

CATALOG

2013-2014



Hennepin Technical CollegeSM

LET'S DO THIS

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WELCOME to Hennepin Technical College

On behalf of all our faculty, staff, and students, I enthusiastically welcome you to “simply the best” technical college in the state of Minnesota! We are thrilled that you have chosen Hennepin Technical College (HTC) as your pathway to fulfill your educational and career/technical dreams with the skills and knowledge to ensure that your plans and aspirations become reality.

I assure you that HTC has state-of-the-art programs in many technical fields that are in-demand in today’s workplace. Our programs are supported by over 450 industry representatives who serve on advisory committees for each of our programs. They are volunteers who provide valuable expertise that we take seriously and integrate into our course curricula; consider when purchasing training equipment; develop internships; and use to revise learning outcomes that prepare our students for today’s careers. Career/technical education is needed today more than ever before in the history of our nation. Because the United States is competing in a global economy, HTC is doing its part to provide the very best training for our students in preparation for entering a highly skilled workforce. Please be assured, you will receive a world-class technical education at Hennepin Technical College.

In addition to our outstanding programs, HTC has assembled a comprehensive array of support services that will also contribute to your success. We have professional lab assistants and tutors who provide one-on-one assistance to students in classrooms and labs. Additionally, all of our faculty and staff are constantly looking for ways to serve you more effectively. It is our goal to deliver friendly, professional, and helpful service at all times. I am sure you have noticed our updated facilities. Within our Student Services suite, you will find departments that include: admissions, advising, counseling, registration, tuition/payments, financial aid, and the transfer center. The improved library provides an open space with access to computers. We are continually working to improve our College to make sure that you succeed. I look forward to greeting you at both campuses. I encourage you to come by my office or to send me an email with any questions or suggestions. I am always ready to hear from you. I wish you an enjoyable and successful learning experience at Hennepin Technical College!

Warmly,

Cecilia Cervantes, Ph.D.
President
Cecilia.Cervantes@hennepintech.edu



GENERAL INFORMATION

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.

Advisory Committees

Hennepin Technical College works closely with business and industry. Advisory committees guide, strengthen, and improve programs. Approximately 350 volunteers, including business leaders, educators, and alumni, serve on 35 program advisory committees. The members represent a cross-section of business and industry.

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 mental and physical challenges. 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

Hennepin Technical College provides equal access for all students to classes, programs, activities, and facilities without regard to race, color, creed, religion, age, national origin, disability, marital status, status with regard to public assistance, sexual orientation, gender identity, or gender expression. In addition, discrimination in education based on membership or activity in a local commission or inclusion in any other protected class as defined by law is prohibited.

Nondiscrimination in Education and Employment

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, 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 the policy for "Equal Opportunity and Nondiscrimination in Employment and Education" on the HTC website at www.hennepintech.edu. Hennepin Technical College's designated officer, Jean Maierhofer, Director of Diversity and Affirmative Action, can be contacted at (763) 488-2633. Her main office is located at the Brooklyn Park campus in room G116.

Sexual Violence

Sexual violence has no place in a learning or work environment. HTC shall work to eliminate violence in all its forms. Physical contact by designated college staff members may be appropriate if necessary to avoid physical harm to persons or property. For the complete MnSCU Sexual Violence Policy 1B.3, please visit www.mnscu.edu/board/policy/1b03.html

Report/Complaint of Discrimination/Harassment Investigation and Resolution

This procedure is designed to further implement Minnesota State Colleges and Universities 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, marital 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 Colleges and Universities, 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.

The system office, colleges, and universities 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" on the HTC website at www.hennepintech.edu. Hennepin Technical College's designated officer, Jean Maierhofer, Director of Diversity and Affirmative Action, can be contacted at (763) 488-2633. Her main office is located at the Brooklyn Park campus in room G116.

Accessibility

Hennepin Technical College complies with the Americans with Disabilities Act, the Rehabilitation Act, and the Minnesota Human Rights Act, which provide for reasonable accommodations for students with documented disabilities. Persons needing accommodations should contact Disability Services on either campus.

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

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

TTY
MN Relay 711

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

Drug Free College

The Drug Free Schools and Communities Act Amendment of 1989 (Public Law 101-266) requires colleges and universities to provide information to students and employees to prevent drug and alcohol abuse. Hennepin Technical College strives to educate students and employees of health risks associated with drug and alcohol use.

HTC prohibits the use, manufacture, sale, distribution, exchange, or possession of alcohol or controlled substances by any student or employee while on campus or while involved in any college activity, service, and program or work situation.

