) 3 cr

CMAE1506 360 Introduction to Computers

This course was designed to provide learners with a learning experience using critical-thinking and a problem solving approach. Learners will develop software concepts and practical skills they need to succeed beyond the classroom. This course provides essential, hands-on coverage of the Microsoft Office suite software. (Prereq: Qualifying score on the reading assessment test OR ENGL0901) (BP/EP) 2 cr

CMAE1510 Print Reading

This course will orient the student in the basic skills and abilities required for understanding prints utilized in a manufacturing/industrial environment. Emphasis will be on interpretation of Geometric Dimensioning and Tolerancing symbols/principles; Alphabet of lines; Multi-view drawing (including Orthographic Projection, Isometric Views and Perspective Drawing); Title blocks; Revision systems; Identification of general/local notes; Dimensions and tolerances; Basic principles of math/geometry in relation to mechanical print reading; Interpretation of basic weld symbols; Techniques of basic shop sketching and interpretation of three-dimensional drawings, will be also discussed. Each student will have the opportunity to apply the knowledge acquired through a variety of in-class activities and external assignments. (Prereq: Qualifying score on the reading assessment test OR ENGL0901) (BP/EP) 2 cr

CMAE1514 Safety Awareness

This course is designed to align with the Manufacturing Skill Standards Council's (MSSC) assessment and certification system for Safety. The course curriculum is based upon federally-endorsed national standards for production workers. This course will introduce OSHA standards relating to personal protective equipment, HAZMAT, tool safety, confined spaces, and others. (Prereq: Qualifying score on the reading assessment test OR ENGL0901) (BP/EP) 2 cr

CMAE1518 Manufacturing Processes and Production

This course is designed to align with the Manufacturing Skill Standards Council's (MSSC) assessment and certification system for Manufacturing Processes. The

course curriculum is based upon federally-endorsed national standards for production workers. This course emphasizes Just-In-Time (JIT) manufacturing principles, basic supply chain management, communication skills, and customer service. (Prereq: Qualifying score on the reading assessment test OR ENGL0901) (BP/EP) 2 cr

CMAE1522 Quality Practices

This course is designed to align with the Manufacturing Skill Standards Council's (MSSC) assessment and certification system for Quality Practices. The course 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 nonconforming product. (Prereq: Qualifying score on the reading assessment test OR ENGL0901) (BP/EP) 2 cr

CMAE1526 Maintenance Awareness

This course is designed to align with the Manufacturing Skill Standards Council's (MSSC) assessment and certification system for Maintenance Awareness. The course curriculum is based upon federally-endorsed national standards for production workers. The Maintenance Awareness course introduces the concepts of Total Productive Maintenance and preventative maintenance. Students are introduced to lubrication, electricity, hydraulics, pneumatics, and power transmission systems. (Prereq: Qualifying score on the reading assessment test OR ENGL0901) (BP/EP) 2 cr

CMAE1528 360 Career Success Skills

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. This is an on-line course utilizing D2L and Screencast. (Prereq: Qualifying score on the reading assessment test OR ENGL0901) (BP/EP) 1 cr

CMAE1550 DC Power

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. (Prereq: Qualifying score on the reading assessment test OR ENGL0901) (BP/EP) 3 cr

CMAE1552 AC Power

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. (Prereq: CMAE1550 or equivalent course) (BP/EP) 3 cr

CMAE1554 Digital Electronics

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. (Prereq: Qualifying score on the reading assessment test OR ENGL0901) (BP/EP) 3 cr

CMAE1556 Analog Circuits

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. (Prereq: CMAE1552 or equivalent course) (BP/EP) 3 cr

CMAE1558 Motor Control

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. (Prereq: CMAE1552 or equivalent course) (BP/EP) 3 cr

Communication (COMM)

COMM1050 Communication in the Workplace

This course focuses on the concepts of human communication and the styles of communications used in personal, 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, the ethics of interpersonal communication and relationship development and maintenance. (Prereq: None) (BP/EP) 2 cr

COMM1060 Career Portfolio

This is a combination lecture and workshop class that results in the compilation of a portfolio. The portfolio consists of a resume, cover letter, reflective self-analysis essay, and a collection of paper and/or electronic artifacts ready to present to possible employers. (Prereq: Qualifying score on writing assessment test OR ENGL0930) (BP/EP) 3 cr

COMM2020 Intercultural Communication

MnTC: 1 & 7

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required) (BP/EP) 3 cr

COMM2050 Interpersonal Communication

MnTC: 1 & 7

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required) (BP/EP) 3 cr

COMM2060 Small Group Communication

MnTC: 1 & 2

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required) (BP/EP) 3 cr

COMM2070 Cyber Culture

MnTC: 1

This course covers the practical and theoretical issues associated with computer-mediated communication (CMC) systems. CMC includes many different types of technologies such as social networking, email, newsgroups, chat, and online gaming. Students will receive an introduction to the principles of interpersonal communication in mediated environments and study how media richness affects interpersonal perception, language and nonverbal communication, relational development and deterioration, and relational maintenance strategies. (Prereq: Qualifying score on computer literacy assessment test OR CPLT1100. Qualifying score on reading

assessment test OR ENGL0921
) (BP/EP) 3 cr

COMM2130 Public Speaking

MnTC: 1

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required) (BP/EP) 3 cr

Computer Literacy (CPLT)

CPLT0900 Keyboarding and Computer Basics

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (BP/EP) 2 cr

CPLT1000 Computer Keyboarding

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (BP/EP) 2 cr

CPLT1005 Advanced Keyboarding and Document Processing

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. (Prereq: Qualifying score on keyboarding assessment test OR CPLT1000 and qualifying score on computer literacy assessment test OR CPLT1100) (BP/EP) 3 cr

CPLT1095 Office 365 Cloud Apps

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. (Prereq: Basic computer skills and understanding of Internet strongly recommended for successful course completion) (BP/EP) 1 cr

CPLT1100 Computer Essentials in the Digital World

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. (Prereq: Qualifying score on computer literacy assessment test OR CPLT0900 or CPLT1000 or ESOL0841 and Qualifying score on reading assessment test OR ENGL0901 or ESOL0832) (BP/EP) 3 cr

CPLT1200 Introduction to Macintosh

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 GarageBand. (Prereq: Qualifying score on computer literacy assessment test OR CPLT0900 or CPLT1000) (BP/EP) 3 cr

Culinary Arts (CULA)

CULA1000 Food Service Math

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901 and qualifying score on math assessment test) (BP/EP) 1 cr

CULA1106 Introduction to the Hospitality Industry

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (BP/EP) 2 cr

CULA1116 Sanitation and Safety

To develop an understanding of the basic principles of sanitation and safety and to be able to apply them in the foodservice operations. To reinforce personal hygiene habits and food handling practices that protects the health of the consumer. The culmination of the course is the Food Managers Certification exam. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (BP/EP) 1 cr

CULA1126 Basic Baking and Pastry

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. (Prereq: CULA1000, CULA1106, and CULA1116 or instructor approval) (BP/EP) 4 cr

CULA1136 Basic Garde Manger and Entremétier

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 hor d'oeuvres. (Prereq: CULA1000, CULA1106, and CULA1116 or instructor approval) (BP/EP) 4 cr

CULA1156 Basic Food Preparation

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. (Prereq: CULA1000, CULA1106, and CULA1116 or instructor approval) (BP/EP) 4 cr

CULA1165 Basic Sugar Work

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. (Prereq: None) (BP) 2 cr

CULA1301 Culinary Arts Nutrition

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. (Prereq: CULA1116) (BP/EP) 2 cr

CULA1321 Decorative Work and Showpieces

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. (Prereq: CULA1116 and CULA1126) (BP/EP) 2 cr

CULA1325 Menu Planning

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. (Prereq: CULA1000) (BP/EP) 2 cr

CULA1335 Purchasing and Cost Control

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. (Prereq: CULA1000) (BP/EP) 2 cr

CULA1525 Dining Room Service

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. (Prereq: CULA1106 and CULA1116) (BP/EP) 4 cr

CULA1530 Advanced Baking and Pastry

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. (Prereq: CULA1116 and CULA1126) (BP/EP) 4 cr

CULA1535 Advanced Garde Manger and Entremétier

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. (Prereq: CULA1116 and CULA1136) (BP/EP) 4 cr

CULA1540 Advanced Food Preparation

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. (Prereq: CULA1116 and CULA1156) (BP/EP) 4 cr

CULA1700 Human Relations Management

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. (Prereq: CULA1000, CULA1106, and CULA1116 or instructor approval) (BP/EP) 2 cr

CULA1710 Beverage Management

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. (Prereq: CULA1000, CULA1106, and CULA1116 or instructor approval) (BP/EP) 2 cr

CULA1720 Capstone/Portfolio

This is the final synthesis and evaluation course to determine the student's ability to enter the hospitality industry. The course is designed to involve student in all aspects of catered events and assess their ability to develop cost and execute an event. To complete the requirements of the course, students will develop an on line portfolio to record their accomplishments in their course of study. (Prereq: CULA1301, CULA1321, CULA1325, CULA1335, CULA1525, CULA1530, CULA1535, and CULA1540) (BP/EP) 2 cr

CULA2050 Fundamentals of Wine

This course will teach professional tasting technique which will improve the student's understanding of how smell, taste, and appearance of a wine are integral to its enjoyment. In addition, the course will allow hands-on experience preparing food to taste with various wine varietals, thus giving students some standard formulas for understanding the flavor profile of the wine and how it works with food. The goal is to give students better understanding and knowledge to experiment and explore with new styles and grape varieties to serve with traditional and new menu selections. (Students must be 21 years of age or older to taste wines.) (Prereq: CULA1116) (BP/EP) 2 cr

CULA2056 Global Cuisine

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. (Prereq: Food manager's certificate, current registration to earn one, or instructor's approval) (BP/EP) 4 cr

CULA2075 Catering

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. (Prereq: CULA1301, CULA1321 CULA1325, CULA1335, CLUA1525, CULA1530, CULA1535, and CULA1540. Or instructor approval) (BP/EP) 2 cr

CULA2080 Food, Wine and Beer Pairing

This course will teach professional tasting technique which will improve the students understanding of how smell, taste and appearance of a wine and beer are integral to its enjoyment. In addition, the course will allow hands on experience preparing food to taste with various wine and beer varietals, thus giving students some standard formulas for understanding the flavor profile of the wine and beer and how it works with food. The goal is to give students a better understanding and knowledge to experiment and explore with new styles and grape varieties to serve with traditional and new menu selections. Students must be 21 years of age or older to taste wines. (Prereq: CULA1116 and CULA2050 or instructor approval) (BP/EP) 4 cr

CULA2085 Current Trends in Beer, Wine and Spirits

This course will focus on the Current Trends related to the role of Beer, Wine & Spirits in the Culinary setting. Each topic will represent an area which Culinary students will seek an applied and practical understanding of the basic concepts behind the trends. The course will provide a basic understanding the history and appreciation of beer, wine, & spirits. In addition, the course will allow hands on experience preparing beverages, beer brewing, and cocktails (mixology). The goal will be to enhance the understanding of these products and how they can be implemented with food. In addition, national and local culinary trends will be discussed and several guest lecturers from metropolitan restaurants & bars will speak with students. Upon completion of the course, students will possess a better understanding and knowledge to experiment and explore with beer, wine, and spirits with traditional and new menu selections. Students must be 21 years of age or older to consume alcoholic beverages. (Prereq: Instructor approval) (BP/EP) 4 cr

CULA2175 Culinary Internship

This course allows the student to gain on-the-job experience in the Culinary 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. (Prereq: Instructor approval and completion of at least 75% of your degree or diploma) (BP/EP) 1_to_4 cr

Dental Assistant (DNTL)

DNTL1000 Dental Team/Practice Management

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. (Prereq: Admission into the Dental Assistant Program) (BP/EP) 2 cr

DNTL1121 Dental Science

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921) (BP/EP) 4 cr

DNTL1140 Dental Materials

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. (Prereq: Admission into the Dental Assistant Program) (BP/EP) 3 cr

DNTL1160 Preclinical Chairside Assisting

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. (Prereq: Admission into the Dental Assistant Program) (BP/EP) 3 cr

DNTL1180 Chairside Assisting I

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. (Prereq: Admission into the Dental Assistant Program) (BP/EP) 4 cr

DNTL1200 Dental Health

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. (Prereq: Successful completion of 1st semester courses) (BP/EP) 2 cr

DNTL1220 Chairside Assisting II

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. (Prereq: Successful completion of 1st semester courses) (BP/EP) 4 cr

DNTL1241 Dental Radiology

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. (Prereq: Admission into the Dental Assistant Program) (BP/EP) 4 cr

DNTL1261 Expanded Functions

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. (Prereq: Successful completion of 1st semester courses) (BP/EP) 7 cr

DNTL1305 Externship Seminar

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. (Prereq: Successful completion of 1st and 2nd semester courses. DNTL1321 and DNTL1325 must be taken concurrently with this course) (BP/EP) 1 cr

DNTL1321 Clinical Externship I

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. (Prereq: Successful completion of 1st and 2nd semester courses) (BP/EP) 4 cr

DNTL1325 Clinical Externship II

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. (Prereq: Successful completion of 1st and 2nd semester courses) (BP/EP) 4 cr

Economics (ECON)

ECON2200 Principles of Microeconomics

MnTC: 5 & 9

This course will focus on tools and techniques used by economists that impact decisions made by individuals and businesses/firms. Current microeconomic issues are reviewed and analyzed as well as alternate views being provided. (Prereq: Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required) (BP/EP) 3 cr

ECON2300 Principles of Macroeconomics

MnTC: 5 & 8

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921) (BP/EP) 3 cr

Electronics Technology (ELEC)

ELEC1000 DC Circuits

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. (Prereq: None) (BP) 4 cr

ELEC1050 AC Circuits

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. (Prereq: ELEC1000 or equivalent) (BP) 4 cr

ELEC1075 Careers in Manufacturing

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. (Prereq: None) (BP) 2 cr

ELEC1100 Complex AC Circuits

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. (Prereq: ELEC1050 or equivalent) (BP) 3 cr

ELEC1150 Diodes and Rectifiers

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. (Prereq: ELEC1100 or equivalent) (BP) 2 cr

ELEC1200 Soldering Skills

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. (Prereq: None) (BP) 1 cr

ELEC1250 Solid State Components and Circuits

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. (Prereq: ELEC1150 or equivalent) (BP) 5 cr

ELEC1300 Operational Amplifiers

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. (Prereq: ELEC1250 or equivalent) (BP) 2 cr

ELEC1400 Basic Troubleshooting

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. (Prereq: ELEC1250 or equivalent) (BP) 3 cr

ELEC1450 Basic Digital Logic

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. (Prereq: ELEC1250 or equivalent) (BP) 3 cr

ELEC2000 Advanced Digital Circuits I

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. (Prereq: ELEC1450 or equivalent) (BP) 4 cr

ELEC2020 Advanced Digital Circuits II

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. (Prereq: ELEC2000 or equivalent) (BP) 3 cr

ELEC2050 Advanced Troubleshooting

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. (Prereq: ELEC1400 or equivalent) (BP) 4 cr

ELEC2100 Motor and Motor Controllers

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. (Prereq: ELEC1250 and ELEC1300 or equivalent) (BP) 3 cr

ELEC2200 Microprocessors and Microcomputers I

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. (Prereq: ELEC2000 and ELEC2020 or equivalent) (BP) 4 cr

ELEC2220 Microprocessors and Microcomputers II

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. (Prereq: ELEC2200) (BP) 4 cr

ELEC2300 Troubleshooting Computers

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. (Prereq: ELEC1000 and ELEC1050 or equivalent) (BP) 3 cr

ELEC2400 Industrial Controls

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. (Prereq: ELEC1450, ELEC2000 and ELEC2020 or equivalent) (BP) 2 cr

ELEC2420 Telemetry

This course covers the fundamental concepts of signal interfacing and telemetry circuits in industrial situations. (Prereq: ELEC2400) (BP) 2 cr

ELEC2450 Regulated Power Supplies

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. (Prereq: ELEC1300 or equivalent) (BP) 2 cr

ELEC2475 Electronics Internship

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. (Prereq: Instructor approval and completion of at least 50% of your degree or diploma) (BP) 1_to_4 cr

Emergency Medical Services (EMSV)**EMSV1000 Introduction to EMS Systems**

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. (Prereq: None) (BP/EP) 1 cr

EMSV1020 CPR/First Aid

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. (Prereq: None) (BP/EP) 1 cr

EMSV1030 OSHA 10 First Aid/CPR

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. (Prereq: None) (BP/EP) 2 cr

EMSV1050 Emergency Medical Responder (First Responder)

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921) (BP/EP) 3 cr

EMSV1060 EMPACT

This is a course designed for the healthcare provider which covers adult medical emergencies, skills, and assessment. The student will use different assessment skills and learn how to access, treat, and package the patient. (Prereq: EMSV1100) (BP/EP) 1 cr

EMSV1070 Pediatric Education for Prehospital Providers

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. (Prereq: None) (BP/EP) 1 cr

EMSV1080 Documentation for Emergency Medical Services

This is a course that will help the Emergency Medical Services (EMS) provider understand and perform the skills needed to meet industry standards for documentation. Students will learn to use subjective and objective information along with abbreviations commonly used in EMS. Students will be able to complete a patient care report (PCR) to industry standards. (Prereq: EMSV1050) (BP/EP) 1 cr

EMSV1100 Emergency Medical Technician - Basic

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 \$80 fee required), you are then eligible to take the NREMT written exam (additional \$70 fee required). State and National certifications will be issued upon passing these tests. Current EMT certification is a prerequisite for most paramedic programs. (Prereq: EMSV1050 and Qualifying score on computer literacy assessment test OR CPLT1100, 18 years old, and required vaccinations) (BP/EP) 6 cr

EMSV1105 Ambulance Operations

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). (Prereq: EMSV1100 or current Certified EMT-B and EMSV1130) (BP/EP) 2 cr

EMSV1110 Lifting Techniques for Health Professionals

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. (Prereq: Be in good health and have no lifting restrictions) (BP/EP) 1 cr

EMSV1115 Passenger Assistant Technician

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. (Prereq: None) (BP/EP) 1 cr

EMSV1120 Ambulance Clinical

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. (Prereq: EMSV1100 and current State Certified EMT-B) (BP/EP) 2 cr

EMSV1130 Emergency Vehicle Driving Skills

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. (Prereq: 18 years old, and valid driver's license with good driving record) (BP/EP) 1 cr

EMSV1136 Understanding EKGs

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. (Prereq: None) (BP/EP) 2 cr

EMSV1140 CPR Instructor

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. (Prereq: Current CPR for Health Care Provider Certificate or instructor approval) (BP/EP) 1 cr

EMSV1146 Medical Terminology for EMS/ER Personnel

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921) (BP/EP) 3 cr

EMSV1150 First Responder

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. (Prereq: None) (BP/EP) 3 cr