Sanctions

Administrative and legal sanctions, up to and including, expulsion and referral for prosecution will be imposed on students who violate the preceding standards of conduct.

Administrative and legal sanctions, consistent with existing contracts, up to and including termination of employment and referral for prosecution will be imposed on employees who violate these standards. A disciplinary sanction may include the completion of an appropriate rehabilitation program.

Legal Sanctions

Federal and state sanctions for illegal possession of controlled substances range from up to one year imprisonment and up to \$100,000 in fines for a first offense, to three years imprisonment and \$250,000 in fines for repeat offenders. Additional penalties include forfeiture of personal property and the denial of federal student aid benefits. Under federal laws, trafficking in drugs such as heroin or cocaine may result in sanctions up to and including life imprisonment for a first offense involving 100 gm or more. A first offense for trafficking in marijuana may result in up to five years imprisonment and fines up to \$500,000 for an offense involving less than 50 kg, and up to life imprisonment and fines up to \$8 million for an offense involving 1,000 kg or more. The State of Minnesota may impose a wide range of sanctions for alcohol-related violations. For example, first-offense penalties for driving while intoxicated (blood alcohol content of .08 or more) may result in a \$1,000 fine, 90 days in jail, and/or revocation of driver's license for 90 days.

Social Host

A Social Host Ordinance makes it unlawful for an individual regardless of age to provide an environment (place) where underage drinking takes place, regardless of who provided the alcohol.

Potential consequences: 90 days in jail and \$1,000 fine.

Prevention and Information

Primary prevention efforts will be to provide students and employees with appropriate information to make responsible decisions regarding alcohol and drug use. Contact an HTC counselor for advice and guidance.

Some of these efforts are as follows:

- Early identification and intervention efforts to provide assistance to those primary areas of concern.
- Crisis intervention procedures for those experiencing medical emergencies.
- Counseling and referral for those persons with a need for such services.
- Re-entry assistance for those students and employees who complete therapy for drug and alcohol abuse.
- Providing information regarding the college's policies as they pertain to standards of conduct and sanction.

The college will cooperate fully with law enforcement officials in the event of violations of local, state, or federal statutes.

Health Risks

Alcohol: Alcohol consumption causes a number of changes in behavior and physiology. Even low doses significantly impair judgment, coordination, and abstract mental functioning. Statistics show that alcohol use is involved in a majority of violent behaviors on college campuses, including acquaintance rape, vandalism, fights, and incidents of drinking and driving. Continued abuse may lead to dependency, which often causes permanent damage to vital organs and deterioration of a healthy lifestyle.

Amphetamines: Amphetamines can cause a rapid or irregular heartbeat, headaches, depression, damage to the brain and lungs, tremors, loss of coordination, collapse, and death. Heavy users are prone to irrational acts.

Cocaine/Crack: Cocaine users often have a stuffy, runny nose and may have a perforated nasal septum. The immediate effects of cocaine use include dilated pupils and elevated blood pressure, heart rate, respiratory rate, and body temperature, paranoia and depression. Cocaine is extremely addictive and can cause delirium, hallucinations, blurred vision, severe chest pain, muscle spasms, psychosis, convulsions, stroke and even death.

Hallucinogens: Lysergic Acid Diethylamide (LSD) causes illusions and hallucinations. The user may experience panic, confusion, suspicion, anxiety, and loss of control. Delayed effects, or flashbacks, can occur even when use has ceased. Phencyclidine (PCP) affects the section of the brain that controls the intellect and keeps instincts in check. Hallucinogens can cause liver damage, convulsion, coma and even death.

Marijuana: Marijuana may impair or reduce short-term memory and comprehension, alter sense of time, and reduce coordination and energy level. Users often have a lowered immune system and an increased risk of lung cancer. Users also experience interference with psychological maturation and temporary loss of fertility. The active ingredient in marijuana, THC, is stored in the fatty tissues of the brain and reproductive system for a minimum of 28 to 30 days.

Methamphetamine: Methamphetamines, known as speed, meth, ice, glass, etc., have a high potential for abuse and dependence. Taking even small amounts may produce irritability, insomnia, confusion, tremors, convulsions, anxiety, paranoia, and aggressiveness. Over time, methamphetamine users may experience symptoms similar to Parkinson's disease, a severe movement disorder.

Narcotics: Narcotics such as codeine, heroin or other opiate drugs cause the body to have diminished pain reactions. The use of heroin can result in coma or death due to a reduction in heart rate.

Steroids: Steroid users experience a sudden increase in muscle and weight and an increase in aggression and combativeness. Steroids can cause high blood pressure, liver and kidney damage, heart disease, sterility and prostate cancer.

Additional information can be found at www.nida.nih.gov

Drug and Alcohol Treatment Programs

Agencies and Community Resources

- Substance Abuse and Mental Health Services Administration, U.S. Department of Health and Human Services
Website: www.samhsa.gov
- United Way 2-1-1 (formerly First Call for Help)
Website: www.unitedwaytwincities.org Phone: 211 or 651-291-0211.
Call 2-1-1. It's free, confidential, and is available 24 hours-a-day, 7 days-a-week. United Way 2-1-1 provides callers with information about and referrals to human services for every day needs and in times of crisis. United Way 2-1-1 can connect you to resources dealing with family counseling, housing assistance, food, health services, legal help, transportation, child and senior services, volunteer and donation opportunities and many more!
- Hennepin County Chemical Health Program
Website: www.hennepin.us Phone: 612-348-4111
Chemical Health services are available for Hennepin County residents who have or may have problems with drug or alcohol abuse, or who have been referred by the Court. Services are available directly from the County and from a variety of health care and social services providers located throughout the county. Programs are culturally diverse and different treatment models are available.
Services include chemical dependency assessments, detoxification, referrals, and other support services. Referrals are available to inpatient and outpatient treatment; extended and transitional care; supportive housing; and case management. Assessments are available regardless of financial status. Private insurance may not cover some chemical health services. Services may be paid for with public funding if the recipient is financially eligible.
- Alcoholics Anonymous Greater Minneapolis Intergroup
Website: www.aaminneapolis.org Phone: (952) 922-0880
Greater Minneapolis Intergroup helps men and women who might have a drinking problem. Their purpose is to carry the message of Alcoholics Anonymous and to be of service to the A.A. Groups in the Twin Cities area. Contact them to find local meetings of Alcoholics Anonymous in your area.
- Narcotics Anonymous
Website: www.naminnnesota.org Phone: 1-877-767-7676
N.A. is a nonprofit fellowship or society of men and women for whom drugs had become a major problem.
- Addiction Search
Website: www.addictionsearch.com/treatment/MN/minnesota.html Phone: 1-800-559-9503

EMERGENCY INFORMATION

Emergency Closings

In the event of inclement weather or other emergency closings, listen to radio station WCCO (830 AM) for the official Hennepin Technical College closing notification. Notification of campus closures will be posted on the HTC webpage, 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 warnings, fire alarm all clear notifications, or other situations that impact campus safety.

Enroll on the HTC Campus Security webpage. 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 Coordinator, Brooklyn Park Campus (763) 488-2477

Jean Kreutter, Disability Services Coordinator, 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

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 will declare a major during the admissions process. HTC grants some or all awards listed below in each program of study. Awards are conferred upon successful completion of all award requirements. Students who have questions about their major selection or changing their major should meet with a counselor or 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 non-liberal arts professional field. An A.S. degree may also be designed to prepare students for employment. General education courses are selected from at least six of the ten goal areas of the Minnesota Transfer Curriculum. A.S. degrees are 60 credits. Hennepin Technical College offers Associate in Science degrees in selected majors. A.S. degrees are awarded to students upon satisfactory completion of all degree requirements.
- 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. A.A.S. degrees have a credit range from 60-72 credits. Hennepin Technical College offers Associate in Applied Science Degrees in selected majors. A.A.S. degrees are awarded to students upon satisfactory completion of all degree requirements.
- Diploma
Diplomas prepare students for positions that typically require one to two years of education with general education included. Diplomas have a credit range from 31-72 credits. Diplomas are awarded to students upon satisfactory completion of all diploma requirements.
- Advanced Technical Certificate
Advanced Technical Certificates prepare students for career advancement and enhancement opportunities that require less than one year of education. These certificates require previous related work experience or graduation from a related program of study. Advanced Technical Certificates have a credit range from 9-30 credits.
- 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.

Non-Degree Seeking

Students who are not seeking an A.S. degree, A.A.S. degree, diploma, or certificate but wish to take courses may do so by registering during the open registration period before the start of the semester. When registering the first time, students must submit an HTC application. The application can be submitted at the time of registration.

Students who wish to register prior to the open registration date must complete the admissions process.

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. Students are responsible for meeting course prerequisites and/or placement test score requirements. Please refer to the Placement Testing section.

Non-degree seeking students are not eligible for financial aid.

Visiting Students

Students wishing to enroll in classes at Hennepin Technical College (HTC) but not complete a degree are called visiting students. This would include students wanting to enroll in courses for enrichment purposes or career advancement.