EMSV1155 Phlebotomy Techniques

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. (Prereq: None) (EP) 3 cr

EMSV1165 EMT-Basic + CPR

This course uses the new guidelines established by the US DOT and meets the requirements established by the Minnesota EMS Regulatory Board (MN EMSRB). Upon successful completion of the course and National Registry of EMT Practical Skills exam (additional \$80.00), you are eligible to take the NREMT written exam (additional \$70 fee required). State and National certifications will be

issued upon passing these tests. Current EMT certification is a prerequisite for most paramedic programs. (Prereq: Qualifying score on reading assessment test OR ENGL0921 or FRPT1100, 18 years old, required vaccinations, background studies will be required) (EP) 7 cr

EMSV1170 ER Procedures and Clinical

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. (Prereq: None) (EP) 3 cr

EMSV1180 Principles of Basic Life Support for Healthcare Providers

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. (Prereq: EMSV1020 OR Current CPR certification OR taken currently with EMSV1100) (BP/EP) 1 cr

EMSV1190 Intravenous (IV) Access

This course is designed to teach the principals of Intravenous Access, along with assessing the patient who will need intravenous access and fluid resuscitation. (Prereq: None) (EP) 1 cr

EMSV1195 International Trauma Life Support (ITLS)

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. (Prereq: None) (EP) 1 cr

EMSV1200 Anatomy and Physiology for Emergency Medical Services (EMS)

This course provides a basic study of the structure and function of the human body. Topics include a basic study

of the body systems, as well as an introduction to homeostasis, cells, tissues, nutrition, acid-base balance, and electrolytes. Upon completion, students should be able to demonstrate a basic understanding of the fundamental principles of anatomy and physiology related to EMS and how that knowledge can be applied to EMS care. (Prereq: EMSV1105 or EMSV1120 AND Instructor Approval) (EP) 3 cr

EMSV1205 Introduction to Emergency Medical Services (EMS) Systems II

This course curriculum explains the difference between the various levels of the Emergency Medical Technicians and the responsibilities that accompany each level of training. The student will learn such topics as medical/legal issues, communications, stress, system structure, infection control, patient assessment, lifting, and medical terminology. (Prereq: EMSV1105 or EMSV1120 AND Instructor Approval) (EP) 3 cr

EMSV1210 Pharmacology for Emergency Medical Services (EMS)

The intent of this course is to introduce the student to basic pharmacological concepts, principles of drug safety and basic drug categories. Legal aspects of drug administration, drug standards, and use of reference material will be included. The student will learn pharmacology topics that will be used in an advanced EMS setting. (Prereq: EMSV1105 or EMSV1120 AND Instructor Approval) (EP) 3 cr

EMSV1215 Pathophysiology for Emergency Medical Services (EMS)

The course is an introduction to the basic concepts of pathophysiology. The student will examine the phenomena that produce alterations in human physiologic function and the resulting human response. Upon completion of the course, students will understand pathophysiological changes, including how pathological processes are manifested, progress in the body, and primary and secondary effects. (Prereq: EMSV1105 or EMSV1120 AND Instructor Approval) (EP) 5 cr

EMSV1220 Cardiac Care

The course will prepare the Emergency Medical Provider to assess and manage those cardiac emergencies that result from coronary atherosclerosis, along with a number of conditions involving pathology of peripheral circulation. The interpretation of cardiac dysrhythmia receives primary emphasis in this course. Advanced Life Support Certification (ACLS) may be included. (Prereq: EMSV1105 or EMSV1120 AND Instructor Approval) (EP) 4 cr

EMSV1225 Advanced Cardiac Life Support (ACLS) for EMT

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. (Prereq: Healthcare Provider Basic Life Support) (EP) 1 cr

EMSV1230 Trauma Care

This course deals with the many aspects of trauma including: kinematics, evaluation, management, packaging and transport. The course will utilize learner techniques to allow the student to utilize the assessment findings to formulate a field impression and implement the treatment plan for the trauma patient. This class will include the International Trauma Life Support (ITLS) certification. (Prereq: EMSV1105 or EMSV1120 AND Instructor Approval) (EP) 3 cr

EMSV1235 EMS Skills

Emergency Medical Services (EMS) skills focuses on the Basic and Advanced Life Support skills. These include: patient assessment, airway control with adjuncts, IV therapy, suctioning, communication skills, Automatic External Defibrillator (AED) intubation, medication administration and other invasive techniques. The students may use high fidelity simulation throughout the course to assist them in mastering these skills. (Prereq: EMSV1105 or EMSV1120 AND Instructor Approval) (EP) 5 cr

EMSV1260 First Responder Refresher

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. (Prereq: Minnesota First Responder who is current in their certification) (EP) 1 cr

EMSV2001 Role Advocacy and Outreach

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. (Prereq: 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) (BP/EP) 3 cr

EMSV2005 Community Assessment

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. (Prereq: Instructor approval and EMSV2001) (BP/EP) 2 cr

EMSV2011 Care and Prevention Development Strategies

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. (Prereq: Instructor approval and EMSV2001) (BP/EP) 4 cr

EMSV2020 Community Paramedic Clinicals

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 provide both advice and care. The student's placement in the clinical is based on qualifications and past training and experience. (Prereq: Instructor approval and EMSV2011) (BP/EP) 5 cr

Engineering CAD Technology (ENGC)

ENGC1011 Engineering Drawing

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. (Prereq: One of the following: ENGC1100, ENGC1160, ENGC1250, or ENGC2100) (BP/EP) 3 cr

ENGC1021 Working Drawings

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. (Prereq: One of the following: ENGC1100, ENGC1160, ENGC1250, or ENGC2100) (BP/EP) 3 cr

ENGC1041 Geometric Dimensioning & Tolerancing

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. (Prereq: MACH1056 or ENGC1011 or instructor approval) (BP/EP) 3 cr

ENGC1050 Additive Manufacturing

This course is an introduction to additive manufacturing. Students will explore different types of additive manufacturing processes, create prototypes using fused deposition modeling (FDM), apply finishing techniques to models, 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. (Prereq: None) (BP/EP) 3 cr

ENGC1075 Careers in Manufacturing

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. (Prereq: None) (BP/EP) 2 cr

ENGC1100 AutoCAD

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. (Prereq: None) (BP/EP) 4 cr

ENGC1160 Inventor

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. (Prereq: None) (BP/EP) 4 cr

ENGC1201 Industrial CAD Project

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. (Prereq: MACH1056 or ENGC1011 and one of the following: ENGC1100, ENGC1160, ENGC1250, or ENGC2100) (BP/EP) 3 cr

ENGC1250 SolidWorks I

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. Rapid prototyping may be presented in this course. (Prereq: None) (BP/EP) 4 cr

ENGC1255 SolidWorks II

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. (Prereq: ENGC1250) (BP/EP) 4 cr

ENGC1260 SolidWorks Certification Review

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. (Prereq: Concurrent enrollment in or completion of ENGC1255 or instructor approval) (BP/EP) 1 cr

ENGC1265 Certified SolidWorks Associate Exam

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. (Prereq: ENGC1260) (BP/EP) 0 cr

ENGC2000 Mechanical Design

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 get experience selecting these components from vendor catalogs and solving design/layout drawing problems. (Prereq: ENGC1021 and

one or more of the following: ENGC2100, ENGC1250, or ENGC1160) (BP/EP) 4 cr

ENGC2011 Special Fields of Drafting

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. (Prereq: MACH1056 or ENGC 1011 and one of the following: ENGC1100, ENGC1160, ENGC1250, or ENGC2100) (BP/EP) 3 cr

ENGC2050 AutoCAD Upgrade Training

This course covers only the changes, enhancements and additions that have occurred with the latest release of the AutoCAD software package. (Prereq: None) (BP/EP) 1 cr

ENGC2075 Engineering Design Project

This course will introduce the student to the design and prototyping process. The students will create a design using a three-dimensional CAD station and rapid prototype the design using a three-dimensional printer. Through the use of a variety of manufacturing machines and quality assurance equipment the student will produce a final product to meet the original design concept. (Prereq: MACH1056 or ENGC1011 and one of the following: ENGC1100, ENGC1160, ENGC1250, ENGC2100, or an approved three-dimensional CAD application) (BP/EP) 3 cr

ENGC2100 Basic Creo Parametric (Pro/ENGINEER)

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. Rapid prototyping may be introduced in the course as well. (Prereq: None) (BP/EP) 4 cr

ENGC2110 Advanced Creo Parametric (Pro/ENGINEER)

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 rounds, drafts, and advanced patterns. Feature management topics including family tables, user-defined features, Pro/Program, layouts, and simplified representations will also be covered. Assembly topics covered include repeat and replace components, component interfaces and flexibility, interchange assemblies and top down assembly design. Surface modeling will be used to solve problems that basic features can not, and sheet metal will be introduced. Rapid prototyping may be discussed as well. (Prereq:

ENGC2100 or equivalent or three months work experience) (BP/EP) 4 cr

ENGC2200 Engineering CAD Technology Internship

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. (Prereq: Instructor approval and prior completion of 50 percent of the Engineering CAD Technology program and an internship position in a host company) (BP/EP) 3_to_4 cr

English (ENGL)

ENGL0901 Reading Techniques

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. (Prereq: Qualifying score on reading assessment test OR ESOL0821, ESOL0822 and ESOL0823. Basic computer literacy skills required) (BP/EP) 3 cr

ENGL0906 English Skills I

This course is designed for students who need to improve their grammar skills to be more effective writers. Students will study basic grammar, its usage, and end punctuation. (Prereq: Qualifying score on writing assessment test OR ESOL0831. Basic computer literacy skills required) (BP/EP) 3 cr

ENGL0921 Applied Reading Techniques

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901 with a grade of C or better. Basic computer literacy skills required) (BP/EP) 3 cr

ENGL0926 English Skills II

This course is designed for students who need to improve their grammar skills to be more effective writers. This course builds on the skills acquired in ENGL0906 and involves applying basic grammar, usage, and punctuation skills to writing basic sentence patterns. (Prereq: Qualifying score on writing assessment test OR completion of ENGL0906 with a grade of C or better. Basic computer literacy skills required) (BP/EP) 3 cr

ENGL0930 Fundamentals of Writing

Writing is an essential element for successful communication in work and school settings. This course is designed to introduce students to the kinds of writing they will need to use 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. (Prereq: 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) (BP/EP) 4 cr

ENGL0931 Basic Grammar Skills I

This course will help students increase grammar skills needed for success in college and the workplace. This course is required for students who score below 62 on the Accuplacer Placement Exam and register for ENGL0930. In addition, students who have scored above 62 on the Accuplacer and want to update their English Grammar Skills, students who want to prepare for the Accuplacer Placement Exam, or students who are recommended by an Instructor or Advisor may also take this course. Through a pre-assessment, a specialized curriculum will be developed for each of these students. (Prereq: Co-requisites of ENGL0930) (BP/EP) 1 cr

ENGL0932 Basic Grammar Skills II

This course will help students increase grammar skills needed for success in college and the workplace. The course is for students whose pre-assessment has indicated the need for additional instruction and practice beyond ENGL0931. (Prereq: Co-requisites of ENGL0930) (BP/EP) 1 cr

ENGL0933 Basic Grammar Skills III

This course will help students increase grammar skills needed for success in college and the workplace. The course is for students whose pre-assessment has indicated the need for additional instruction and practice beyond ENGL0931 and ENGL0932. (Prereq: Co-requisites of ENGL0930) (BP/EP) 1 cr

ENGL0935 Fundamentals of Writing Plus

Writing is an essential element for successful communication in work and school settings. This course is designed to introduce students to the kinds of writing they will need to use 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. This course will move at a slower pace than ENGL 930, providing additional instructional time to focus on sentence-level skills, including but not limited to pronouns, prepositions, punctuation, articles, verb forms, and sentence structure. (Prereq: 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) (BP/EP) 6 cr

ENGL1010 Business English

The majority of the time in this course will be spent on the spelling, grammar, punctuation, proofreading, and editing skills needed for success in the work world. Students will then apply these skills to produce a few short documents using correct English with appropriate formatting. (Prereq: Qualifying score on writing assessment test OR ENGL0930 or ESOL0841) (BP/EP) 3 cr

ENGL1021 Essay Fundamentals

This is a pre-college level writing course intended to develop essay writing skills. Students will learn to compose essays using several development strategies. They will also be introduced to basic citation styles and develop critical thinking and reading skills. (Prereq: Qualifying score on writing assessment test OR ENGL0930 with a grade of C or better. Basic computer literacy skills required) (BP/EP) 3 cr

ENGL1026 Writing for Careers

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. (Prereq: Qualifying score on writing assessment test OR ENGL0930. Basic computer literacy skills required) (BP/EP) 3 cr

ENGL1050 Writing for Health Care

This course will help students to develop an understanding of professional writing skills as well as a familiarity with academic writing. This will help them develop practical writing skills for their work in the health care field and in the college classroom. Process writing and real-time writing will both be emphasized. (Prereq: Qualifying score on writing assessment test OR ENGL1021 or ENGL1026 and Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required) (BP/EP) 3 cr

ENGL1500 Special Topics in English

This course provides a forum for the innovation of new curriculum or of delivery methods. The specific course description, prerequisites, and course goals are on file with the Registrar. And the number of credits and contact hours varies depending on what is required to meet the specific goals of the course. (Prereq: Vary depending on the Special Topic) (BP/EP) 1_to_4 cr

ENGL2001 Workplace Correspondence**MnTC: 1**

This course will provide instruction in selecting, organizing, and writing effective workplace correspondence. The course will cover a variety of methods of correspondence commonly used in the workplace including, but not limited to, letters, memos, e-mail, instant messaging, text messaging, and wikis. Areas of study will include selecting

the appropriate medium for the message and using common guidelines for different mediums. This course is designed primarily for working students who want to improve the writing skills they are already using in the workplace. (Prereq: Qualifying score on writing assessment test OR ENGL1021 or ENGL1026 and Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required) (BP/EP) 2 cr

ENGL2050 Short Form Composition and Reporting
MnTC: 1

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. (Prereq: Qualifying score on writing assessment test OR ENGL1021 or ENGL1026 and Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required) (BP/EP) 3 cr

ENGL2121 Writing and Research
MnTC: 1

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. (Prereq: Qualifying score on writing assessment test OR ENGL1021 or ENGL1026 and Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required) (BP/EP) 4 cr

ENGL2125 Technical Writing
MnTC: 1

This course will enhance students' abilities to write effective technical reports. Emphasis will be on effective writing styles, audience analysis, ethics, intercultural issues, documentation of sources, designing visual aides, and practicing outlining techniques to create instructions and process reports. Students also will plan, organize, and complete a persuasive proposal. (Prereq: Qualifying score on writing assessment test OR ENGL1021 or ENGL1026 and Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required) (BP/EP) 3 cr

ENGL2130 Introduction to Creative Writing
MnTC: 1 & 6

This introductory course will provide a broad overview of creative writing. Emphasis will be on short stories, nonfiction, memoir, playwriting, and essays. Students will study the work of published authors, complete short writing assignments, and complete a substantial creative

piece in the genre of their choice. (Prereq: Qualifying score on writing assessment test OR ENGL1021 or ENGL1026 and Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required) (BP/EP) 3 cr

ENGL2135 Special Topics: English Composition
Transfer Curriculum
MnTC: 1

This class is meant for students who have already taken a 3 semester credit freshman level composition class at another institution. This course assumes the student has already achieved an understanding of writing basics: intro, body, conclusion; organization; outlining; the thesis; etc. Therefore, this class will focus on the research paper; specifically, an argument paper. This paper will be 6-10 pages in length, and will give students the opportunity to demonstrate their writing proficiency, their understanding of research and citation, and their critical thinking and reading skills. (Prereq: Accredited 3 semester credit, freshman level composition class or its equivalent. This class is only for students who have taken and successfully completed a 3 semester credit composition course. Basic computer literacy skills required) (BP/EP) 1 cr

ENGL2140 Topics in Literature: Trades and Industry
MnTC: 6

This course explores, through literature, the issues relevant to various professions. Topics will be varied and selected by the instructor and may change every term. Examples of topics include but are not limited to: Literature of the Working Class, Garden Literature, Literature of Health Sciences, Literature in Graphic and Visual Arts, Transportation Literature, Literature of the Culinary Arts. Students will engage in understanding multiple viewpoints; and reflect on style, voice, and other elements of critical reading. (Prereq: Qualifying score on writing assessment test OR ENGL1021 or ENGL1026 and Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required) (BP/EP) 3 cr

ENGL2200 Introduction to Cinema
MnTC: 6

This is a writing intensive course where students study and analyze the basic elements of a critical understanding of film: story elements; visual design; cinematography and color; editing and special effects; functions of sound and music; styles of acting and directing; and functions of genre. (Prereq: Qualifying score on writing assessment test OR ENGL1021 or ENGL1026 and Qualifying score on reading assessment test OR ENGL0921) (BP/EP) 3 cr

Environmental Health and Safety (ENHS)

ENHS1000 Introduction to Environmental Health and Safety

The objective of this course is to develop the students ability to minimize health risk by implementing proper routine work practices and by responding to releases of

hazardous substances. The individual's actions will result in the protection of human health, property and the environment. This course will provide the student with information required for compliance with hazardous materials handling regulations and successful completion of this course will meet OSHA's general requirements for 'First Responder Awareness Level' training. (Prereq: None) (BP/EP) 1 cr

ENHS1005 Introduction to Industrial Processes

This course introduces students to industrial, manufacturing, construction, and business processes and organization. The course will focus on contemporary designs of the work place and the role that the safety function plays. (Prereq: None) (EP) 3 cr

ENHS1010 Introduction to Safety and Health

This course introduces students to the safety and health field. Topics include general safety and health concepts, terminology, overview of historical developments, program concepts, workers compensation basics, hazard recognition, and safety assessment process. (Prereq: None) (EP) 3 cr

ENHS1015 Fire Protection

This is an introductory course in fire protection. Topics include chemistry of fire, behavior of fire, fire hazards, fire suppression systems. (Prereq: None) (EP) 3 cr

ENHS1020 Hazard Recognition and Control

This course will address hazard recognition in both construction and industrial environments. Common engineering practices and procedures to remedy these hazards will be examined. New technology will be evaluated relative to safety hazard control. Students will be exposed to real life situations and required to formulate solutions to protect workers and resources. (Prereq: None) (EP) 3 cr

ENHS1025 Industrial Hygiene

This course is devoted to the principles of industrial hygiene and toxicology and includes the study of the theory and practices of industrial hygiene and the use of basic industrial hygiene equipment and instrumentation equipment. Topics include recognition, evaluation and control of hazards related to toxic chemicals, ionizing and non-ionizing radiation, noise, biological substances, abnormal temperatures and pressures, and air-borne contaminants. (Prereq: None) (EP) 3 cr

ENHS1030 Ergonomics

This course covers a range of relationships between people and machines. Of primary significance for safety are the design of the items to minimize injuries and errors that lead to accidents and injuries. (Prereq: None) (EP) 3 cr

ENHS1035 Safety and Health Program Management

This course develops fundamental knowledge about safety policy, procedures, practices, and administrative controls for safety. Topics include: company safety policies and procedures, program administration, record keeping, training planning, delivery and management, and evaluation of program effectiveness. (Prereq: None) (EP) 3 cr

ENHS1040 Safety Laws, Regulations, and Standards

This course covers the process, sources and applications for minimum safety requirements established by laws, regulations, standards and codes. Included are: Federal, State, and Local laws, agencies, regulations, codes, and voluntary standards. (Prereq: ENHS1020) (EP) 3 cr

ENHS1045 Modern Theories of Safety Programming

Students in this course will examine Behavior Based Safety Practices and other newer theories utilized in safety programming. Students will be required to develop a model safety program. (Prereq: ENHS1010 and ENHS1035) (BP) 3 cr

ENHS1050 Internship

This course is designed to provide the student with a field experience to observe how safety procedures and/or policies are implemented in the business, industry, and/or construction environments. Students may apply for life experience credit with three or more years of professional level safety experience. (Prereq: ENHS1005, ENHS1010, ENHS1020, ENHS1040, and ENHS1045) (EP) 3 cr

ENHS1110 Chemistry of Hazardous Materials

This course will provide the student with examples of chemical and physical properties. Treatment technology for the various classes of hazardous materials and selected examples of chemical incompatibilities common to hazardous materials will be discussed. (Prereq: None) (EP) 3 cr

ENHS1120 Hazardous Materials Management and Handling

This course is designed to provide the student with information and skills required for the safe performance of daily work activities involving hazardous materials. The emphasis of this course is safe work practices. (Prereq: None) (EP) 1 cr

ENHS1130 Personal Protective Equipment

This course is designed to provide the student with information required to select, use, maintain and safely don and doff personal protective equipment. Topics covered include equipment used for the protection of the respiratory system, head, face, hands, feet, and the body. Students will be able to determine the levels of protection based on EPA guidelines after completion of the class. (Prereq: None) (EP) 2 cr

ENHS1140 Incident Management for Business and Industry

This course is designed to provide the student with the training and information necessary to safely respond and manage emergencies. Topics covered include incident command, pre-planning, communications, and safety. (Prereq: None) (EP) 1 cr

English for Speakers of Other Languages (ESOL)**ESOL0821 Grammar/Writing II**

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. (Prereq: Qualifying score on ESL reading assessment test) (BP/EP) 5 cr

ESOL0822 Reading II

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. (Prereq: Qualifying score on ESL reading assessment test) (BP/EP) 4 cr

ESOL0823 College Communication Skills II

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. (Prereq: Qualifying score on ESL reading assessment test) (BP/EP) 3 cr

ESOL0831 Grammar/Writing III

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. (Prereq: Qualifying score on ESL reading assessment test OR ESOL0821 and ESOL0822 and ESOL0823 with a grade of C or better) (BP/EP) 5 cr

ESOL0832 Reading III

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. (Prereq: Qualifying score on ESL reading assessment test OR ESOL0821 and ESOL0822 and ESOL0823 with a grade of C or better) (BP/EP) 4 cr

ESOL0833 College Communication Skills III

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. (Prereq: Qualifying score on ESL reading assessment test OR ESOL0821 and ESOL0822 and ESOL0823 with a grade of C or better) (BP/EP) 3 cr

ESOL0841 Grammar/Writing IV

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. (Prereq: Qualifying score on ESL reading assessment test OR ESOL0831 and ESOL0832 and ESOL0833 with a grade of C or better) (BP/EP) 5 cr

ESOL0842 Reading IV

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. (Prereq: Qualifying score on ESL reading assessment test OR ESOL0831 and ESOL0832 and ESOL0833 with a grade of C or better) (BP/EP) 4 cr

ESOL0843 College Communication Skills IV

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. (Prereq: Qualifying score on ESL reading assessment test OR ESOL0831 and ESOL0832 and ESOL0833 with a grade of C or better) (BP/EP) 3 cr

ESOL0850 ESOL Skills Workshop

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. (Prereq: Instructor approval) (BP/EP) 4 cr

Ford ASSET Program (FDAS & FMLR)**FDAS1250 Ford Gasoline Engine Performance I**

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. (Prereq: None) (BP) 2 cr

FDAS1260 Ford Gasoline Engine Performance II

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. (Prereq: FDAS1250) (BP) 3 cr

FDAS1420 Ford Driveline

This course will detail the fundamentals, operation and repair of clutches, differentials, transfer cases, manual transmissions and transaxles used on Ford vehicles. (Prereq: None) (BP) 3 cr

FDAS1500 Engine Repair

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. (Prereq: None) (BP) 3 cr

FDAS1550 Engine Operation

This will consist of basic engine theory of operation, types of engines, and preventative maintenance service used in Ford vehicles. (Prereq: None) (BP) 2 cr

FDAS1611 Noise Vibration Harshness (NVH)

This course will provide the student with the skills and knowledge to pinpoint a NVH concern on a Ford motor company vehicle. (Prereq: None) (BP) 3 cr

FDAS1701 Ford Climate Control

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. (Prereq: None) (BP) 3 cr

FDAS1750 Ford Fuel Systems

This course will detail the fundamentals, operation and repair of Ford fuel and air inlet controls. (Prereq: None) (BP) 2 cr

FDAS2030 Ford Dealership Internship III

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. (Prereq: Successful completion of FDAS1250, FDAS1400, FDAS1410, and FDAS1701 or equivalent) (BP) 6 cr

FDAS2040 Ford Dealership Internship IV

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. (Prereq: Successful completion of FDAS1260, FDAS2230, and FDAS2240 or equivalent) (BP) 6 cr

FDAS2055 Ford Dealership Summer Internship I

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. (Prereq: None) (BP) 4 cr

FDAS2060 Ford Dealership Summer Internship II

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. (Prereq: None) (BP) 4 cr

FDAS2230 Ford Car Transmissions

This course will detail the fundamentals, operation and repair of automatic transmissions used on current Ford passenger cars. (Prereq: None) (BP) 3 cr

FDAS2240 Ford Truck Transmissions

This course will detail the fundamentals, operation and repair of the automatic transmissions used on current Ford light trucks. (Prereq: None) (BP) 3 cr

FDAS2502 Ford Advanced Engine Performance

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. (Prereq: None) (BP) 3 cr

FDAS2552 Ford Diesel

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. (Prereq: None) (BP) 4 cr

FDAS2650 Ford New Technology

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. (Prereq: None) (BP) 2 cr

Fluid Power Engineering Technology (FLPW)**FLPW1075 Careers in Manufacturing**

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. (Prereq: None) (BP/EP) 2 cr

FLPW1101 Fluid Power Technology I

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. (Prereq: None) (BP/EP) 3 cr

FLPW1106 Fluid Power Technology II

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. (Prereq: FLPW1101 or concurrent) (BP/EP) 4 cr

FLPW1150 Pneumatic Components

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. (Prereq: None) (BP/EP) 4 cr

FLPW1181 Pumps, Actuators, and Conductors

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. (Prereq: FLPW1101) (BP/EP) 4 cr

FLPW1191 Hydraulic Components

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. (Prereq: FLPW1101) (BP/EP) 3 cr

FLPW1231 Industrial Electricity I

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. (Prereq: None) (BP/EP) 3 cr

FLPW1236 Industrial Electricity II

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. (Prereq: FLPW1231) (BP/EP) 3 cr

FLPW1320 Hydraulic Circuits

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. (Prereq: FLPW1101) (BP/EP) 2 cr

FLPW1340 Pneumatic Circuits and Air Logic

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. (Prereq: FLPW1101 or concurrent and FLPW1150) (BP/EP) 4 cr

FLPW1400 Engineering Drawings and Schematics

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. (Prereq: None) (BP/EP) 4 cr

FLPW1500 Fluid Power Process Lab

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. (Prereq: Instructor approval) (BP/EP) 1_to_4 cr

FLPW2000 Programmable Logic Controllers

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. (Prereq: None) (BP/EP) 3 cr

FLPW2020 Advanced Programmable Logic Controllers

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. (Prereq: FLPW2000 or equivalent or instructor approval) (BP) 3 cr

FLPW2112 Instrumentation of Fluid Power Systems

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.

(Prereq: FLPW1231 should be taken prior to or concurrent with this course) (BP/EP) 3 cr

FLPW2180 Circuit Design

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. (Prereq: FLPW1106) (BP/EP) 3 cr

FLPW2191 Industrial Circuit Design

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. (Prereq: FLPW1106 and FLPW1231) (BP/EP) 3 cr

FLPW2250 Proportional and Servo Controls (Robotics Application)

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. (Prereq: FLPW1106) (BP/EP) 3 cr

FLPW2301 Mobile Circuit Design

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. (Prereq: FLPW1320) (BP/EP) 3 cr

FLPW2321 System Engineering Portfolio

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. (Prereq: FLPW1231, FLPW1340, FLPW2112, FLPW2180, FLPW2191, and FLPW2301 or instructor approval) (BP/EP) 3 cr

FLPW2350 Hydraulic Specialist Certification Review

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. (Prereq: None) (BP/EP) 2 cr

FLPW2360 Pneumatic Specialist Certification Review

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. (Prereq: None) (BP/EP) 2 cr

FLPW2375 Fluid Power Internship

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. (Prereq: Instructor approval and completion of at least 50% of your degree or diploma) (BP/EP) 1_to_4 cr

FLPW2450 Hydraulic Specialist Certification Exam

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. (Prereq: Instructor approval) (BP/EP) 0 cr

FLPW2460 Pneumatic Specialist Certification Exam

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. (Prereq: Instructor approval) (BP/EP) 0 cr

Ford ASSET Program (FDAS & FMLR)

FMLR1200 Ford Electrical Systems

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. (Prereq: Instructor approval) (BP) 3 cr

FMLR1301 Related Mechanical Skills

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. (Prereq: Instructor approval) (BP) 2 cr

FMLR1601 Ford Suspension and Alignment

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. (Prereq: None) (BP) 3 cr

FMLR1650 Ford Steering and Balance

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. (Prereq: Instructor approval) (BP) 2 cr

FMLR1810 Ford Dealership Internship I

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. (Prereq: Successful completion of FDAS1200, FDAS1300, FDAS1650, and FDAS2600 or equivalent) (BP) 6 cr

FMLR1820 Ford Dealership Internship II

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. (Prereq: Successful completion of FDAS1500, FDAS1550, FDAS1600, and FDAS1750 or equivalent) (BP) 6 cr

FMLR2600 Ford Braking Systems

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. (Prereq: Instructor approval) (BP) 3 cr

Fire Protection (FRPT)**FRPT1050 Fire Prevention**

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. (Prereq: None) (EP) 2 cr

FRPT1055 Principles of Fire Service Safety and Survival

This course introduces the basic principles and history related to the national firefighter life safety initiatives, focusing on the need for cultural and behavior change throughout the emergency services. (Prereq: None) (EP) 2 cr

FRPT1060 Fire Department Occupational Health & Safety

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. (Prereq: None) (EP) 2 cr

FRPT1100 Fire Fighter I

This course is designed to teach the student the necessary skills to perform the base duties of fire fighting 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. (Prereq: None) (BP/EP) 5 cr

FRPT1105 Fire Fighter II

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. (Prereq: Instructor approval) (BP/EP) 2 cr

FRPT1110 Fire Instructor I

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. (Prereq: None) (BP/EP) 2 cr

FRPT1120 Fire Officer I

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. (Prereq: None) (BP/EP) 2 cr

FRPT1125 Fire Investigation I

This course is designed to teach the student the basic skills needed for fire scene investigations. (Prereq: None) (BP/EP) 2 cr

FRPT1130 Fire Inspector I

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. (Prereq: None) (BP/EP) 2 cr

FRPT1136 Principles of Emergency Services

This course is designed to introduce the student to the systems approach to fire protection by presenting the system components of modern fire department responsibility, including suppression, prevention, public education, emergency medical service, hazardous materials response and urban search and rescue. Other concepts emphasized are incident effectiveness, customer service, physical fitness and training, and fire prevention. (Prereq: None) (BP/EP) 2 cr

FRPT1155 Fire Protection Systems

This course will teach the student how to review built-in fire protection system design. The student will learn about portable extinguishers, fixed special agent systems, water supply and sprinkler systems. (Prereq: None) (BP/EP) 2 cr

FRPT1161 Building Construction for the Fire Service

This course is designed to teach the student the principles used in constructing various types of buildings. The overall goal of this course is to provide knowledge about the classifications system of buildings, the importance of fire resistance for structural support elements, and the risks associated with performing fire suppression activities inside and around buildings involved with fire. (Prereq: None) (BP/EP) 3 cr

FRPT1165 Apparatus Operator

This course is designed to provide knowledge of pumping apparatus design. The student will learn about the mechanical workings of fire pumps and the accessories required to use the pumps. It will introduce the student to apparatus maintenance and necessary record keeping. The student will also develop attitudes and skills necessary for safe driving and operation of a pumper. This course will introduce the student to the hydraulics used on the fire ground. This course follows the NFPA 1002 Standard for apparatus operators. (Prereq: FRPT1100) (BP/EP) 3 cr

FRPT1170 Fire Behavior and Combustion

This course explores the theories and fundamentals of how and why fires start, spread, and are controlled. (Prereq: None) (EP) 2 cr

FRPT1176 Hazardous Materials First Responder Operational

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. (Prereq: FRPT1100) (BP/EP) 2 cr

FRPT1240 Emergency Response Operations

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. (Prereq: FRPT1100, FRPT1105 or Instructor approval) (EP) 1 cr

FRPT2105 Fire Instructor II

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. (Prereq: FRPT1110) (EP) 2 cr

FRPT2110 Strategy and Tactics

This course is designed to teach the student the components of the Command System and how it relates to controlling a fire scene. The student will learn standard operating procedures and how they relate to functions of command. (Prereq: None) (EP) 2 cr

FRPT2115 Fire Officer II

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. (Prereq: FRPT1110 and FRPT1120) (EP) 2 cr

FRPT2120 Fire Investigation II

This course is designed to teach the student the basic skills needed for fire investigations. The student will learn basic insurance concerns, photography, use of sketching devices, investigative techniques, and characteristics of wildland fires, vehicle fires and fatal fires. The student will learn about explosives, incendiary, legal aspects, interviews, field notes and report writing. (Prereq: FRPT1125 or instructor approval) (EP) 2 cr

FRPT2125 Fire Inspector II

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. (Prereq: FRPT1130 or instructor approval) (EP) 2 cr

FRPT2130 Fire Officer III

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. (Prereq: FRPT2115 or instructor approval) (BP/EP) 2 cr

FRPT2140 Personnel Management for Fire Department Services

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. (Prereq: FRPT2115 or instructor approval) (EP) 3 cr

Health Science (Broad Field) (HLTH)

HLTH1000 Introduction to Health Careers

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921) (BP/EP) 3 cr

HLTH1010 Anatomy and Physiology

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921 and HLTH1000) (EP) 4 cr

HLTH1020 Disease Conditions

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. (Prereq: HLTH1010 and MAST1010 or BIOL2115 and MAST1010) (EP) 3 cr

HLTH2001 Nutrition and Health

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921 and Qualifying score on the computer literacy assessment test OR CPLT1100 or CPLT1200) (BP/EP) 2 cr

Health Unit Coordinator (HLUC)

HLUC1002 Health Unit Coordinator Fundamentals

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.

(Prereq: Qualifying score on reading assessment test OR ENGL0921) (BP/EP) 4 cr

HLUC1020 Medical Terminology

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921) (BP) 2 cr

HLUC1061 Diagnostic and Therapeutic Procedures

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. (Prereq: Successful completion in HLUC1002 and HLUC1020) (BP/EP) 3 cr

HLUC1101 Processing Physician's Orders

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. (Prereq: Successful completion in HLUC1002, HLUC1020, and HLUC1061) (BP) 2 cr

HLUC1200 Health Unit Coordinator Internship

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. (Prereq: Successful completion of the Health Unit Coordinator courses and instructor approval) (BP) 3 cr

Heating, Ventilation and Air Conditioning (HVAC)

HVAC1000 Electrical Circuits

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. (Prereq: None) (BP/EP) 3 cr

HVAC1005 OSHA 30-Hour Construction Safety Training

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 students 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. (Prereq: None) (BP/EP) 2 cr

HVAC1010 1PH Motors and Auxiliary Controls

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. (Prereq: HVAC1000) (BP/EP) 2 cr

HVAC1015 Residential Heat Load Calculation

This course will explore the factors that influence the size and performance needs of residential heating and cooling equipment. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (BP/EP) 1 cr

HVAC1020 Tube and Pipe Fabrication

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (BP/EP) 2 cr

HVAC1025 Mini-Split Air Conditioners

This course explores the installation and service concerns for residential Mini – Split Air Conditioners. (Prereq: HVAC1040 or Industry Experience) (BP/EP) 1 cr

HVAC1030 Sheet Metal

This course will introduce the skills required to assemble duct work for air distribution in heating and air conditioning systems. (Prereq: HVAC1000 and HVAC1020) (BP/EP) 2 cr

HVAC1035 National Electrical Outcome Assessment

This HVAC Excellence Electrical examination is given by Hennepin Technical College and is a nationally recognized student outcome assessment. (Prereq: HVAC1000, HVAC1010, and HVAC1110) (BP/EP) 0 cr

HVAC1040 Basic Refrigeration

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. (Prereq: HVAC1000 and HVAC1020) (BP/EP) 4 cr

HVAC1045 National Residential Air Conditioning Assessment

This HVAC Excellence Residential Air Conditioning examination is given by Hennepin Technical College and is a nationally recognized student outcome assessment. (Prereq: HVAC1140) (BP/EP) 0 cr

HVAC1050 Refrigerant Transition and Recovery

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. (Prereq: An understanding of a Refrigeration System operation) (BP/EP) 1 cr

HVAC1055 Refrigeration Certification Exam

This examination is certified by the EPA and packaged by ESCO Institute. (Prereq: HVAC1050 or knowledge of HVAC systems operations) (BP/EP) 0 cr

HVAC1065 National Gas Heat Outcome Assessment

This HVAC Excellence Gas Heat examination is given by Hennepin Technical College and is a nationally recognized student outcome assessment. (Prereq: HVAC1071) (BP/EP) 0 cr

HVAC1071 Gas Heat Systems

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. (Prereq: HVAC1110) (BP/EP) 4 cr

HVAC1075 National Commercial Refrigeration Outcome Assessment

This HVAC Excellence Commercial Refrigeration examination is given by Hennepin Technical College and is a nationally recognized student outcome assessment. (Prereq: HVAC2121 and HVAC2130) (BP/EP) 0 cr

HVAC1081 Oil Heat Systems

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. (Prereq: HVAC1000, HVAC1071 and HVAC1110) (BP/EP) 1 cr

HVAC1085 National Commercial Air Conditioning Outcome Assessment

This HVAC Excellence Commercial Air Conditioning examination is given by Hennepin Technical College and is a nationally recognized student outcome assessment. (Prereq: HVAC2001) (BP/EP) 0 cr

HVAC1095 North American Technician Excellence (NATE)

The NATE tests given to students are a nationally recognized outcome assessment for technicians in the HVAC field. (Prereq: None) (BP/EP) 0 cr

HVAC1100 Service Call Completion

This course will prepare the student to successfully complete a residential HVAC service call. (Prereq: None) (BP/EP) 1 cr

HVAC1110 Electrical Diagrams

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. (Prereq: HVAC1000 and HVAC1010) (BP/EP) 2 cr