- **Registration as a Visiting Student – Admitted to MnSCU Institution**
HTC allows students who are currently admitted at another system college or university to enroll as a visiting student. A visiting student shall not be required to submit an application for admission to HTC, and is not a candidate for a degree, diploma or certificate at HTC. A visiting student may enroll for a maximum of 21 credits per semester at HTC, provided that the student's total number of enrolled credits at all system colleges and universities shall not exceed 22 in any semester.
- **Registration as Visiting Student – Not Admitted to MnSCU Institution**
HTC allows students who are not currently admitted as a student at any system college or university to enroll for a maximum of 21 credits per semester at HTC without submitting an application for admission.

Visiting students will have the opportunity to enroll in classes later than degree seeking students. Visiting students must meet the necessary course prerequisites to be eligible for registration. Please review the course prerequisites before your registration date and contact the Registration Office for assistance.

Visiting students will register and pay for classes using the MnSCU 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.

Visiting student provisions

- Visiting students shall satisfy HTC course prerequisites.
- Visiting students who have an enrolment hold due to conduct or satisfactory academic progress must schedule an appointment to meet with a counsellor and submit an Academic Suspension Appeal. Students who have an enrollment hold from another system college or university due to outstanding financial obligations will be denied enrollment at HTC until the financial obligation is met.

International Students (F-1 Visa)

International students enrolling for fall semester must be admitted to HTC by June 1 and for spring by November 1. Summer admission is not accepted. International students are required to be enrolled in 12 or more credits each semester (fall and spring). Attendance at an International Student Orientation is mandatory. Upon arrival at the college, students must present their I-94, visa, and passport bio page to the International Student Advisor. International students must purchase health insurance through MnSCU prior to registering for courses at HTC. International students are responsible for maintaining their legal status while enrolled at HTC. For further information about maintaining legal status, see the international student advisor.

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.

To Apply for PSEO Admission at Hennepin Technical College

- Meet with your high school counselor to discuss how post-secondary coursework fits into your high school graduation requirements.
Complete and submit the following application materials to Hennepin Technical College. The packet should include:
 1. A Hennepin Technical College Application for Admission
 2. An official copy of your high school transcript
 3. A Minnesota Department of Education PSEO form (including the required signatures from your high school)
 4. An Immunization Verification Form
- Schedule a Placement Testing appointment by calling the HTC Admissions Office.
- Meet with an HTC counselor or advisor to review your test results and register for courses.

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.

TESTING

Placement Testing

Hennepin Technical College supports student success. In accordance with MnSCU board policy, testing is administered to place students into appropriate courses that ensure the best chance for success in college. Testing is required for students who declare a major or after registering for four cumulative credits. Picture identification is required before the placement test can be administered. Students may request a waiver from testing through the HTC Transfer Center. Students are required to enroll in courses at or below their assessed skill level. Students are required to complete all necessary prerequisite coursework.

If English is not your primary language, you may be required to take the ESL Reading test.

If you would like to refresh your basic skills before you take the placement tests, HTC offers some options:

- A suite of study guides that are accessible on the Placement Testing website under “Accuplacer Study Information” that include: Reading, Writing, and Math (Arithmetic to College Level). There is also an overview about the Computer literacy test that is available for students.
- The College Board also offers an updated Accuplacer Study Guide that can be viewed online at <http://media.collegeboard.com/digitalServices/pdf/accuplacer/accuplacer-sample-questions-for-students.pdf> The College Board study guide also includes the ESL versions of the Accuplacer test.
- For those students with an iPhone, iPod Touch or iPad, an interactive study guide may be downloaded/purchased at the iTunes Store.

Students are allowed to retest once in a three year period in reading, writing, computer literacy, and keyboarding and once in a two year period for mathematics. Students will be charged a retest fee of \$10 per testing session. Remediation or review of the subject area is strongly recommended prior to taking a retest.

CLEP (College Level Examination Program)

CLEP provides students of any age with the opportunity to earn college credit by earning qualifying scores on any of the 33 CLEP examinations. Students take CLEP exams to get college credit for what they have learned through independent study, advanced high school courses, noncredit adult courses, or professional development. Also, students save money taking CLEP exams; compare the cost of a CLEP exam (\$80 currently) to the cost of tuition. CLEP exams are free to active military service members.

CLEP Testing appointments must be made by calling the Testing Center at either campus: 763-488-2589 (Brooklyn Park) or 952-995-1547 (Eden Prairie). **No pre-registration is required.** The test administrator will register students the day they come in for testing. If you are unable to attend the scheduled testing appointment, please contact the Testing Center to cancel or reschedule.