HVAC1120 Psychrometrics

This course will introduce the student to the fundamentals of air properties. (Prereq: None) (BP/EP) 1 cr

HVAC1130 Room Air Conditioners

This course will introduce the skills for troubleshooting and servicing room air conditioners. (Prereq: HVAC1000, HVAC1020, HVAC1040 and HVAC1110) (BP/EP) 2 cr

HVAC1140 Central Air Conditioners

This course will assist the student in developing skills for installing, troubleshooting and servicing central air conditioners. (Prereq: HVAC1000, HVAC1040 and HVAC1110) (BP/EP) 3 cr

HVAC1146 Residential Heat Pumps

This course will assist the student in developing skills for installing, troubleshooting and servicing heat pumps. (Prereq: HVAC1000, HVAC1040, and HVAC1110) (BP/EP) 2 cr

HVAC1151 Hydronic Heat Systems

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. (Prereq: HVAC1110) (BP/EP) 2 cr

HVAC1155 Radiant Heat Systems

This course will expose the student to in-floor/ceiling radiant heat concepts that include sizing, application, and servicing. (Prereq: None) (BP) 1 cr

HVAC1160 Air Quality Systems

This course will introduce the student to the skills necessary to service air filtration systems, heat recovery ventilators and humidifiers. (Prereq: HVAC1071 and HVAC1110) (BP/EP) 1 cr

HVAC1175 R-410A Certification Training

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. (Prereq: An understanding of the operation of a Refrigeration/ Air Conditioning system) (BP/EP) 1 cr

HVAC1181 MN Class C Boiler Operator License

Whether you are at the entry level or an experienced operator, this course covers the information needed to take you to the next level. (Prereq: None) (BP/EP) 3 cr

HVAC1185 R-410A Certification Exam

This examination is certified by the AC/R Safety Coalition and Packaged by ESCO institute. (Prereq: HVAC1175) (BP/EP) 0 cr

HVAC1190 MN Special Boilers License

This course covers the information needed to take the Minnesota State Special Boilers License Examination. (Prereq: None) (BP/EP) 1 cr

HVAC2001 Packaged Heating and Cooling Equipment

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. (Prereq: HVAC1040, HVAC1071 and HVAC1110) (EP) 4 cr

HVAC2005 Commercial HVAC/R Safety and Servicing Procedures

This course is designed to instruct the student on safety and troubleshooting skills when repairing Commercial HVAC/R equipment. (Prereq: Qualifying score on reading assessment test OR ENGL0901 and HVAC1000, HVAC1010, HVAC1040, HVAC1050, HVAC1071 & HVAC1110) (EP) 2 cr

HVAC2010 Commercial Heat Pump Systems

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. (Prereq: Residential HVAC Diploma or equivalent industry experience) (EP) 2 cr

HVAC2020 Pneumatic Controls

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. (Prereq: HVAC1040) (EP) 2 cr

HVAC2030 Commercial Ice Making Machines

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. (Prereq: HVAC1040 and HVAC1110) (EP) 3 cr

HVAC2041 Gas/Refrigeration (Mechanical) Code

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. (Prereq: None) (EP) 1 cr

HVAC2050 Electrical for Commercial HVAC&R Equipment

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. (Prereq: HVAC1010 and HVAC1040) (EP) 2 cr

HVAC2060 Computer Room Air Conditioning

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. (Prereq: Residential HVAC Diploma or equivalent industry experience) (EP) 1 cr

HVAC2100 Water Chiller Machines

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. (Prereq: HVAC1040 and HVAC1110) (EP) 3 cr

HVAC2111 Low Pressure Steam and Water Boilers

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. (Prereq: None) (EP) 2 cr

HVAC2121 Refrigerated Coolers and Cases

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. (Prereq: HVAC1040 and HVAC1110) (EP) 4 cr

HVAC2130 Supermarket Refrigeration

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. (Prereq: HVAC1040 and HVAC1110) (EP) 3 cr

HVAC2165 Air Handling Units

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). (Prereq: Residential HVAC Diploma or equivalent industry experience) (BP/EP) 1 cr

Industrial Building Engineering & Maintenance (IBEM)

IBEM1000 Welding Maintenance

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. (Prereq: None) (BP) 3 cr

IBEM1010 Carpentry Maintenance

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. (Prereq: None) (BP) 3 cr

IBEM1020 HVAC Maintenance

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. (Prereq: None) (BP) 3 cr

IBEM1030 Tube and Pipe Repair

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. (Prereq: None) (BP) 2 cr

IBEM1040 Rigging Procedures and Forklift Operations

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. (Prereq: None) (BP) 1 cr

IBEM2000 Industrial Building Engineering and Maintenance Internship

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. (Prereq: Instructor approval and completion of at least 50% of your degree or diploma) (BP) 1_to_4 cr

Information Science (INFS)

INFS2000 Research Skills in the Information Age MnTC: 2

In today's information-driven world, the ability to find and use information effectively is essential to success in college and beyond. This class will take a broad-based approach to developing information-seeking strategies and skills for academic and work-related research. Students will learn how information is created, organized, disseminated, and accessed; and they will gain experience analyzing research needs, selecting appropriate research tools, critically evaluating potential sources, and using information legally and ethically. Students will have the opportunity to explore the literature and information sources in specific programs, career fields, or other areas of academic interest. The class will also explore a number of contemporary issues surrounding information in society. (Prereq: Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required) (BP/EP) 3 cr

Language (LANG)

LANG2000 American Sign Language/Deaf Culture I MnTC: 7

This course is designed to introduce students to American Sign Language and the Culture of Deaf People in the United States. (Prereq: None) (BP/EP) 3 cr

LANG2010 American Sign Language/Deaf Culture II MnTC: 7

This course is designed to increase students' American Sign Language vocabulary and provide additional awareness of and insight into the deaf culture. This course builds upon the skills developed in LANG2000. (Prereq: LANG2000 or instructor approval) (BP/EP) 3 cr

Law Enforcement (LAWE)

LAWE2225 Criminal Investigation

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. (Prereq: Admission into the Law Enforcement Program) (BP) 3 cr

LAWE2230 Legal Issues for Law Enforcement

The course will familiarize students with the principles of criminal procedures, the rules established by the US 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. (Prereq: Admission into the Law Enforcement Program) (BP) 3 cr

LAWE2231 MN Criminal and Traffic Codes

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. (Prereq: Admission into the Law Enforcement Program) (BP) 3 cr

LAWE2235 Police Report Writing/Interview

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. (Prereq: Admission into the Law Enforcement Program) (BP) 2 cr

LAWE2241 Police Response and Human Behavior

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.

(Prereq: Admission into the Law Enforcement Program) (BP) 3 cr

LAWE2261 In Progress Response

This course will include instruction in the areas of Crimes In-Progress. (Prereq: Admission into the Law Enforcement Program) (BP) 2 cr

LAWE2275 Traffic

This course will include instruction in the areas of Low Risk Traffic Stops, High Risk/Felony Stops, DWI enforcement, Crash Scene Management. (Prereq: Admission into the Law Enforcement Program) (BP) 1 cr

LAWE2280 Defensive Tactics

This course will include instruction in the areas of Defensive Tactics and Active Shooter Response. (Prereq: Admission into the Law Enforcement Program) (BP) 2 cr

LAWE2285 Crime Scene and Evidence

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. (Prereq: Admission into the Law Enforcement Program) (BP) 1 cr

LAWE2290 Firearms

This course will include instruction in the areas of Use of Deadly Force, Simunitions, Firearms and Judgmental Shootings. (Prereq: Admission into the Law Enforcement Program) (BP) 2 cr

LAWE2300 Tactical Driving for Law Enforcement Students

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. (Prereq: Admission into the Law Enforcement Program) (BP) 0 cr

Landscape and Horticulture (LNDC)**LNDC1110 Introduction to Landscape/Horticulture Careers**

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. (Prereq: None) (BP) 1 cr

LNDC1120 Woody Plants I - Trees

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. (Prereq: None) (BP) 4 cr

LNDC1131 Arboriculture I

This course is designed to give students a fundamental knowledge of the care of woody plants in the landscape. Topics covered include: values and benefits of trees; proper planting techniques; extensive study and lab work on formative, corrective, and renewal pruning techniques; site and soil problems; serious insect and diseases that affect landscape trees; woody invasive species management; construction damage prevention; and information resources via the web, professional organizations, and state agencies. (Prereq: None) (BP) 3 cr

LNDC1141 Nursery Propagation and Production

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. (Prereq: None) (BP) 3 cr

LNDC1145 Tree Climbing Operations

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 & 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). (Prereq: None) (BP) 3 cr

LNDC1151 Insects and Diseases of Landscape Plants

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. (Prereq: None) (BP) 3 cr

LNDC1160 Greenhouse Infrastructure Technology

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. (Prereq: None) (BP) 2 cr

LNDC1166 Sustainable Food and Plant Production - Fall

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. (Prereq: None) (BP) 3 cr

LNDC1176 Sustainable Food and Plant Production - Winter

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. (Prereq: None) (BP) 3 cr

LNDC1187 Sustainable Food and Plant Production - Summer

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. (Prereq: None) (BP) 2 cr

LNDC1190 Woody Plants II - Shrubs

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. (Prereq: None) (BP) 4 cr

LNDC1202 Herbaceous Plant Materials

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. (Prereq: None) (BP) 4 cr

LNDC1220 Integrated Pest Management

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. (Prereq: None) (BP) 2 cr

LNDC1231 Nursery Operations

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. (Prereq: None) (BP) 2 cr

LNDC1235 Landscape Operations

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. (Prereq: None) (BP) 2 cr

LNDC1242 Plant Biology

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. (Prereq: None) (BP) 4 cr

LNDC1250 Bedding Plant Production

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. (Prereq: None) (BP) 3 cr

LNDC1271 Soil Science

This course will help the student recognize the various types of soils and how plants respond to various soils and soil fertility. (Prereq: None) (BP) 3 cr

LNDC1300 Minnesota Invasive Terrestrial Plants

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. (Prereq: None) (BP) 2 cr

LNDC1315 Minnesota Native Plants and Communities

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. (Prereq: None) (BP) 4 cr

LNDC2110 Introduction to Landscape Construction

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. (Prereq: None) (BP) 2 cr

LNDC2120 Landscape Construction I

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. (Prereq: LNDC2110) (BP) 4 cr

LNDC2131 Landscape Construction II

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. (Prereq: LNDC2110) (BP) 3 cr

LNDC2155 Advanced Tree Climbing Operations

This course is a continuation of Tree Climbing Operations with emphasis on tree care via rope and saddle climbing. Specialized topics and practices to include: An overview of basic tree climbing, advanced hitches and knots, progressive equipment and techniques, line placement and tree entry, limb walking, pruning techniques, aerial rescue, electrical hazard awareness, and basic rigging. (Prereq: LNDC1131 and LNDC2150) (BP) 2 cr

LNDC2160 Sustainable Landscape Design I

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. (Prereq: LNDC1120 and LNDC1190) (BP) 4 cr

LNDC2165 Advanced Arboriculture

This course is a continuation of Arboriculture I 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 & 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. (Prereq: LNDC1131) (BP) 3 cr

LNDC2171 Sustainable Landscape Design II

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. (Prereq: LNDC2160) (BP) 3 cr

LNDC2210 Tropical Plants and Their Uses

This course is designed to give students an understanding of the Interior Landscaping 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. (Prereq: None) (BP) 2 cr

LNDC2220 Turf Culture and Management

This course is designed to give the student a comprehensive knowledge of the many kinds of turf grasses used in the upper Midwest for residential, commercial and athletic areas. Emphasis will also be given to their cultural requirements and specialized turf maintenance equipment. (Prereq: None) (BP) 3 cr

LNDC2241 Landscape Equipment Operation

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. (Prereq: None) (BP) 3 cr

LNDC2261 Professional Gardening

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. (Prereq: None) (BP) 3 cr

LNDC2271 Landscape Computer Design and Applications I

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. (Prereq: None) (BP) 3 cr

LNDC2280 Landscape Computer Design and Applications II

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. (Prereq: LNDC2271) (BP) 3 cr

LNDC2290 Dynascapes Training for the Green Industry

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. (Prereq: Previous windows based computer knowledge required) (BP) 2 cr

LNDC2330 Landscape Construction Internship Certificate

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. (Prereq: None) (BP) 4 cr

LNDC2335 Landscape Construction Internship

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. (Prereq: None) (BP) 1_to_4 cr

LNDC2341 Arboriculture Internship Certificate

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. (Prereq: None) (BP) 3 cr

LNDC2345 Arboriculture Internship

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. (Prereq: None) (BP) 1_to_4 cr

LNDC2350 Grounds Maintenance Internship

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. (Prereq: Completion of courses for a certificate or instructor approval) (BP) 1_to_4 cr

LNDC2360 Horticulture Internship

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. (Prereq: None) (BP) 1_to_4 cr

Light Rail Train Technology**LRTT1000 Rail Maintenance Fundamentals**

This course introduces students to light rail vehicle (LRV) systems, operation and signals systems. Safety in and around trains and the vehicle right-of-way (ROW) is emphasized. This course forms the foundation from which students will build their career as light rail technicians. (Prereq: None) (BP/EP) 3 cr

LRTT1015 AC Theory for LRV

This course expands upon the electrical theory foundation established in DC Circuits. The student will compute AC voltage, current, power, impedance and reactance for resistors, inductors and capacitors in series and parallel circuits. This theory is then applied to real-world examples such as three-phase industrial voltages and loads utilized in Light Rail systems. (Prereq: ELEC1000) (BP/EP) 3 cr

LRTT1020 Motors, Generators and Transformers

This course applies AC/DC theory to motors, generators and transformers, exploring the various types of each, their operating characteristics, control circuits and their real-world use. In addition, the student practices calculations for load, over-current protection and wire size based upon National Electrical Code standards. During lab-time, the student practices wiring methods for varying voltages, speeds and rotations as well as troubleshooting with different types of meters. (Prereq: LRTT1015) (BP/EP) 2 cr

LRTT1025 LRV Operations: Electronics

This course is designed to provide the student with the basic electronic concepts as they apply to diodes, transistors and other solid-state circuits. Additional topics include basic wave-forms, Boolean logic, integrated circuit fundamentals, and binary and hexadecimal. Students will design and evaluate circuits. (Prereq: LRTT1015) (BP/EP) 2 cr

LRTT1030 LRV Systems I

This is the first course in a series covering the theory and operation of Light Rail Vehicle (LRV) systems from both a mechanical and electrical perspective. Systems covered include batteries, pantographs, couplers and lighting. In addition, this course introduces the student to Trainlines focused on maintaining control throughout multiple vehicles via electrical coupling. Theory and troubleshooting techniques are taught using LRV manufacturer supplied manuals and electrical schematics. (Prereq: LRTT1020 AND LRTT1025) (BP/EP) 3 cr

LRTT1035 LRV Systems II

This is the second course in a series covering the theory and operation of Light Rail Vehicle (LRV) systems. The course covers these systems from both mechanical and electrical perspectives. Systems covered include propulsion, braking, suspension and sanding. Theory and

troubleshooting techniques are taught using LRV manufacturer-supplied manuals and electrical schematics. (Prereq: LRTT1030) (BP/EP) 3 cr

LRTT1045 LRV Systems III

This is the third course in a series covering the theory and operation of Light Rail Vehicle (LRV) systems. The course covers LRV systems from both mechanical and electrical perspectives. Systems covered include trucks and the car body. Theory and troubleshooting techniques are taught using LRV manufacturer-supplied manuals and electrical schematics. In addition, this course discusses methods for lifting vehicles both in a repair shop and in the field to re-rail. This course also reviews crane safety and hand signals. Because of the inherent dangers in this work, particularly in lifting heavy loads, safe work practices will be emphasized throughout this course. (Prereq: LRTT1035) (BP/EP) 3 cr

LRTT1050 Communications and Networking Fundamentals

In this course, the student is introduced to networking fundamentals as applied to Light Rail Vehicle (LRV) and Light Rail Signals systems. Network systems and topologies commonly found within light rail systems are defined and compared. Power quality, grounding and their effects on network reliability are also studied. In the lab, the student practices cable selection, termination and troubleshooting. Examples are obtained from LRV and Light Rail Signals communication systems. (Prereq: LRTT1025) (BP/EP) 3 cr

LRTT1055 LRV Systems IV

This is the fourth course in a series covering the theory and operation of Light Rail Vehicle (LRV) systems. The course covers systems from both mechanical and electrical perspectives. Systems covered include doors, monitoring and diagnostics (MDL). This course provides the student a more detailed look at Trainlines; explaining how control is maintained throughout multiple vehicles via electrical coupling. Theory and troubleshooting techniques are taught using LRV manufacturer supplied manuals and electrical schematics. (Prereq: LRTT1045) (BP/EP) 3 cr

LRTT1065 Light Rail Signals Systems I

This course provides historical information relevant to equipment and processes commonly used to protect street and pedestrian traffic at rail crossings. In addition, this course provides information on equipment and processes related to train detection, signaling theory, troubleshooting and repair. Upon completion, the student will know how to safely work in the rail Right of Way, inspect and maintain crossing, train detection and signaling equipment. The course focuses on process, starting with communication with Rail Control Center, removing equipment from service, troubleshooting and repair or replacement, and restoring the system to service. (Prereq: LRTT1055) (BP/EP) 3 cr

LRTT1070 Light Rail Signals Systems II

This course provides historical information relevant for an understanding of equipment and processes related to rail switch machines, railroad Interlockings, including; theory, troubleshooting and repair. Upon completion, the student will know how to safely work in the rail Right of Way, identify, inspect and maintain both yard and mainline switch machines as well as mainline Interlockings. Local Control Panels and appropriate troubleshooting, repair and return to service techniques will also be covered. (Prereq: LRTT1065) (BP/EP) 3 cr

Machine Tool Technology (MACH)

MACH1056 Blueprint Reading I

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. (Prereq: None) (BP/EP) 3 cr

MACH1075 Careers in Manufacturing

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. (Prereq: None) (BP) 2 cr

MACH1100 Introduction to Machining Technology

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. (Prereq: None) (BP) 3 cr

MACH1105 Drilling and Sawing Processes

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. (Prereq: MACH1100 or Instructor approval) (BP) 2 cr

MACH1110 Turning Technology I

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. (Prereq: MACH1105 or Instructor approval) (BP) 3 cr

MACH1120 Turning Technology II

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. (Prereq: MACH1110 or instructor approval) (BP) 3 cr

MACH1125 Milling Technology I

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. (Prereq: MACH1105 or instructor approval) (BP) 3 cr

MACH1130 Milling Technology II

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. (Prereq: MACH1125 or instructor approval) (BP) 3 cr

MACH1135 Precision Grinding

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. (Prereq: MACH1125 or instructor approval) (BP) 2 cr

MACH1140 Introduction to CNC

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. (Prereq: MACH1125 or Instructor approval) (BP) 3 cr

MACH1145 Machinists Reference Materials

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. (Prereq: None) (BP) 1 cr

MACH1205 Machine Tool Technology

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. (Prereq: Registration in METS Program) (BP/EP) 3 cr

MACH2400 CNC Setup and Operation

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. (Prereq: CNC Operators certificate, or equivalent industry experience with instructors approval) (BP) 3 cr

MACH2406 CNC Programming

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. (Prereq: CNC Operators Certificate, or instructors approval) (BP) 3 cr

MACH2410 CAD/CAM

This course will introduce the student to computer-assisted design and computer-assisted machining. Machining processes and post-processor selection will also be covered. (Prereq: METS1000 or basic computer skills) (BP) 3 cr

MACH2415 CNC Milling

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. (Prereq: CNC Operators Certificate, or equivalent industry experience with instructors approval) (BP) 3 cr

MACH2420 Blueprint Reading II for Machinists

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. (Prereq: MACH1056 or instructor approval) (BP) 2 cr

MACH2425 Geometry/Trigonometry for Machinists

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. (Prereq: MATH1500 or equivalent) (BP) 2 cr

MACH2430 CNC Machining Centers

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. (Prereq: MACH2415) (BP) 3 cr

MACH2435 CNC Turning Centers

This course will introduce the student to CNC turning centers. Programming, tooling, setup, and operation of CNC turning centers will be emphasized. (Prereq: CNC Operators Certificate, or equivalent industry experience with instructors approval) (BP) 3 cr

MACH2440 Quality Assurance

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. (Prereq: None) (BP) 2 cr

MACH2445 Heat Treating and Metallurgy

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. (Prereq: MACH1125 or Instructor approval) (BP) 2 cr

MACH2450 Fundamentals of EDM

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. (Prereq: CNC Operators Certificate, or equivalent industry experience with instructors approval) (BP) 2 cr

MACH2455 Die/Mold Design

This course will introduce students to the concepts of Tool & 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. (Prereq: CNC Operators Certificate, or equivalent industry experience with instructors approval) (BP) 3 cr

MACH2460 Die Construction

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. (Prereq: MACH2455) (BP) 3 cr

MACH2465 Mold Construction

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. (Prereq: MACH2455) (BP) 3 cr

MACH2470 Advanced CNC Turning Centers

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. (Prereq: MACH2435) (BP) 3 cr

MACH2475 Gibbs CAD/CAM Milling

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. (Prereq: METS1000 or instructor approval) (BP) 3 cr

MACH2495 Machine Tool Technology Internship

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. (Prereq: Instructor approval and completion of at least 50% of your degree or diploma) (BP) 1_to_4 cr

MACH2500 Introduction to Swiss-Style Machining

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. (Prereq: Graduation from or concurrent enrollment in a 2 year Machine Tool Technology Program or a minimum of 2 years of related work experience) (BP) 3 cr

MACH2505 CNC Swiss-Style Lathe Setup and Operation

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. (Prereq: 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) (BP) 3 cr

MACH2510 CNC Swiss-Style Lathe Programming

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. (Prereq: 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) (BP) 3 cr

MACH2600 Introduction to Quality Assurance

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. (Prereq: None) (BP) 3 cr

MACH2610 Inspection Processes

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. (Prereq: MACH2440 or MACH2600 or METS1050 or instructor approval) (BP) 3 cr

MACH2615 Inspection Equipment and Techniques

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. (Prereq: MACH2610 or instructor approval) (BP) 3 cr

MACH2620 Quality Systems

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. (Prereq: MACH2615 or instructor approval) (BP) 3 cr

Medical Assistant (MAST)**MAST1010 Medical Terminology**

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. (Prereq: Qualifying score on reading assessment test or ENGL0921) (EP) 2 cr

MAST1015 Medical Assistant Administrative I

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. (Prereq: Admission into the Medical Assistant Program) (EP) 3 cr

MAST1020 Lab I

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. (Prereq: Admission into the Medical Assistant Program) (EP) 4 cr

MAST1030 Clinical Procedures I

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. (Prereq: Admission into the Medical Assistant Program) (EP) 4 cr

MAST1045 Pharmacology

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. (Prereq: Admission into the Medical Assistant Program) (EP) 3 cr

MAST1060 Documentation for Health Care Professionals

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. (Prereq: Qualifying score on keyboarding assessment test OR CPLT1000 and ENGL2121) (EP) 2 cr

MAST2000 Fundamentals of Radiographic Imaging

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. (Prereq: BIOL2045 or BIOL2115 or HLTH1010) (EP) 2 cr

MAST2015 Medical Assistant Administrative II

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. (Prereq: MAST1015) (EP) 3 cr

MAST2021 Lab II

This course is designed to build upon the skills acquired in Lab I. Students will learn how to perform 12-lead Electrocardiogram (ECG). This course covers immunology, 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. (Prereq: MAST1020, concurrent enrollment in MAST2030 and must be taken semester before MAST2040, EMSV1155 or concurrent enrollment in EMSV1155) (EP) 2 cr

MAST2035 Clinical Procedures II

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. (Prereq: MAST1030) (EP) 5 cr

MAST2041 Practicum

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. (Prereq: MAST2020 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)) (EP) 6 cr

Mathematics (MATH)

MATH0950 Essential Skills for Math Pathways

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. (Prereq: None) (BP/EP) 2 cr

MATH1007 Math for the Trades

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. (Prereq: Qualifying score on math assessment test) (BP/EP) 2 cr

MATH1020 Geometry and Trigonometry

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. (Prereq: MATH1500) (BP/EP) 2 cr

MATH1050 Math Pathways Plus for College and Careers

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on math assessment test) (BP/EP) 4 cr

MATH1060 Math Pathways for College and Careers

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. (Prereq: Qualifying score on math assessment test and Qualifying score on reading assessment test) (BP/EP) 3 cr

MATH1500 Beginning Algebra

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. (Prereq: Qualifying score on math assessment test OR Grade of `C` or better in either MATH1050 or MATH1060) (BP/EP) 3 cr

MATH1650 Mathematical Literacy

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. (Prereq: Qualifying score math assessment test OR MATH1050 OR MATH1060) (BP/EP) 4 cr

MATH1700 Intermediate Algebra

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. (Prereq: Qualifying score on math assessment test OR Grade of `C` or better in MATH1500) (BP/EP) 3 cr

MATH2050 Applications of Quantitative Reasoning

MnTC: 2 & 4

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. (Prereq: Qualifying score on math assessment test OR MATH1650 OR MATH1700) (BP/EP) 3 cr

MATH2150 Introduction to Statistics

MnTC: 4

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. (Prereq: Qualifying score on math assessment test OR MATH1700) (BP/EP) 3 cr

MATH2200 College Algebra

MnTC: 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. (Prereq: Qualifying score on math assessment test OR MATH1700) (BP/EP) 4 cr

MATH2250 Precalculus with Trigonometry

MnTC: 2 & 4

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. (Prereq: Qualifying score on math assessment test OR MATH2100 or MATH2150 or MATH2200) (BP/EP) 5 cr

MATH2300 Calculus I**MnTC: 2 & 4**

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. (Prereq: Qualifying score on math assessment test OR MATH2250 Precalculus with Trigonometry with a grade of a C or better) (BP/EP) 5 cr

Manufacturing Engineering Technology (METS)**METS1000 Computers in Manufacturing**

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. (Prereq: None) (BP/EP) 3 cr

METS1020 Industrial Manufacturing Processes

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. (Prereq: None) (BP/EP) 3 cr

METS1050 Quality Control

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. (Prereq: None) (BP/EP) 3 cr

METS1075 Careers in Manufacturing

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. (Prereq: None) (BP/EP) 2 cr

METS1100 Manufacturing Fundamentals I

This course prepares students to enter the manufacturing field with acquired basic skills in shop math, print reading, measuring tools, hand tools, shop safety, employment/life skills, metallurgy, and biology. Students also learn about federal and international regulations, cleanroom techniques and quality systems. Successful completion is measured by the student's ability to determine whether a part has been manufactured to customer requirement and specifications within a safe, effective work environment. (Prereq: None) (BP/EP) 6 cr

METS1105 Manufacturing Fundamentals II

This course prepares students to enter the manufacturing field by applying acquired skills in shop math, print reading, measuring tools, hand tools, shop safety, employment/life skills, metallurgy, and quality systems. Successful completion is measured by the student's ability to determine whether a part has been manufactured to customer requirement and specifications within a safe, effective work environment. (Prereq: METS1100 or instructor approval) (BP/EP) 3 cr

METS1110 Manufacturing Fundamentals III (Bridge Course)

This course is designed for M-Powered students to bridge into diploma-granting programs successfully. All the topics covered in the earlier classes are explored with emphasis on more advanced knowledge and skills development in the areas of print reading, mathematics, and quality assurance. (Prereq: METS1105 or instructor approval) (BP/EP) 5 cr

METS1150 M-Powered Internship

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. (Prereq: METS1105 or instructor approval) (BP/EP) 2 cr

METS1200 Industry Practices and Procedures

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 & professionalism, material handling, hand tool identification & 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. (Prereq: Qualifying score on computer literacy assessment test OR METS1000) (BP/EP) 3 cr

METS2000 Engineering Design Principles

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. (Prereq: None) (BP/EP) 3 cr

METS2100 Statics and Strength of Materials

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. (Prereq: MATH1020 or MATH2100 or MATH2200) (BP/EP) 3 cr

METS2800 Manufacturing Engineering Technology Internship

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. A "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. (Prereq: Instructor approval) (BP) 1_to_16 cr

Graphic Design (MGDP)**MGDP1010 Basic Drawing**

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT1200) (BP) 3 cr

MGDP1205 Fundamentals of Graphic Design

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT1200) (BP) 3 cr

MGDP1210 Graphic Design Essentials

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. (Prereq: None) (BP) 3 cr

MGDP1220 Concepts in Creativity

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT1200) (BP) 3 cr

MGDP1230 Photoshop

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. (Prereq: MGDP1205 or instructor approval) (BP) 3 cr

MGDP1235 Fundamentals of Digital Imaging

This course is designed to give the learner the best possible solutions to their digital design projects. The student will use a scanner and digital camera to acquire images into Photoshop. Once in Photoshop, the student will learn how the image interacts with resolution, image size, pixel dimension, color modes, enhancement tools, and digital output. Included in the coursework is terminology, evaluation of images, acquisition of images, image tonal correction, image transport, and file formats. (Prereq: MGDP1310) (BP) 2 cr

MGDP1240 Illustrator

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT1200 and MGDP1205 or concurrent or instructor approval) (BP) 3 cr

MGDP1250 Web Design & Development I

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (BP) 3 cr

MGDP1265 XHTML

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT1200) (BP) 3 cr

MGDP1270 Macintosh Computer Technology

Featuring Mac OS 10.X this course is designed to provide the student with in depth technical information related to the operation of the Macintosh computer. Emphasis will be placed on solving hardware, software and general application problems, understanding the control panel settings; upgrading hardware and software and running diagnostics available for the Macintosh. Other areas to be covered include the proper procedure for adding external or internal devices, installing RAM, installing and preparing a new hard drive, software and systems installations, file management techniques and font problems. (Prereq: CPLT1200 or instructor approval) (BP) 3 cr

MGDP1285 Fundamentals in Web Imaging

This course explores web-safe color issues and image quality as well as image maps, rollovers, remote rollovers, transparency, simple animation, tables, buttons, rules and backgrounds. Discover the file formats and tools available to create images with small file sizes for quick download time such as: gif, png and jpeg (file formats). This course will also include copyright issues as well as hints and tips to find images you can use copyright free. (Prereq: MGDP1230, MGDP1265 or equivalent or instructor approval) (BP) 2 cr

MGDP1310 InDesign

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. (Prereq: MGDP1205 or instructor approval) (BP) 3 cr

MGDP1330 Advanced Page Layout

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. (Prereq: MGDP1230, MGDP1235, MGDP1240, MGDP1310, and MGDP2010 or instructor approval) (BP) 3 cr

MGDP1340 Advanced Photoshop

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. (Prereq: MGDP1230, or instructor approval) (BP) 3 cr

MGDP1350 Advanced Illustrator

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. (Prereq: MGDP1240, or instructor approval) (BP) 3 cr

MGDP1360 Acrobat

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT1200) (BP) 2 cr

MGDP1365 CSS for Designers

CSS (Cascading Style Sheets) gives Web designers control over the appearance of their web sites by managing visual content. CSS allows the designer to make a complete overhaul of visual design by completing minor changes to the CSS programming language. This course presents the essentials of CSS, including selectors, the cascade and inheritance. It also covers how to build an effective and dynamic navigation system, how to use page layout, work with typography, colors, backgrounds, and white space. We will use a project-based approach and the learner will design and develop a fully functional web site for a semester project. (Prereq: MGDP1230 and MGDP1265) (BP) 3 cr

MGDP1370 Advanced Dreamweaver

This second-level course will take the learner beyond the basics of Dreamweaver. Covered in this course will be integration of templates, Cascading Style Sheets (CSS), Extensible Mark-up Language (XML), Hypertext Preprocessor (PHP), Javascript and Really Simple Syndication (RSS) feeds. The learner will design advanced navigation systems, build usable forms, set up site maps, apply data-base content, SPRY Widgets, use Design Notes, and apply CSS to their web site integration. (Prereq: MGDP1265 and MGDP1320) (BP) 3 cr

MGDP2010 Applied Graphic Design

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. (Prereq: MGDP1010, MGDP1205, and MGDP1240, or instructor approval) (BP) 3 cr

MGDP2030 Packaging and Display Advertising

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. (Prereq: MGDP1330, MGDP1340, MGDP1350, or instructor approval) (BP) 3 cr

MGDP2040 Collateral Advertising

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. (Prereq: MGDP1330 or instructor approval) (BP) 3 cr

MGDP2050 Web Design & Development II

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. (Prereq: MGDP1250) (BP) 3 cr

MGDP2060 Web Design & Development III

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 & Development I & II. (Prereq: MGDP1250) (BP) 3 cr

MGDP2080 Applied Typography

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. (Prereq: MGD1205) (BP) 3 cr

MGDP2100 Web Design/Production

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. (Prereq: MGD1250) (BP) 3 cr

MGDP2150 Advanced Production Lab

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. (Prereq: Instructor approval) (BP) 1_to_8 cr

MGDP2200 Design Portfolio

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. (Prereq: Instructor approval) (BP) 3 cr

MGDP2215 Graphic Design Internship

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. (Prereq: Instructor approval) (BP) 1_to_12 cr

Medium/Heavy Truck Technology (MHTT)

MHTT1002 Truck Technology Fundamentals

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT0900) (BP) 2 cr

MHTT1011 Electricity in Truck Technology I

This course is designed to give the student an understanding of electrical circuits to include battery, starting, and charging systems. (Prereq: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT0900) (BP) 4 cr

MHTT1015 Electricity in Truck Technology II

This course is designed to give the student an understanding of the troubleshooting and repair of advanced electrical circuits and controls. (Prereq: MHTT1011) (BP) 3 cr

MHTT1020 Vehicle Service

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT0900) (BP) 3 cr

MHTT1031 Internship/Industry Partnership I

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT0900) (BP) 6 cr

MHTT1100 Hydraulic Brake Systems

This course is designed to give the student an understanding of operation, maintenance, troubleshooting and repair of hydraulic brake systems. (Prereq: MHTT1002) (BP) 3 cr

MHTT1115 Air Brake Systems and Controls

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. (Prereq: MHTT1002) (BP) 3 cr

MHTT1131 Internship/Industry Partnership II

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. (Prereq: MHTT1002) (BP) 6 cr

MHTT1200 Steering and Suspension Systems

This course is designed to give the student an understanding of operation, maintenance, troubleshooting and repair of steering and suspension systems. (Prereq: MHTT1002) (BP) 3 cr

MHTT1210 Clutch and Driveline

This course is designed to give the student an understanding of operation, maintenance, troubleshooting, repair and adjustments of clutches, u-joints, and drivelines. (Prereq: MHTT1002) (BP) 3 cr

MHTT1300 Introduction to Diesel Engines

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. (Prereq: MHTT1002) (BP) 3 cr

MHTT1321 Heating and Air Conditioning

This course is designed to give the student an understanding of service and repair procedures used on heating and air conditioning systems. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal. (Prereq: MHTT1011) (BP) 3 cr

MHTT1331 Internship/Industry Partnership III

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. (Prereq: MHTT1015, MHTT1300, and MHTT1321) (BP) 6 cr

MHTT1401 Diesel Engine II

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. (Prereq: MHTT1300) (BP) 3 cr

MHTT1410 Transmission Technologies

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. (Prereq: MHTT1002) (BP) 3 cr

MHTT1420 Drive Axles

This course is designed to give the student an understanding of the operation and repair of medium and heavy-duty drive axles. (Prereq: MHTT1002) (BP) 3 cr

MHTT1431 Internship/Industry Partnership IV

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. (Prereq: MHTT1210, MHTT1410, and MHTT1420) (BP) 6 cr

MHTT1501 Diesel Engine III

This course is designed to give the student an understanding of diesel engine repair and overhaul procedures. (Prereq: MHTT1300) (BP) 3 cr

MHTT1512 Diesel Engine IV

This course is designed to give the student an understanding of systems operation, troubleshooting, repair, and programming of electronically controlled diesel engines. (Prereq: MHTT1300) (BP) 4 cr

MHTT1532 Internship/Industry Partnership V

This course will provide the student on-the-job training in the medium/heavy truck industry. The student will use the knowledge learned during previous courses and put into practice those technical skills at the workplace. (Prereq: MHTT1401, MHTT1501 and MHTT1512) (BP) 9 cr

Marine, Motorsport and Outdoor Power Equipment Technology (MMST)

MMST1100 Introduction to Marine and Motorsport Technology

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (EP) 3 cr

MMST1105 Introduction to Engine Theory

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (EP) 3 cr

MMST1110 Introduction to Fuel Systems

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (EP) 3 cr

MMST1115 Introduction to Electrical Systems

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (EP) 3 cr

MMST1120 Introduction to Ignition Systems

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. (Prereq: MMST1105 and MMST1115) (EP) 3 cr

MMST1125 Service Management

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. (Prereq: None) (EP) 3 cr

MMST1130 Introduction to Drive Systems

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (EP) 3 cr

MMST1145 Trailer Maintenance

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. (Prereq: MMST1115) (EP) 3 cr

MMST2105 Motorcycle Transmissions and Clutch Service

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. (Prereq: MMST1130) (EP) 3 cr

MMST2110 Motorcycle Wheels and Suspension

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. (Prereq: MMST1130) (EP) 3 cr

MMST2126 Marine Lower Unit and Cooling System Service

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. (Prereq: MMST1130) (EP) 3 cr

MMST2140 Marine Tilt/Trim and Controls

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. (Prereq: Successful completion of all first year courses) (EP) 3 cr

MMST2175 Power Equipment Drive Systems

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. (Prereq: MMST1130) (EP) 3 cr

MMST2180 Power Equipment Accessory Maintenance

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. (Prereq: MMST1100) (EP) 3 cr

MMST2300 Advanced Fuel Systems

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. (Prereq: MMST1110) (EP) 3 cr

MMST2305 Advanced Electrical Systems

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. (Prereq: MMST1115) (EP) 3 cr

MMST2310 Engine Overhaul

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. (Prereq: Successful completion of all first year MMST classes) (EP) 3 cr

MMST2315 Tune Up

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. (Prereq: Successful completion of all first year courses) (EP) 3 cr

MMST2320 Customizing Lab

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. (Prereq: Second year student) (EP) 1_to_3 cr

MMST2325 EETC/Advanced Troubleshooting

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. (Prereq: MMST1105) (EP) 3 cr

MMST2340 Repair and Accessory Lab

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. (Prereq: None) (EP) 3 cr

MMST2350 Internship

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. (Prereq: Instructor approval) (EP) 1_to_3 cr

MMST2400 Fuel Injection Systems

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. (Prereq: MMST1110, MMST2300, and MMST2305) (EP) 3 cr

Interactive Design and Video Production (MMVP)

MMVP1500 Concepts of Interactive Media

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901 and Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200) (BP) 3 cr

MMVP1505 Introduction to Visual Communications

In this course emphasis will be on the basic visual design strategies and techniques used in all types of multimedia presentations. (Prereq: None) (BP) 3 cr

MMVP1511 Production Planning

This course will introduce the student to the process of evaluating client needs and preparing written production documents for multimedia and video projects. (Prereq: None) (BP) 4 cr

MMVP1516 Digital Media Technology

This course is designed to give students a basic knowledge of the technical aspects of the hardware and software used in the digital design world. It includes the basics of file formats and input and output considerations for all types of media. (Prereq: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 and qualifying score on reading assessment test OR ENGL0901) (BP) 2 cr

MMVP1520 Flash

This course will introduce the fundamentals of creating exciting animations and compelling interactive projects using Adobe Flash. (Prereq: MMVP1500 with a grade of C or better or instructor approval) (BP/EP) 3 cr

MMVP1540 Web Basics

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. (Prereq: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 and qualifying score on reading assessment test OR ENGL0901) (BP) 2 cr

MMVP1545 3D Basics

This course introduces foundations 3D modeling and animation. Students will explore different aspects of 3D modeling and animation to create interior environments, exterior environments, vehicles, and characters. Students will create textures, light scenes, and apply effects. (Prereq: MMVP1500 with a grade of C or better or instructor approval) (BP) 3 cr

MMVP1562 Audio for Media

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. (Prereq: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200) (BP) 3 cr

MMVP1565 Captivate

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. (Prereq: MMVP1500 with a grade of C or better or instructor approval) (BP) 3 cr

MMVP1570 Introduction to Programming for Designers

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. (Prereq: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200 and Qualifying score on reading assessment test OR ENGL0901) (BP) 3 cr

MMVP1580 Animation

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. (Prereq: MMVP1500 or instructor approval) (BP) 3 cr

MMVP1590 Multimedia for the Web

In this course students will learn methods and techniques to integrate interactive rich media into web pages.