CLEP Exam Costs

Two separate fees are paid on the day of the test.

- a \$20 non-refundable administration fee. Please pay at the Tuition Office by check, cash, or credit-card for each CLEP exam. If paying by check, please make checks payable to HTC.
- a CLEP examination fee of \$80 and is paid to the test administrator in the Testing Center (not the Tuition Office). This fee may only be paid for with a check (made out to CLEP) or by credit card. Please inform the test administrator at the time of registration if you want to pay for the exam by check.

CLEP ID Requirements

Students must bring two forms of ID. The primary ID must be government-issued (ex. driver's license, passport, or MN state ID, etc.) and the second ID needs to have either a photo or a signature. If proper identification is not presented, students will not be able to test.

CAREER DEVELOPMENT SERVICES

Career Development Services at HTC assists students to identify a career path. 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, resume and interview preparation, job search assistance, workshops, and career fairs.

Contact the Director of Career Services to receive more information about accessing career development services at HTC.

Cheryl Benkofske, Director of Career Services (763) 488-2411

COUNSELING/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:

- Counseling
Professional counselors serve the college community by providing academic, career, and personal counseling to students in a confidential setting. Students can 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.
- Advising
Students may meet with an advisor in Enrollment Services for assistance with the admissions, registration, and financial aid processes.
- 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.
- English Language Learners (ELL) Student Advisor
The ELL student advisors offer assistance to English language learners with services such as financial aid, admissions, initial course placement, and career advising. They can also help in locating services for social and academic support.

- **Multicultural/International Student Advisor**
International students are required to meet with the multicultural/international student advisor for immigration and visa regulation advising. Other services provided are aimed at supporting the retention of culturally diverse students from enrollment through graduation.

TRANSFER OF CREDIT

Transfer of Credit from Another College to HTC

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. Additional documentation may be requested to complete a transfer evaluation.

Courses with a content match to the required HTC course may be transferred and used to satisfy specific course requirements in an A.S. degree, A.A.S. degree, diploma, and/or certificate program. Consideration for advanced status may be given to students who have already earned a degree or have completed the Minnesota Transfer Curriculum (MnTC).

Minnesota Transfer Curriculum guidelines will be used to categorize transferred General Education courses into one of ten MnTC goal areas. Credit for general education coursework that does not fit into any goal area will not be granted.

If a student's cumulative GPA at the sending institution is less than 2.0, D grades will not be accepted in transfer from that school. However, if the course is part of the MnTC, D grades will be accepted unless otherwise specified by program requirements. No F grades will be accepted in transfer. Courses approved for transfer must be comparable in nature, content, and level and match at least 75 percent of the content and goals of the course for which the student is seeking equivalent credit. Technical courses must have been completed within the past five years to be considered for transfer. (Nursing students should consult with the transfer specialist regarding specific program transfer requirements.) Transfer grades are not calculated in a student's GPA. Refer to the HTC website for additional transfer information.

If you have earned college credit at other institutions or through alternative means such as AP, IB, CLEP Examinations or military education, you may send transcripts or the appropriate documents to the Hennepin Technical College Transfer Center, Eden Prairie Campus, for evaluation.

The number of credits transferred to Hennepin Technical College is dependent upon the specific requirements of each program or degree offered at HTC.

For additional transfer information, go to www.mntransfer.org

eTranscript (Transfer From Other MnSCU Colleges)

Students are no longer required to request official transcripts from other MnSCU school(s) that they have previously attended. Hennepin Technical College may be able to electronically retrieve official transcripts (eTranscripts) from other MnSCU institutions free of charge. HTC will retrieve all available MnSCU eTranscripts without any action on the student's part based on the student's HTC application date.

It is the student's responsibility to submit an E-Transcript Retrieval Request form in the following situations:

- The student applied to HTC before November 5, 2009, and did not previously submit an up-to-date official transcript from another MnSCU institution.
- New grades have been posted at another MnSCU institution(s) because the student had "In Progress" grades at the time they applied to HTC, or the student has since completed additional courses at another MnSCU institution.
- Financial hold(s) at other MnSCU institution(s) at the time of the student's application to HTC have been resolved. (E-Transcripts will not be available and students will not be able to register at HTC until they resolve the financial hold(s) and submit the eTranscript Retrieval Request Form to HTC, along with a receipt or account statement that verifies a zero balance exists at the other MnSCU institution.
- An eTranscript was not retrieved at the time of application for some other unknown reason.

eTranscripts are available for MnSCU institutions only. Students who attended non-MnSCU schools or the University of MN must request official transcripts from that school be sent to HTC.