(Prereq: MMVP1520 with a grade of C or better OR MGDP1230 with a grade of C or better OR instructor approval) (BP) 3 cr

MMVP1600 Introduction to Video Production

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. (Prereq: None) (BP) 4 cr

MMVP1605 Videography and Directing

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. (Prereq: MMVP1511 with a grade of C or better and MMVP1600 with a grade of C or better or instructor approval) (BP) 4 cr

MMVP1650 Event Technical Production

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. (Prereq: None) (BP) 4 cr

MMVP1700 DSLR Video Production

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. (Prereq: None) (BP) 3 cr

MMVP2001 Advanced Lighting

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. (Prereq: MMVP1600 with a grade of C or better, or instructor approval) (BP) 3 cr

MMVP2010 Javascript for Designers

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. (Prereq: MMVP1570 and MGD1250, or instructor approval) (BP) 3 cr

MMVP2025 Interactive Game Design

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. (Prereq: MMVP2010 or instructor approval) (BP) 3 cr

MMVP2045 Advanced 3D

3D modeling and animation is used by many fields such as architecture, medical, engineering, forensics, and the entertainment industry. Students in this course will build on their previous knowledge in 3D modeling and animation as they study advanced level methods and techniques. (Prereq: MMVP1545 or instructor approval) (BP) 3 cr

MMVP2520 ActionScript

This course will provide students with the knowledge and hands-on experience they need to create dynamically generated animation and interactive projects with Flash. This course will build on the programming techniques introduced in MPRT1380 Print Media Programming. Students will work with Flash ActionScript classes, methods, functions, and event handlers. Students will focus on using ActionScript to reduce the dependence on Timeline-based tools. Students will implement ActionScript design patterns. (Prereq: MPRT1380 or instructor approval) (BP) 2 cr

MMVP2550 Video Field Production

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. (Prereq: MMVP1511 with a grade of C or better and MMVP1600 with a grade of C or better or instructor approval) (BP) 3 cr

MMVP2560 After Effects

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. (Prereq: MMVP1500 with a grade of C or better or instructor approval) (BP) 3 cr

MMVP2565 Advanced After Effects

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. (Prereq: MMVP2560 or instructor approval) (BP) 3 cr

MMVP2575 Interactive Mobile Design

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. (Prereq: MMVP2010 or instructor approval) (BP) 3 cr

MMVP2600 Digital Post Production

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. (Prereq: MMVP1600 with a grade of C or better, qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200, or instructor approval) (BP) 4 cr

MMVP2605 Corporate Video Production

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. (Prereq: MMVP1511 with a grade of C or better and MMVP1600 with a grade of C or better or instructor approval) (BP) 4 cr

MMVP2610 Avid Non-Linear Editing

This advanced course will introduce a student to the Avid non-linear editing system. Students will create video projects for their portfolio. Students will become proficient with the Avid software and hardware interfaces. (Prereq: MMVP1600 with a grade of C or better, qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200, or instructor approval) (BP) 3 cr

MMVP2630 Advanced Production Lab

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. (Prereq: Instructor approval) (BP) 1_to_8 cr

MMVP2641 Portfolio Production

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. (Prereq: Project related beginning courses and instructor approval) (BP) 3 cr

MMVP2650 Interactive Design Video Production Internship

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. (Prereq: Instructor approval) (BP) 1_to_8 cr

Nursing Assistant (NAHA)

NAHA0110 Nursing Assistant Written Test

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. (Prereq: None) (BP/EP) 0 cr

NAHA0115 Nursing Assistant Written-Retake

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. (Prereq: None) (BP/EP) 0 cr

NAHA0120 Nursing Assistant Skills Test

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. (Prereq: None) (BP/EP) 0 cr

NAHA0125 Nursing Assistant Skills-Retake

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. (Prereq: None) (BP/EP) 0 cr

NAHA0130 Home Health Aide Written Test

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. (Prereq: None) (BP/EP) 0 cr

NAHA0140 Home Health Aide Written-Retake

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. (Prereq: None) (BP/EP) 0 cr

NAHA1002 Nursing Assistant/Home Health Aide

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901. Ability to lift and move 25-50 pounds. 16 years of age) (BP/EP) 5 cr

Practical Nursing (NURS)

NURS1015 Nutrition Basics

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. (Prereq: Qualifying score on Computer Literacy assessment test OR CPLT1100 or CPLT1200) (BP/EP) 1 cr

NURS1020 Trained Medication Aide

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. (Prereq: Qualifying score on reading assessment test or ENGL0901. Proof of completing a 75 hour NA course. Proof required at the first class) (BP/EP) 2 cr

NURS1103 Foundations I

This clinical course provides opportunity for the student to apply skills and theory in a long term care setting under faculty supervision. Students will care for selected adult patients/residents with chronic or acute illnesses. Medication administration and selected nursing skills are evaluated. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal. (Prereq: NURS1141, NURS1161, NURS1191, and HLTH2001. Prerequisite or concurrent NURS1222 and NURS1261. Successful completion of pre-clinical math test with a score of 100%. Current CPR or BLS for Health Care Provider or professional rescuer. Current TB skin or blood test or Chest X-ray. Clear criminal background study) (BP/EP) 4 cr

NURS1120 Medical Terms

This course is designed to acquaint the nursing student with medical terminology. Students learn to construct words using medical roots, prefixes, and suffixes, as well as learn to pronounce and spell medical terminology. This course may be offered on-line. (Prereq: High School diploma or GED or concurrently enrolled under the PSEOP. Qualifying score on reading assessment test OR ENGL0921 and qualifying score on writing assessment test OR ENGL1021 or ENGL1026) (BP/EP) 1 cr

NURS1141 Pharmacology for Practical Nurses

This course contains nursing theory and skills related to the general principles of medication administration. Terminology, abbreviations, and knowledge of medications required to interpret physician orders are emphasized. Preparation and administration of medications via oral, topical, and parenteral routes are practiced and demonstrated. Skills lab is required in preparation for clinical participation. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal. (Prereq: Admission into the practical nursing program) (BP/EP) 4 cr

NURS1143 Infection Control

Utilizing a fully on-line course format, the student will learn about different infectious organisms and their influence on the human body. The student will review the history of infection control, discover how the disease process works and investigate how the complex immune system functions. Standard and transmission-based precautions will be discussed. Methods to enhance immunity and assist in the prevention of disease transmission will be covered. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal. (Prereq: Qualifying score on the computer literacy assessment test OR CPLT1100 or CPLT1200. High School diploma or GED or concurrently enrolled under the PSEOP) (BP/EP) 1 cr

NURS1161 Nursing Skills I

The Nursing Skills I course builds a foundation of skills and knowledge for the practical nurse. Topics covered will

include the head to toe data collection, airway management, sterile technique, pain management and genitourinary procedures. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal. (Prereq: Admission into the practical nursing program) (BP/EP) 3 cr

NURS1201 Foundations II

This clinical course provides opportunity for the student to apply skills and nursing theory in an acute, sub-acute or rehabilitation patient care setting under faculty supervision. Students provide nursing skills, designated medical treatments and medication administration for patients between the ages of 18 and 65 + years. Development of organizational skills in the management of a multiple patient care assignment (2 or more patients) is required during this clinical rotation. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal. (Prereq: NURS1141, NURS1161, NURS1191, NURS1103 and HLTH2001. Prerequisite or concurrent NURS1222, and NURS1261. Current CPR or BLS for Health Care Provider or professional rescuer. Successful completion of pre-clinical math test with a score of 100%. Current TB skin or blood test or Chest X-ray. Current clear criminal background study) (BP/EP) 4 cr

NURS1222 Adult Nursing II

This course explores the following system as they relate to health and disease: gastrointestinal, renal, reproductive, integumentary, and neurosensory. Disease processes and related symptoms are analyzed. Emphasis is on the practical nurse's role in diagnostic testing, intervention, treatment and related pharmacology. (Prereq: NURS1141, NURS1161, NURS1191, and HLTH2001) (BP/EP) 4 cr

NURS1242 Maternal Child Nursing

This course explores well-child care, and pediatric health issues. Pregnancy, labor and delivery, prenatal and post partum care are discussed. The importance of family centered care is emphasized. (Prereq: NURS1103, NURS1222, and NURS1261) (BP/EP) 2 cr

NURS1261 Nursing Skills II

This course builds upon knowledge presented in Nursing Skills I. Students explore pre/post-op care, dressing changes, drainage tubes, neurological checks, gastric lavage and enteral feedings with medication administration. Practice and evaluation in a skills lab is required for clinical participation. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal. (Prereq: NURS1141, NURS1161, NURS1191 and HLTH2001) (BP/EP) 3 cr

NURS1270 Documentation for Nurses

This course will present charting steps, guidelines, and tips on improving documentation. Components for meeting professional and regulatory requirements will also be

presented. (Prereq: NURS1161 or current RN or LPN license) (BP/EP) 1 cr

NURS1275 Transcultural Nursing

This course will explore meanings and expressions of health, illness, caring, and healing transculturally. This will prepare the student for practice in a culturally diverse environment. (Prereq: NURS1161 or current RN or LPN license) (BP/EP) 1 cr

NURS1280 Geriatric Nursing

This course will expand the students knowledge of nursing care in the geriatric population. It will address geriatric nursing care in a variety of life settings and prepare the student for work in elder care. (Prereq: NURS1141 and NURS1191 or current RN or LPN license) (BP/EP) 2 cr

NURS1375 Fundamentals of Nursing

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. (Prereq: Acceptance into the nursing program) (BP/EP) 8 cr

NURS1380 Medical Surgical Nursing I

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. (Prereq: NURS1375) (BP/EP) 8 cr

NURS2110 Psychosocial Nursing

This theory course expands the students understanding of adaptive and maladaptive human behavior. The student develops an understanding of mental health and illness which include mental disorders, chemical abuse and domestic violence. Discussions will include theory related to appropriate cultural nursing interventions and psychotropic medication therapy. (Prereq: NURS1201, NURS1222, and NURS1261) (BP/EP) 2 cr

NURS2375 Medical Surgical Nursing II

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. (Prereq: NURS1380) (BP/EP) 8 cr

NURS2380 Transition to Practice

This course facilitates the transition of the student to the role of an LPN. Concepts related to teamwork, collaboration, and leadership is 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. (Prereq: NURS2375) (BP/EP) 8 cr

NURS2550 Capstone

This course examines current legal responsibilities and accountability of the Licensed Practical Nurse. Students will prepare for the NCLEX-PN licensure exam by identifying strengths and areas of concerns. The clinical components of this course will focus on integrating nursing theory with practice while caring for clients of all ages in various clinical settings. (Prereq: NURS1201, NURS1222, NURS1261. NURS1242 prerequisite or concurrent, NURS2110 prerequisite or concurrent. Successful completion of pre-clinical medication math test with a score of 100%. Current CPR or BLS for the Health Care Provider or Professional Rescuer. Negative TB skin test or blood test or Chest x-ray. Proof of completed Hepatitis B vaccination series. Current clear background study) (BP/EP) 5 cr

NURS2600 NCLEX - PN Review

This course is designed for the practical nursing student preparing to take the NCLEX-PN. The focus is on reviewing nursing knowledge. Content includes a review of the following: body systems in health and disease; health promotion and maintenance from infancy through adulthood, pharmacology, strategies which promote a safe and effective nursing care environment and maintaining psychosocial integrity. (Prereq: None) (EP) 2 cr

Medical Office Careers (OFCR)

OFCR1301 Medical Terminology

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921) (BP/EP) 4 cr

OFCR1317 Medical Office Procedures

This is an introductory course to medical office procedures and the administrative medical assisting profession. Topics covered will include HIPAA regulations, 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. (Prereq: Qualifying score on math assessment test OR MATH1050 or MATH1060 and OFCR1301 and CCIS1080) (BP/EP) 4 cr

OFCR1331 Medical Document Processing

This course introduces the student to transcription of medical reports. Emphasis will be placed on the use of transcription equipment, use of reference material, formats, and proofreading. The student will transcribe office notes, procedural notes, consultative and emergency service medical reports, history and physicals, operative notes, discharge summaries, and patient correspondence. (Prereq: CPLT1005, ENGL1010, and OFCR1301) (BP/EP) 4 cr

OFCR1335 Medical Coding and Reimbursement Fundamentals

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. (Prereq: OFCR1301) (BP/EP) 4 cr

OFCR1340 Medical Office Management

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. (Prereq: ACCT1000 or ACCT1102, OFCR1317 and OFCR1335) (BP/EP) 3 cr

Philosophy (PHIL)**PHIL2000 Introduction to Logic****MnTC: 4**

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921) (BP/EP) 3 cr

PHIL2100 Critical Thinking**MnTC: 2**

This course is an introduction to logic, the study of reasoning. Students will investigate what an `argument` is in logic, which different forms of argument are good ones, which are not, and which rules to follow in constructing and evaluating arguments. Students will also master some useful problem-solving methodologies relevant to the workplace. (Prereq: Qualifying score on writing assessment test OR ENGL1021 or ENGL1026. Basic computer literacy skills required) (BP/EP) 3 cr

PHIL2200 Ethics**MnTC: 6 & 9**

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. (Prereq: Qualifying score on writing assessment test OR ENGL1021 or ENGL1026. Basic computer literacy skills required) (BP/EP) 3 cr

PHIL2400 Medical Ethics**MnTC: 6 & 9**

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. (Prereq: Qualifying score on writing assessment test OR ENGL1021 or ENGL1026. Basic computer literacy skills required) (BP/EP) 4 cr

PHIL2500 World Religions**MnTC: 6 & 8**

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. (Prereq: Qualifying score on writing assessment test OR ENGL1021 or ENGL1026. Basic computer literacy skills required) (BP/EP) 3 cr

PHIL2600 Environmental Ethics**MnTC: 9 & 10**

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. (Prereq: Qualifying score on writing assessment test OR

ENGL1021 or ENGL1026. Basic computer literacy skills required) (BP/EP) 3 cr

Pharmacy Technology (PHRM)

PHRM1000 Medical and Pharmacy Terminology

This course will provide the student with the basic medical lexicon and the structure on which medical and scientific words are built. These words are used to describe the human body, diseases and conditions, treatments and drugs, using root words, prefixes and suffixes. (Prereq: Qualifying score on computer literacy assessment test OR CPLT1100 or CPLT1200) (EP) 2 cr

PHRM1010 Pharmacy Law and Ethics

This course will provide the student with the Federal and State laws as they pertain to pharmacy. The ethics content of this course will address the principles of ethical thought as applied within the area of pharmacy practice. It will assist in preparing the student for the Pharmacy Technician Certification Exam. (Prereq: Qualifying score on writing assessment test OR ENGL1021) (EP) 2 cr

PHRM1020 Pharmaceutical Calculations

Students will become proficient in basic arithmetic and specific calculation methods as they apply to pharmacy. This course will review basic math skills which are required for more advanced calculations. It also covers measurement systems and various dosage calculations. (Prereq: PHRM1100) (EP) 2 cr

PHRM1030 Pharmacology

Students will study therapeutic agents, properties, actions and effects on the human body and their role in the management of disease. Topics include therapeutic properties, side effects, interactions, drug dosages and toxicities. (Prereq: PHRM1000, PHRM1010 and PHRM1100. Recommended concurrent enrollment with PHRM1020) (EP) 3 cr

PHRM1040 Principles of Pharmacy Practice I

Students will learn the organization and functions of retail and hospital pharmacy. The student will be introduced to the use of computers and their practical applications. This course will define the role and responsibilities of the pharmacy technician. Occupational Safety and Health Act (OSHA) and Health Insurance Portability and Accountability Act (HIPAA) requirements will be covered. (Prereq: PHRM1000, PHRM1010 and PHRM1100) (EP) 4 cr

PHRM1050 Pharmacotherapy and Epidemiology of Disease Processes

The basic concepts of drug therapy, their therapeutic classes and common uses will be presented. The development of basic proficiency in the use of drug resources will be covered. The relationship of pharmacotherapy with the incidence, distribution and

control of various diseases will also be presented. (Prereq: PHRM1030 or NURS1141) (EP) 3 cr

PHRM1060 Principles of Pharmacy Practice II

Students will continue to be acquainted with retail and institutional pharmacy practices. Intravenous (IV) drug admixture, total parenteral nutrition (TPN) and critical care IV admixture will be covered. Unit dose dispensing, diabetic supplies and medication storage and stability will be covered. Students will study billing systems and the universal medical coding system which classifies medical conditions and treatments into sets of numeric codes. Personal safety and hygiene related to pharmacy practice will also be covered. In a lab setting students will practice filling prescriptions and develop communication skills associated with pharmacy. (Prereq: PHRM1040) (EP) 5 cr

PHRM1080 Pharmacy Technician Externship I

This course prepares the student for entering the Pharmacy Technician career field and provides information on career opportunities. Students will apply skills, knowledge and abilities acquired in the classroom in a practical work-based community pharmacy training environment. (Prereq: PHRM1020, PHRM1030, and PHRM1040. Recommended concurrent enrollment with PHRM1050 and PHRM1060) (EP) 3 cr

PHRM1090 Pharmacy Technician Externship II

This course continues to prepares the student for entering the Pharmacy Technician career field and provides information on career opportunities. Students will continue to apply skills, knowledge and abilities acquired in the classroom in a practical work-based training environment. (Prereq: PHRM1020, PHRM1030, and PHRM1040. Recommended concurrent enrollment with PHRM1050 and PHRM1060) (EP) 3 cr

PHRM1100 Chemistry for Pharmacy Technicians

This course covers topics that range from general chemistry, organic chemistry to medicinal and pharmaceutical chemistry. Students will learn the basics of chemistry and how that knowledge is applied to the development of new drug entities. The history and folklore of drug products will be explored and how that can be applied to the discovery of new drugs. Students will learn about new developments in chemistry that permit researchers to develop compounds that are more closely related to those that occur in nature. Drug interactions will be explored and how and why they may be expected to happen. In the laboratory students will demonstrate hands-on experience of some of the principles of chemistry. (Prereq: Qualifying score on reading assessment test OR ENGL0921) (BP/EP) 4 cr

Physics (PHYS)

PHYS1000 Fundamentals of Physics

Physics is the study of the way the universe works. This course is for those interested in learning more about the physical world around them and why things behave the way they do. Conceptual understanding of the subject will be emphasized. The topics covered include motion, forces, energy, heat, electricity and magnetism. The course may also include a study of waves, sound, light, and/or atomic structure. Classroom activities will include lectures, discussions, and demonstrations. (Prereq: None) (BP/EP) 2 cr

PHYS2001 Introductory Physics

MnTC: 2 & 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. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (BP/EP) 3 cr

PHYS2005 College Physics I

MnTC: 3

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. (Prereq: Qualifying score on math assessment test OR MATH1500 with a grade of C or better) (BP/EP) 4 cr

PHYS2010 College Physics II

MnTC: 3

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. (Prereq: Qualifying score on math assessment test OR MATH1500 with a grade of C or better and PHYS2005 with a grade of C or better) (BP/EP) 4 cr

Plumbing Technology (PLBG)

PLBG1000 Introduction to Piping Procedures

Students will study copper, plastic, cast iron and steel piping, which involves the joining of drainage, waste & vent, water and gas pipes. Students will become familiar with the different types of copper, plastic, cast iron, and steel pipe, fittings and tubing. Students will also utilize and study hand and power plumbing tools. Safe methods of handling and installing piping in accordance with Minnesota State Plumbing Code and general industry accepted standards will be emphasized. Students will apply and obtain the State of Minnesota plumbers apprentice license. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (EP) 2 cr

PLBG1011 Blueprint Reading and Estimating

The student will learn to read building plans and pipe diagrams, interpret floor plans, elevation views, draw isometrics and sketch detailed work drawings. Student will develop skills in estimating plumbing cost for new installations and remodels and prepare projects using industry developed estimating procedures. Estimates include material, fixtures and labor costs with profit and overhead calculations. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (EP) 3 cr

PLBG1016 Building Sewers and Drain Systems

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. (Prereq: PLBG1035) (EP) 3 cr

PLBG1020 Copper Pipe Procedures

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (EP) 2 cr

PLBG1025 Plastic Pipe Procedures

Students will study plastic piping, which involves the joining of plastic pipes for water supply, distribution and space heating. Students will become familiar with the different types of plastic pipe, fittings and tubing. Plastic

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (EP) 2 cr

PLBG1031 Plumbing Calculations

This course will apply mathematics to plumbing calculations in developed lengths of pipe, fitting allowances, offsets, area, volumes, diameters, weights and pressures. Students will also use formulas common to the plumbing industry. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (EP) 3 cr

PLBG1035 Minnesota State Plumbing Code I

Students will study the Minnesota Plumbing Code, which covers the laws, rules, and regulations of plumbing installed in Minnesota. (Prereq: Qualifying score on reading assessment test OR ENGL0901) (EP) 3 cr

PLBG1041 Plumbing Systems

Students will study sizing, service and installation of hot water heaters, hydronic heating systems, water softening systems, backflow prevention systems and water and sewage pumps. Students will study proper sequence and operation of gas and electric hot water heaters and boilers, also water softening equipment. (Prereq: PLBG1035) (EP) 3 cr

PLBG1045 Minnesota State Plumbing Code II

Students will study the Minnesota Plumbing Code which covers the laws, rules and regulations of plumbing installed in Minnesota including plumbing principles, design, materials, traps and fixtures, water supply and drainage, waste and vent systems used in construction, repair and remodeling of buildings. (Prereq: PLBG1035) (EP) 3 cr

PLBG1050 Plumbing Fixture Installation

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. (Prereq: PLBG1035) (EP) 3 cr

PLBG1055 Internship

Students will work in a sponsoring plumbing-related business applying knowledge, and concepts and skills learned in the classroom. (Prereq: PLBG1035) (EP) 2 cr

Plastics Engineering Technology (PLST)

PLST1008 Fundamentals of Plastics/Chemistry/Ingredients

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. (Prereq: None) (BP) 4 cr

PLST1041 Introduction to Plastics Molding Processes

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. (Prereq: None) (BP) 3 cr

PLST1075 Careers in Manufacturing

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. (Prereq: None) (BP) 2 cr

PLST1500 Plastics Processes Lab

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. (Prereq: Instructors approval) (BP) 1_to_3 cr

PLST2007 Properties and Tests of Selected Plastics

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. (Prereq: PLST1008) (BP) 4 cr

PLST2011 Extrusion Molding Processes I

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. (Prereq: None) (BP) 3 cr

PLST2017 Extrusion Molding Processes II

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. (Prereq: PLST2011) (BP) 4 cr

PLST2030 Systematic Medical Device Protocol

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. (Prereq: Instructors approval) (BP) 3 cr

PLST2035 Medical Micro-bore Extrusion Process

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 micro-bore extrusion process. (Prereq: Instructors approval) (BP) 3 cr

PLST2128 Injection Molding Process I

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. (Prereq: None) (BP) 4 cr

PLST2138 Injection Molding Process II

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. (Prereq: PLST2128) (BP) 4 cr

PLST2143 Injection Molding Process III

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. (Prereq: PLST2138) (BP) 4 cr

PLST2150 Design of Experiments (DOE) for Injection Molding

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. (Prereq: MATH1050 or MATH1060 and METS1050) (BP) 4 cr

PLST2240 Scientific Injection Molding I

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. (Prereq: Injection Molding certificate or equivalent experience with instructor approval) (BP) 4 cr

PLST2245 Scientific Injection Molding II

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. (Prereq: PLST2240 and Injection Molding certificate or equivalent with instructors approval) (BP) 4 cr

PLST2250 Scientific Injection Molding III

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. (Prereq: PLST2245 and Injection Molding certificate or equivalent experience with instructor approval) (BP) 4 cr

PLST2300 Plastics Engineering Technology Internship

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. (Prereq: Instructor approval) (BP) 4 cr

Psychology (PSYC)

PSYC2300 General Psychology

MnTC: 5

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921. Basic computer literacy skills required) (BP/EP) 3 cr

PSYC2310 Psychology Throughout the Lifespan

MnTC: 5 & 7

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921) (BP/EP) 3 cr

PSYC2320 Psychology of Living in the 21st Century

MnTC: 5

Road rage, computer viruses, technological advances, and information overload can all contribute to our experience of anxiety, depression, insomnia, anger, and stress! This course will explore the psychological, social, and physical effects of living in the 21st century. Vulnerable areas in close relationships, career-life balance, physical health, mental health and communication will be examined. Strategies for successful adaptation will be contrasted with ineffective lifestyle patterned responses. Effective and ineffective coping skills will be explored to encourage more successful adaptation to our ever-changing world. (Prereq: Qualifying score on reading assessment test OR ENGL0921) (BP/EP) 3 cr

PSYC2330 Abnormal Psychology

MnTC: 5 & 7

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. (Prereq: Qualifying score on reading assessment OR ENGL0921 and PSYC2300 recommended. Basic computer literacy skills required) (BP/EP) 3 cr

Public Works (PWRK)

PWRK1001 Introduction to Public Works Employment

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921 and Qualifying score on writing assessment test OR ENGL0930) (BP/EP) 3 cr

PWRK1005 Introduction to Maintenance Operations and Activities

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921 and Qualifying score on writing assessment test OR ENGL0930) (BP/EP) 3 cr

PWRK1010 OSHA 510

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921) (BP/EP) 2 cr

PWRK1015 Emergency Response for Public Workers

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. (Prereq: 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) (BP/EP) 2 cr

PWRK1020 Basic Engine Repair

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. (Prereq: Must have Public Works as a declared Major) (BP/EP) 3 cr

PWRK1025 Street Maintenance, Materials and Applications

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. (Prereq: Qualifying score on reading assessment test OR ENGL0901 and must have Public Works as a declared Major) (BP/EP) 3 cr

PWRK1030 Trenching/Excavation Safety

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. (Prereq: None) (BP/EP) 3 cr

PWRK1035 Confined Space Safety

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. (Prereq: None) (BP/EP) 3 cr

PWRK1040 Mechanized Equipment Operation

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. (Prereq: None) (BP/EP) 3 cr

PWRK1045 Practical Skills for Public Works

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. (Prereq: Must have Public Works as a declared Major) (EP) 4 cr

PWRK1050 Introduction to Municipal Utilities

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. (Prereq: Must have Public Works as a declared Major) (BP/EP) 3 cr

PWRK1055 Public Works Safety

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. (Prereq: Qualifying score on reading assessment test OR ENGL0921 and Qualifying score on writing assessment test OR ENGL0930) (BP/EP) 3 cr

PWRK1065 Introduction to Park Maintenance

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. (Prereq: Must have Public Works as a declared Major) (BP/EP) 3 cr

PWRK1070 Commercial Driver's License Class B Training

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. (Prereq: Must be 18 years of age, possess a valid MN driver's license and meet all qualifications specified by MN Statute) (BP/EP) 2 cr

PWRK1100 From Line to Leadership: Transitioning from Operations to Supervision

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. (Prereq: None) (EP) 2 cr

PWRK2000 Public Works Internship

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. (Prereq: PWRK1020, PWRK1025, PWRK1045, PWRK1050, and PWRK1065) (BP/EP) 3 cr

Sociology (SOCL)**SOCI2000 Marriage and Family****MnTC: 5 & 7**

Marriage and Family is the sociological study of the relationships of family life and society in contemporary United States. Analysis will focus on historical

perspectives, cross-cultural perspectives, gender roles, gender stratification, sexual roles, cohabitation, and societal norms and expectations. Also, divorce, family violence, remarriage, and parenting roles will be studied. (Prereq: Qualifying score on reading assessment test OR ENGL0921 and Qualifying score on writing assessment test OR ENGL1021 or ENGL1026. Basic computer skills recommended) (BP/EP) 3 cr

SOCI2100 Introduction to Sociology**MnTC: 2 & 5**

Sociology is the scientific study of human social activity. This course will emphasize the methods analysis and perspectives of sociology along with focus on the characteristics of human group life as it relates to the structure of social environment and its influence on the individual. (Prereq: Qualifying score on reading assessment test OR ENGL0921 and Qualifying score on writing assessment test OR ENGL1021 or ENGL1026. Basic computer skills recommended) (BP/EP) 3 cr

SOCI2130 Food, Culture and Society**MnTC: 5 & 10**

This course explores how food production, distribution, preparation and consumption shape, and are shaped by, society. It emphasizes the historical roots of food systems, the relationship between food and culture and the social relations of global and local food markets. (Prereq: Qualifying score on reading assessment test OR ENGL0921 and Qualifying score on writing assessment test OR ENGL1021 or ENGL1026. Basic computer skills recommended) (BP/EP) 3 cr

SOCI2200 Racial and Ethnic Relations**MnTC: 5 & 7**

This course will focus on identification, patterns of social behavior, and treatment of minority groups within the United States. Theories of prejudice and discrimination, key concepts, and social change will be addressed. (Prereq: Qualifying score on reading assessment test OR ENGL0921 and Qualifying score on writing assessment test OR ENGL1021 or ENGL1026. Basic computer skills recommended) (BP/EP) 3 cr

Welding and Metal Fabrication (WLDG)**WLDG1000 Cutting Processes**

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. (Prereq: None) (BP) 3 cr

WLDG1010 Practical Application for Estimating and Layout

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. (Prereq: None) (BP) 2 cr

WLDG1075 Careers in Manufacturing

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. (Prereq: None) (BP) 2 cr

WLDG1100 Oxyacetylene Welding

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. (Prereq: None) (BP) 3 cr

WLDG1135 Gas Metal Arc Welding I

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. (Prereq: None) (BP) 3 cr

WLDG1140 Gas Metal Arc Welding II

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. (Prereq: WLDG1135 and WLDG1181 or instructor approval) (BP) 3 cr

WLDG1165 Gas Metal Arc Welding III

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. (Prereq: WLDG1140) (BP) 3 cr

WLDG1175 GMAW Fabrication Methods

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. (Prereq: WLDG1140 or instructor approval) (BP) 3 cr

WLDG1182 Blueprint Reading for Welders

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. (Prereq: None) (BP) 2 cr

WLDG1220 Gas Tungsten Arc Welding I

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. (Prereq: None) (BP) 3 cr

WLDG1225 Gas Tungsten Arc Welding II

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. (Prereq: WLDG1220 and WLDG1181 or instructor approval) (BP) 3 cr

WLDG1235 Gas Tungsten Arc Welding III

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. (Prereq: WLDG1225) (BP) 3 cr

WLDG1245 GTAW Fabrication Methods

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. (Prereq: WLDG1181 and WLDG1225 or instructor approval) (BP) 3 cr

WLDG1310 Shielded Metal Arc Welding I

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. (Prereq: None) (BP) 3 cr

WLDG1320 Shielded Metal Arc Welding II

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. (Prereq: WLDG1181 and WLDG1310) (BP) 3 cr

WLDG1330 Shielded Metal Arc Welding III

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. (Prereq: WLDG1320) (BP) 3 cr

WLDG1340 Structural Iron Fabrication Methods

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. (Prereq: WLDG1181 and WLDG1320 or instructor approval) (BP) 3 cr

WLDG1350 Flux Cored Arc Welding I

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. (Prereq: WLDG1135) (BP) 3 cr

WLDG1360 Flux Cored Arc Welding II

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. (Prereq: WLDG1350 and WLDG1181) (BP) 3 cr

WLDG1370 Precision Metal Stamping Operations

This course prepares the student to learn the fundamentals of metal forming and develop technical skills and knowledge on how to operate mechanical power presses. Topics covered include: identifying press types and components, safe operating procedures, proper use

of personal protective equipment, and identifying types of tooling and their components. (Prereq: M Powered Level I or equivalent) (BP) 3 cr

WLDG1375 Precision Metal Stamping Setup

This course prepares the student to learn the fundamentals of parts inspection and quality control and to develop skills and knowledge on how to setup mechanical power presses. Topics covered include: Geometric Dimensioning and Tolerancing (GDT) interpreting engineering drawings, sensor and die protection, programming feed and speed and pilot release, applied metal forming theory, applied geometry and trigonometry, calibration and statistical process control (SPC). (Prereq: WLDG1370 or instructor approval) (BP) 3 cr

WLDG1500 Welding Process Lab

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. (Prereq: Instructor approval) (BP) 1_to_3 cr

WLDG2275 Welding & Metal Fabrication Internship

This course allows the student to gain on-the-job experience in the Welding & 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. (Prereq: Instructor approval and completion of at least 50% of your degree or diploma) (BP) 1_to_4 cr

ADMINISTRATION & FACULTY LISTING

Administration

President	Merrill Irving Jr.	Ed.D., University of Southern California M.P.A., West Virginia University B.A., West Virginia University
Provost	Carmen Coballes-Vega	Ph.D., University Illinois, Champaign-Urbana M.A., New York University B.A., Atlantic Union College
Vice President of Finance and Operations	Craig Erickson	B.A., University of St. Thomas Certified Public Accountant
Academic Dean	Dara Hagen	M.A., University of St. Thomas B.A., University of St. Thomas
Academic Dean	Adam Hayashi	Ph.D., University of Florida M.S., University of North Texas B.S., Texas A&M University
Academic Dean	Tina Jackson	Ph.D., University of Texas at Austin M.A., University of Wisconsin
Academic Dean	Alison Leintz	M.A., Bethel University B.S., Empire State College
Dean of Enrollment Services	Kristine Ramos- Walker	M.P.N.A., Metropolitan State University B.A., University of St. Thomas
Dean of Students	Jessica Lauritsen	M.A., University of St. Thomas B.S., St. Cloud State University
Dean of Workforce Education	Kellie McElroy Hooper	B.S., Western Michigan University, Criminal Justice and Sociology M.L.S., Eastern Michigan University, Liberal Studies M.P.A., University of Minnesota, Public Affairs
Director of Human Resources	Sharon Mohr	B.A., Metropolitan State University A.A., Inver Hills Community College
Director of Technology	Jason Kopp	M.S., St. Cloud University B.S., St. Cloud University
Chief Advancement and Communications Officer	Nairobi Abrams	B.B.A., Howard University

Counselor

Counselor	Matt Gustafson	M.Ed., Lynchburg College B.S., Liberty University
Counselor	Susan Lorenz	M.A., University of Nebraska, Lincoln B.A., Midland College

Librarian

Librarian	Jennie Simning	M.L.I.S. Dominican University B.A., University of Minnesota, Twin Cities
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Faculty

Business & Information Technology		
Accounting (ACCT)	Craig Anderson	M.A., University of Minnesota B.S., University of Minnesota B.A., University of St. Thomas Certified Management Accountant (CMA)
	Erin Mrkonich	M.B.A., St. Cloud State University B.S.B., University of Minnesota Certificate in Financial Planning, Boston University
	Christine Reineke	M.B.A., Pepperdine University B.B.A., University of Wisconsin, Eau Claire Certified Public Accountant
Business (BUSN)	Joan Kieren	B.S., University of Wisconsin - Madison
	Michael K. Pepin, JD	Juris Doctorate, Thomas M. Cooley B.S., Northern Michigan University
	Jeffery Peterson	M.B.A., University of St Thomas B.A., Simpson College
Information Technology (CCIS)	Joan Bernard	M.A., St. Mary's University B.A., University of South Dakota CCNA (Cisco Certified Network Associate)
	David Bine	B.A., University of Minnesota Graduate Certificate, University of Minnesota
	Abdiwali Daud	M.S., St. Mary's University of Minnesota B.S., St. Mary's University of Minnesota
	Steven Dupay	M.A., St. John's University B.A., University of St. Thomas
	Timothy Eiler	M.B.A., University of Houston, Clear Lake B.S., University of Minnesota, Twin Cities
	Svetlana Gluhova	M.A., Metropolitan State University B.A., University of Minnesota
	Frank Kaduk	M.A., United States international University B.A., San Diego State University
	Jeffrey Lunde	MA., Mankato State University BA., North Dakota State University
	Mary Mosman	B.A., St. Olaf College
	Donald Myhre	M.A., University of Minnesota B.A., St. Cloud State
	Linda Paquette	B.S., University of Minnesota
	Vinod Sethi	M.S., Minnesota State University, Mankato B.S., North Dakota State University
	Grant Spencer	M.D., United Theological Seminary M.S., University of St. Thomas B.A., University of Winnipeg Diploma, Red River Community College
	Ann Wolff	M.A., University of St. Thomas B.A., Iowa State University