Minnesota Transfer Curriculum (MnTC)

The Minnesota Transfer Curriculum (MnTC) is intended to help students transfer credits within public colleges and universities in Minnesota. MnTC courses are designed to give students a college-level general education curricula that focuses on the skills and knowledge needed to support the technical courses in their A.S. and A.A.S. degree program and to be successful in today's society.

Minnesota Transfer Curriculum (MnTC) at Hennepin Technical College

Hennepin Technical College offers A.A.S. degrees in many of its programs. By definition, an A.A.S. degree at HTC requires 15 or more credits of general education courses from at least three different goal areas of the Minnesota Transfer Curriculum. HTC also offers A.S. degrees in some programs. By definition, an A.S. degree at HTC requires 30 or more credits of general education from at least six different goal areas of the Minnesota Transfer Curriculum.

Students are also able to complete the entire MnTC at Hennepin Technical College. By completing at least 40 credits from all ten goal areas, a student can transfer this entire block to any other state college or university in Minnesota. Questions regarding the MnTC or the specific requirements to complete the entire MnTC should be directed to the transfer specialist or a counselor.

The MnTC Goal Areas are as follows:

MnTC Goal 1 Communications

At least 9 credits (including ENGL2121 and at least 3 credits in COMM)

COMM 2050	Interpersonal Communication	3
COMM 2060	Small Group Communication	3
COMM 2070	Computer Mediated Communication in the Digital Age	3
COMM 2130	Public Speaking	3
ENGL 2001	Workplace Correspondence	2
ENGL 2121	Writing and Research	4
ENGL 2125	Technical Writing	3
ENGL 2130	Introduction to Creative Writing	3

MnTC Goal 2 Critical Thinking

At least 3 credits

COMM 2060	Small Group Communication	3
MATH 2250	Precalculus with Trigonometry	5
MATH 2300	Calculus I	5
PHIL 2100	Critical Thinking	3
PHIL 2200	Ethics	3
PHIL 2400	Medical Ethics	4
SOCI 2100	Intro to Sociology	3

MnTC Goal 3 Natural Sciences

At least 7 credits (one course must include a lab)

BIOL 2001	Biology in Society	4
BIOL 2005	General Biology I	4
BIOL 2045	Human Biology	4
BIOL 2105	General Biology II	4
BIOL 2115	Human Anatomy	4
BIOL 2215	Human Physiology	4
BIOL 2235	Microbiology	4
CHEM 2000	Introduction to Chemistry	4
CHEM 2200	Essentials of General, Organic, and Biochemistry	5
PHYS 2001	Introductory Physics	3
PHYS 2005	College Physics I	4

MnTC Goal 4 Mathematical/Logical Reasoning

At least 3 credits

MATH 2100	Concepts in Mathematics	3
MATH 2150	Introduction to Statistics	3
MATH 2200	College Algebra	4
MATH 2250	Precalculus with Trigonometry	5
MATH 2300	Calculus I	5

MnTC Goal 5 History and the Social and Behavioral Sciences

At least 9 credits (at least 3 credits in SOCI and 3 credits in PSYC)

ECON 2200	Principles of Microeconomics	3
PSYC 2300	General Psychology	3
PSYC 2310	Psychology throughout the Lifespan	3
PSYC 2320	Psychology of Living in the 21 st Century	3
SOCI 2000	Marriage and Family	3
SOCI 2100	Introduction to Sociology	3
SOCI 2130	Food, Culture, and Society	3
SOCI 2200	Racial and Ethnic Relations	3

MnTC Goal 6 Humanities and Fine Arts

At least 3 credits

ARTS 2000	Elements of Design	3
ARTS 2120	Survey of the Photographic Arts	3
ENGL 2130	Introduction to Creative Writing	3
ENGL 2140	Topics in Literature: Trades and Industry	3
ENGL 2200	Introduction to Cinema	3
PHIL 2500	World Religions	3

MnTC Goal 7 Human Diversity

At least 3 credits

COMM 2020	Intercultural Communication	3
COMM 2050	Interpersonal Communication	3
LANG 2000	American Sign Language I	3
PSYC 2310	Psychology throughout the Lifespan	3
SOCI 2000	Marriage and Family	3
SOCI 2200	Racial and Ethnic Relations	3

MnTC Goal 8 Global Perspective

At least 3 credits

BIOL 2003	Nutrition and Health	3
COMM 2020	Intercultural Communication	3
PHIL 2500	World Religions	3