Building & Landscape Careers		
Architectural Technology (ARCH)	Sandra Kretsch	M.S., University of Colorado B.S., University of Colorado LEED AP
Carpentry (CARP)	Jay Carlson	B.S., Bemidji State University A.A.S., North Hennepin Community College Diploma, Journeyman Carpenter
	William Joos	Certificate, Hennepin Technical College
Heating, Ventilation and Air Conditioning (HVAC)	Mark Arens	License, Minnesota Power Limited Technician License, Minneapolis Master Gas Fitter License, Minneapolis Master Refrigeration License, Minneapolis Master Warm Air License, Minneapolis Master Plumber License, Minnesota Master Plumber License, Minnesota 1st Class Boilers License, EPA Universal Refrigerant Certificate, Hennepin Technical College Certificate, South Central Technical College
	Dennis Hanson	B.S., St. Cloud State University Diploma, Century College
	Chad Murphy	A.A.S., Hennepin Technical College Certificate, Anoka Technical College License, Special Engineer Boiler License, EPA Universal Technician License, Minneapolis Journeyman Warm Air License, Minneapolis Journeyman Gasfitter License, Minneapolis Journeyman Refrigeration License, Minneapolis Journeyman Steam/Hot Water License St. Paul Journeyman Gas Burner License, St. Paul Refrigeration
	Jim Ruhland	A.A.S., Hennepin Technical College License, Minneapolis Master Gas Fitter License, Minneapolis Master Registration License, Minneapolis Master Warm Air License, EPA Universal Refrigerant License, Minnesota 2nd Class Boiler License, Minnesota Power Limited Technician Certification, NATE Gas Furnaces Service Certification, NATE Heat Pumps Service
	Kent Slavik	Ph.D., CLST Columbus, Georgia M.Div., CLST Columbus, Georgia M.Th., CLST Columbus, Georgia B.Th., CLST Columbus, Georgia Degree of Occupational Proficiency, Red Wing Area Vocational-Technical Institute License, Minneapolis Master Gas Fitter License, Minneapolis Master Refrigeration License, Minneapolis Master Warm Air License, Minneapolis Journey Oil License, Minnesota Chief C Boiler License, EPA Universal Refrigerant

	Rhonda Wiggins	A.A.S., Hennepin Technical College Diploma, Isothermal Community College License, Minnesota Power Limited Technician License, EPA Universal Refrigerant License, Minnesota 1st Class B Boilers License, St. Paul Master Gas Fitter License, Minneapolis Master Gas Fitter License, St. Paul Master Refrigeration License, Minneapolis Master Refrigeration
Landscape and Horticulture (LNDC)	Debra Kvamme	B.S., University of Minnesota, Crookston A.A.S., University of Minnesota, Crookston
	Jay Siedschlaw	B.S., South Dakota State University
Plumbing Technology (PLBG)	John Barber	A.A.S., Indian Hills Community College Apprenticeship Certificate, Associated Builders & Contractors of Iowa License, Master Mechanical License, Master Plumber, Iowa, Minnesota and North Dakota License, Plumbing Contractor
Woodworking Technology (CBTG)	Keith Hanstad	Diploma, Hennepin Technical College
	Jim May	Diploma, St. Paul Technical College AWI Member
Emergency & Public Service		
Emergency Medical Services (EMSV)	Al Benney	A.S, Mankato State University National Registry of EMT Paramedics
	Scott Lindberg	Diploma, Wadena Technical College
	Joseph Martinez	Community Paramedic, Hennepin Technical College Nationally Registered Paramedic, Century College
Environmental Health and Safety (ENHS)	Anne Mathiowetz	A.A.S., Fire Protection Technology, North Hennepin Community College A.S., Occupational Safety Management, South Central College
	Phillip Mathiowetz	B.S., Fire Department Administration, Columbia Southern University A.A.S., Emergency Management, Hennepin Technical College A.A.S., Fire Protection Technology, North Hennepin Community College
	Jason Stratman	M.B.A., Bellevue University B.S., Columbia Southern University A.A.S., Western Nebraska Community College
Fire Protection (FRPT)	Douglas Dyrland	A.A.S., Fire Science Technology, Hennepin Technical College Diploma, Hennepin Technical College Minnesota State Fire Service Certification
Law Enforcement (LAWE)	Jadelle Breitbarth	M.E.D., University of Minnesota, Twin Cities B.A.S., University of Minnesota, Twin Cities
	Dale Burns	M.A., St. Mary's University, Public Safety Administration B.A., St. Mary's University, Political Science
	Shawn Williams	M.S., St. Cloud University, Criminal Justice B.A.. Winona State University, Criminal Justice

	Mark Holden	M.A., St. Mary's University, Education M.S., Capella University, Public Safety B.S., Mankato State University, Social Behavioral Science in Law Enforcement
General Education		
Arts (ARTS)	Martin Springborg	M.F.A., University of Minnesota, Twin Cities B.F.A., University of Minnesota, Twin Cities
Biology (BIOL)	Diane Hallberg	EMT M.Ed, Oral Roberts University B.S., University of Minnesota
	Lamia Jano	M.S., Texas Woman's University B.S., Texas Woman's University
	Jane Sprangers Bolan	D.V.M., University of Minnesota, Twin Cities M.S., University of Miami
Career Development Services (CCDS)	Bernie Vrona	M.S., University of Southern California, Social Work B.A., University of Wisconsin, Psychology and Sociology Entrepreneurial Certificate, University of Pennsylvania, Wharton School of Business
	Gail Waller	M.A., University of South Alabama, Counselor Education B.A., University of South Alabama, Individualized Studies
Communication (COMM)	Lance Davis	M.S., Metropolitan State University B.A., Winona State University
	Jenessa Gerling	M.A., Northern Illinois University B.A., Luther College
	Kerry Norling	M.A., Minnesota State University, Mankato B.A., St. Cloud State University B.S., St. Cloud State University
	Carmen Price	M.A., University of St. Thomas B.A., University of Minnesota
	Michelle Zeig	M.A., Minnesota State University, Mankato B.A., St. Cloud State University
Computer Literacy (CPLT)	Lesley Boyenga	B.A.S., Westmar College Diploma, Minnesota West Community & Technical College Certificate, Hennepin Technical College
	Renea Carlson	M.S., Bemidji State University B.S., Moorhead State University A.A., Northland Community College
	Nathan Rennels-Reed	M.A.T., East Carolina University B.S.B.A., East Carolina University
Economics (ECON)	Scott Sandok	M.A., Iowa State University B.A., University of Wisconsin, Eau Claire
English (ENGL)	Anna Davis	M.F.A., Hamline University B.A., St. Cloud State University A.A., North Hennepin Community College
	Cynthia Gribas	M.S., Purdue B.S., Bowling Green State University
	Michael Larson	M.A., St. Mary's University of Minnesota B.S., St. Cloud State University A.A., Fergus Falls Community College

	Gretchen Long	M.A., York University H.B.A., Lakehead University
	Robert McGinley Myers	M.F.A., University of Minnesota, Twin Cities B.A., Colorado College
	Andrea Potyondy-Smith	M.F.A., Minnesota State University, Mankato B.A., Northland College Master of Liberal Studies, Metropolitan State University
	Ken Schindler	M.A., American University in Cairo B.S., St. Cloud State University Reading Specialist, Minnesota State University, Mankato
English for Speakers of Other Languages (ESOL)	Mary Barthel	B.S., St. Cloud State University
	Nikole Brothen	M.A., Hamline University B.S., Minnesota State University, Mankato
	Hyeju Dorek	M.A., Minnesota State University, Mankato
	Jonna Meidal	M.A., Hamline University
	Kim Opsal	M.Ed., Hamline University B.S., University of Wisconsin Stout
	Chris van Lierop	M. Ed., Temple University B.A., Mount Holyoke College
Language (LANG)	Deborah Lawrence	B.A., North Central University M.A., Rosemullen University
Mathematics (MATH)	Andrea Buettner	M.Ed., University of Minnesota B.S., University of Minnesota, Duluth
	Jennifer Joa	M.S., Minnesota State University, Mankato B.A., St. Mary's College
	Jason Jones	M.S., University of Minnesota, Duluth
	Liza Kisch	M.Ed., University of Minnesota B.Math, University of Minnesota
	Darlyn Thomas	M.S., Southern Illinois University, Edwardsville B.S., Arizona State University B.S., Southern Illinois University, Edwardsville
	Todd Wadsworth	Ed.D., Liberty University M.A., Pepperdine University B.A., Middlebury College
Philosophy (PHIL)	Jason Burrows	M.A., University of Montana B.A., Simpson College
	Susan Parry	Ph.D., University of Minnesota, Twin Cities M.A., University of Utah B.A., Brigham Young University
Psychology (PSYC)	Tawnda Bickford	M.A., St. Mary's University B.A., Gustavus Adolphus College Licensed Psychologist, Minnesota Board of Psychology
Physics (PHYS)	Carolyn Erickson	Ph.D., University of Minnesota B.A., University of Minnesota
Sociology (SOCI)	Cristin Braesch	M.A., Minnesota State University, Mankato B.S., Bemidji State University
	Monica Erling	B.A., Iowa State University M.S., University of Wisconsin, Madison

Health Careers		
Dental Assistant (DNTL)	JoAnn Brandt	B.A., Metro State University Diploma, Normandale Community College Certified Dental Assistant Licensed Dental Assistant Restorative Functions Dental Assistant
	Jacqueline (Jackie) Bymark	B.E.S., St. Cloud State University A.A., Central Lakes College Certified Dental Assistant Licensed Dental Assistant
	Lucy Shoemaker	B.S., University of Wisconsin, Stout Certified Dental Assistant Licensed Dental Assistant
	Susan Thaemert	B.S., University of Minnesota Diploma, University of Minnesota School of Dentistry Restorative Functions Dental Assistant, Normandale Community College Certified Dental Assistant Licensed Dental Assistant
Health Unit Coordinator (HLUC)	Dalinda Theroux	Medical Assistant Diploma, Meyer Vocational Technical School National Certification, Health Unit Coordinator Member of the National Association of Health Unit Coordinators
Medical Assistant (MAST)	Sally Brown	B.S., Mankato State University Medical Technologist
	Cherika DeJesus	M.S., National American University B.S., Minnesota School of Business A.A.S., Minnesota School of Business Diploma Minnesota School of Business
Medical Office Careers (OFCR)	Jean Konrardy	B.S., Mankato State University A.A.S., St. Catherine University Registered Health Information Administrator Member American Health Information Management Association
	Carmen Price	Master Business Communication, University of St Thomas, St Paul, MN B.A., Speech/Communication, University of Minnesota, Twin Cities Medical Secretary Certification, University of Minnesota, Twin Cities
	Roberta Regis	B.A., Metropolitan State University A.A., Minneapolis Community College J.C.P.C., CEDC American Academy of Professional Coders
Pharmacy Technology (PHRM)	Stephen Hazelton	A.A., Normandale Community College B.S., Pharmacy University of Minnesota, Twin Cities Registered Pharmacist
Practical Nursing (NURS)	Kristen Bebeau	M.A., Bethel University B.S.N., Bethel College A.S., Anoka Ramsey Community College
	Kim Becker	M.A., Bethel University B.S.N., South Dakota State University
	Jeanne A. Bowman	B.S.N., Winona State University A.D.N., Rochester Community College
	Janet Deems	B.S.N., University of Pittsburgh

	Marlene Fuller	M.A., Capella University B.S.N., Metropolitan State University
	Julie Furman	B.S.N., Minnesota State University, Mankato
	Muriel Kruggel	B.S., Crown College Minnesota Diploma, St. Cloud Hospital School of Nursing BSN, Metropolitan State University, St. Paul
	Rebecca Lange	M.S.N., University of Phoenix B.S.N., Minnesota State University, Mankato
	Anna Schmidt	M.A., Bethel University B.S.N., Metropolitan State University
	Jill Waletich	M.A., Bethel University B.S.N., Bethel University B.S., Northern State University A.D.N., Northland Community College Diploma Nursing NW Technical College
Manufacturing & Engineering Technology		
Automation Robotics Engineering Technology (ARET)	Tom Gillespie	B.S., Bemidji State University
	Brad Thorpe	M.A., St. Mary's University B.S., University of Wisconsin, Stout A.A.S., Hennepin Technical College
	Jeffery Thorstad	M.S., Capella University B.A., St. John's University A.A.S., Hennepin Technical College
Electronics Technology (ELEC)	Damodar Ramanuj	M.S., North Carolina State University B.S.E.E., BMS College of Engineering, India
	Dave Sladek	B.A., University of Minnesota A.A., North Hennepin Community College Diploma, A+ Certification, Hennepin Technical College Certificate, Hennepin Technical College
Engineering CAD Technology (ENGC)	Joseph Allen	Diploma, Hennepin Technical College
	Rick Montzka	B.S., Metropolitan State University A.A.S., North Hennepin Community College Diploma, Hennepin Technical College
Fluid Power Engineering Technology (FLPW)	William L. Martin	Diploma, Hennepin Technical College Fluid Power Specialist Certification Certificate, Hennepin Technical College
	Jeannine Uehling	A.A.S., Hennepin Technical College Diploma, Hennepin Technical College
Industrial Building Engineering & Maintenance (IBEM)	William L. Martin	Diploma, Hennepin Technical College Fluid Power Specialist Certification Certificate, Hennepin Technical College
Machine Tool Technology (MACH)	Craig Barringer	Diploma, St. Cloud Technical College, Machine Shop
	Richard Granlund	B.S., University of Minnesota A.A., North Hennepin Community College Diploma, Anoka Technical College
	Robert Lund	B.S., University of Minnesota, Moorhead A.S., Normandale Community College Diploma, Minneapolis Community and Technical College
	Joseph Allen	Diploma, Hennepin Technical College

Manufacturing Engineering Technology (METS)	Rick Montzka	B.S., Metropolitan State University A.A.S., North Hennepin Community College Diploma, Hennepin Technical College
Plastics Engineering Technology (PLST)	Dan Ralph	Diploma, Hennepin Technical College
Welding and Metal Fabrication (WLDG)	Chris Hensiak	Diploma, St. Paul College Diploma, Gateway Tech Certificate, Hennepin Technical College
Media Communications Careers		
Audio Production (ARSP)	Matt Holmes	B.S., Bemidji State University A.A.S., Hennepin Technical College
	Rik Stirling	B.A., St. Olaf College Certified Expert Pro Tools Instructor Avid/Digidesign
Graphic Design (MGDP)	Paul Howlett	A.A.S., Brown Institute
	Susan Longworth	B.M.I.S., Cardinal Stritch University
Interactive Design and Video Production (MMVP)	Richard Oxley	B.S., St. Cloud State University Apple Pro Apps Certification for Final Cut Pro
	John McCaffrey	M.F.A., University of Miami B.F.A., University of Wisconsin, Madison
Service & Education		
Child Development (CHLD)	Erin Kennedy	M.S., Concordia University B.S., Concordia University
	Carla Weigel	M.Ed., St. Scholastica B.A., University of North Dakota
Culinary Arts (CULA)	Gretchen Dorn	M.A., St. Mary's University B.A., St. Olaf College Diploma, St. Paul Technical College Member, American Culinary Federation (ACF)
	Denis Durnev	A.A.S., Hennepin Technical College
	Richard Forpahl	B.S., University of Wisconsin, Stout Diploma, Hennepin Technical College
	Robert Graham	Diploma, Hennepin Technical College
	Dan Vasterling	Certified Executive Chef (CEC), American Culinary Foundation A.A.S., St. Paul College Degree of Proficiency (DOP) in Chef's Training, 916 Vo-Tech
Transportation Careers		
Auto Body Collision Technology (ABCT)	Ron Furchner	Diploma, St. Paul TVI Auto Body Technician ASE Certified Master Technician General Motors Certified Trainer I-CAR Certified Technician
	Mike Janovsky	A.A.S., Hennepin Technical College I-CAR Certification ASE Master Certification
	Mike Netzinger	Diploma, Hennepin Technical College ASE Certification I-CAR Certification
	Tom Phillips	Diploma, Hennepin Technical College I-CAR Instructor I-CAR Certified Technician ASE Certified Technician

Automotive Technology (ATEC)	Susan Amacher	B.S., University of Minnesota A.A.S., North Hennepin Community College ASE Master Technician ASE Advanced L-1 Certification ASE MLR Certification
	Brandon Holland	A.A.S., Wyoming Technical Institute ASE Master Diagnostic Advanced Level Specialist Toyota Master Diagnostic Hybrid Specialist ATRA Certified 609 Air Conditioning EPA Certified
	Jerry Kuss	Diploma, Dunwoody Industrial Institute ASE Certification ASE L-1 Certification MACS Refrigerant Certification DaimlerChrysler Certification
	Donald Paulak	Diploma, Hennepin Technical College ASE Master Certification ASE Advanced L-1 Certification Technical Education Certificate, University of Minnesota Private Secretarial Diploma, Minnesota School of Business
	Mike Roberts	Ph.D., University of Minnesota M.Ed., University of Minnesota B.S., University of Minnesota A.A., Inver Hills Community College Diploma, Anoka-Hennepin Technical College ASE Master Certification ASE Advanced L-1 Certification
	Michael Rudolph	Diploma, Auto Body Repair, St. Paul College Diploma, Automotive Mechanics, St. Paul College ASE Master Certification ASE Advanced L-1 Certification
	Andrew Thul	B.S., University Of Wisconsin – Stout A.A.S., Hennepin Technical College ASE Master Technician 609 Air Conditioning EPA Certified L-1 Advanced Driveability Identifix Certified
Ford ASSET Program (FDAS & FMLR)	Drew Goddard	B.A., Bemidji State University A.A.S., North Hennepin Community College ASE Master Certification Ford Master Certification ASE L-1 & L-2 Certifications
	Brian Friede	A.A.S., North Hennepin Community College ASE Master Technician Ford Senior Master Technician
Marine, Motorsport and Outdoor Power Equipment Technology (MMST)	Jeff Donna	B.S., University of Wisconsin, Stout Certificate, Dakota County Technical College Certificate, Minnesota West Community and Technical College ASE Certified Honda TACS Certified
	Dan Weishaar	Diploma, 916 Career & Technical Center Certified, EETC 4 Stroke Engine Certified, EETC 2 Stroke Engine

Medium/Heavy Truck Technology (MHTT)	Dale Boyenga	B.S., Bemidji State University Diploma, Minnesota West Community and Technical College ASE Certification
	Duane Rasmussen	B.S., Bemidji State University Diploma, Hennepin Technical College Certificate, Hennepin Technical College ASE Master Truck Technician