MnTC Goal 9 Ethical and Civic Responsibility

At least 3 credits

PHIL 2200	Ethics	3
PHIL 2400	Medical Ethics	4
PHIL 2600	Environmental Ethics	3

MnTC Goal 10 People and the Environment

At least 3 credits

BIOL 2001	Biology in Society	4
BIOL 2003	Nutrition and Health	3
PHIL 2600	Environmental Ethics	3
SOCI 2130	Food, Culture, and Society	3

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. To be eligible for completion of the MnTC, a student must earn 12 of the general education credits 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 transferred is determined by the receiving institution. An A.S. degree transfers to a four year institution where an articulation agreement exists with HTC for the program completed subject to the requirements of the four year college. A.A.S. degrees, diplomas, and certificates do not typically transfer as a block to four-year institutions. To have your HTC transcript sent to another MnSCU institution, please follow the procedures of that institution.

Bachelor Degree Opportunities Available

Hennepin Technical College has articulation 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 advisor or access the information on the HTC website. For additional transfer information, go to www.mntransfer.org

CREDIT FOR PRIOR LEARNING

Students who are able to demonstrate learning acquired prior to enrollment at HTC may be able to receive credit for their learning experience. A non-refundable fee may be charged for the evaluation of this learning. HTC recognizes the following different methods of awarding credit for prior learning:

Transfer of Credit

Course credits taken at other institutions may be eligible for transfer to HTC as described in the Transfer Policy.

Test-out

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

Test-out may not be utilized to obtain credit for a course in which the student is currently enrolled, a course that the student had previously taken and received a letter grade, had previously failed, had taken for audit, or had withdrawn from. Students are not permitted to test more than once for any course. A grade of "C" or better, as determined by the evaluator, is required for credit.

Test-out grades are not calculated in a student's GPA. A fee will be charged for each credit attempted. Information and forms for the test-out process are available at the Registration Office. Test-out must be completed within 60 days of paying for the test-out.

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. HTC has Tech Prep articulation agreements with many individual high schools.

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. The students have up to five years from the date the Minnesota High School Tech Prep college credit course(s) was completed, with a grade of "B" or better, to formally request college credit for the articulated course(s). Refer to the HTC website for the complete procedure for "Transfer of Minnesota High School Tech Prep College Credits to Hennepin Technical College."

HTC also has articulation agreements with groups of high schools (consortia). Certificates awarded by tech prep consortia may vary in the number of years for which they are valid.

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. Hennepin Technical College is a Service Members Opportunity College (SOC).

AP (Advanced Placement), IB (International Baccalaureate), CLEP (College Level Examination Program), DANTES (Dense Activities for Non-Traditional Education Support)

Credits may be awarded to students who have completed the AP, IB, CLEP, or DANTES Exams and have scored at or above the level indicated for specific credit. Details explaining the process and necessary criteria are available from the Registrar's Office, Counseling Office, or the HTC website.

Portfolio Review

Hennepin Technical College students may apply to obtain course credit based on a previous relevant life/work experience. The experience shall be from employment or learning, recent and relevant, and of satisfactory performance. Students must demonstrate college level learning through a portfolio process. Some courses may not have this option available. Further details can be obtained from the Counseling or Registration offices.

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.

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 HTC website has links to various sources that explain how awards are determined by the U.S. Department of Education and the State of Minnesota.

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 done 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 Credit Level for Federal Grants (all terms)

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

Required Credit Level for Minnesota State Grant (all terms)

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

Required Credit Level for Federal Direct Stafford Loans

Half-time or greater 6 or more credits

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)
- 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.

Financial Aid Consortium Agreement

The consortium agreement is to be used by students that are getting their degree/certificate and financial aid from Hennepin Technical College (home) and who wish to take coursework at another institution (host) and have those credits included as part of their term credit load at Hennepin Technical College.

Consent to Release Information

Students who want someone else to receive information regarding their financial aid file must complete a Consent to Release Information form.

Data Privacy

Because of data privacy laws, details about student's financial aid file cannot be released over the phone.

Summer Financial Aid Process

Summer award letters are available on eServices after a student registers for summer courses.

Pell Census Date

Pell eligible students who enroll in a course after the Pell Census Date will not receive a Pell Grant for that course. The Pell Census Date is shortly after the start of each term (see calendar for dates). This date establishes course eligibility for the Federal Pell Grant. Courses added after the Pell Census Date are not eligible for the Pell Grant. Students are encouraged to decide on their course schedule early in the term. 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. The Pell Grant may be adjusted if a course which has not started is dropped after the Pell Census Date.

Aid Disbursement

Financial aid disbursement begins the third week of each term. Disbursements are made twice a week in the form of direct deposit or paper check (paper checks are not available for pick up). 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.

Withdrawal from College/Return of Title IV Funds

Grades of "W" issued before aid is disbursed will not be included in the credit level for the aid award. If a student completely withdraws from all credits for a term before the 60% point of that term, the financial aid disbursed is subject to the Federal Return of Title IV Funds. Students "earn" financial aid in proportion to the time they are enrolled up to the 60% point of the term. 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. The student may need to repay a portion of financial aid he/she received. If a student withdraws before his/her financial aid is disbursed, the student is responsible for the tuition due to the college. Failure to attend class does not qualify as a withdrawal from the college.

Tuition Refunds

If a student drops below six credits and has a disbursed loan, the tuition refund will be paid to the loan program. If a student drops a course(s) and has a grant award, the tuition refund will be paid to the grant program if the grant amount is reduced.

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:

<u>Reason for F</u>	<u>Impact on Financial Aid</u>
Not attending	Not eligible for financial aid
Stopped attending classes*	Reduction in financial aid
Attended class and didn't pass the class	Financial aid does not change

* If a student stops attending one class after aid is disbursed and completes other class(es), then no adjustment to financial aid is made.

Financial Aid and Academic Performance

The Higher Education Act Amendments require all colleges to establish and enforce a standard of satisfactory progress for all financial aid recipients. It is important to review the Satisfactory Academic Progress Policy section in this handbook.

eTranscript and Conduct Holds (Financial Aid)

HTC will honor financial and conduct holds and academic suspensions at other MnSCU institutions found through the eTranscript retrieval process. The student will be notified that the hold and/or suspension has been placed on their HTC account as well, and it is the student's responsibility to resolve the issues by following the procedures outlined in the notification. The student's financial aid will be affected, as well as registration, and the student may be dropped from their courses if the holds and/or suspensions are not resolved in a timely manner.

Scholarships

The application form for HTC Foundation Scholarships is available on the HTC website. To be considered for scholarships, a student must typically complete the FAFSA and be making Satisfactory Academic Progress as defined in the HTC Student Handbook. 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.

Information about scholarships from other sources is also available on the HTC website.

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, go to Pay for College > Tuition and Fees > Payment Options on the HTC website.

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 school's role is to report to the VA the student's enrollment information. This is called the Enrollment Certification.

Tuition and fees may be deferred for the semester after the Enrollment Certification has been electronically transmitted to the VA. Students may also be eligible to charge books in the College Bookstore.

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.

Any questions regarding VA benefits can be directed to the veterans certifying official at veteransco@hennepintech.edu

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 his/her agency or employer.

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. 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.

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, see the HTC website.

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

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.

Application Fee

At this time, Hennepin Technical College does not assess an application fee.

Tuition Rates

Hennepin Technical College is a member institution of the Minnesota State College and Universities (MnSCU) System. The college, in consultation with the Student Senate, develops proposed tuition and fee rates for the academic year, which are submitted to the MnSCU 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. These fees support 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.

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.

Additional Course Fees

Some courses may require additional fees.

Graduation Fee

A \$25 graduation fee must be paid at the time of submitting the Application for Award (Degree, Diploma, Certificate) form to the Registration Office. One fee will be assessed per semester.

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 \$50 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, computer literacy, and keyboarding and once in a two year period for mathematics. Students will be charged a retest fee of \$10 per testing session.

Portfolio Evaluation

The fee for Portfolio Evaluation is based on the lecture/lab breakdown of the course; \$25 per lecture credit and \$50 per lab credit.

Non-Sufficient Funds (NSF) Check Fees

The college will apply a service charge to all checks returned for non-sufficient funds or other reasons.

Test-Out

The fee for testing out of a course is based on the lecture/lab breakdown of the course; \$25 per lecture credit and \$50 per lab credit.

Transcript Fee

Students who are currently registered may receive one free official transcript during each semester of enrollment. The number of free transcripts is not cumulative. The fee for additional official transcripts for currently registered students is \$5 for each transcript. Students who are not currently registered must remit \$5 for each 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. 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 handbook. Students may view their account balances and pay online by accessing eServices.

Course Wait List

A course wait list will be established once a course has filled. Students will be responsible for putting themselves on the wait list. Placement on the wait list will be on a first-come basis. In order for a student to be placed on the wait list, the student must have an active myHennepinTech.edu 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 the HTC 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 MnSCU 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, AND WITHDRAWING FROM COURSES

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, and tuition is paid.
- 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 66.66% risk being placed on academic warning, probation, or suspension.

- Pell Census Date: Courses added after this date are not considered Pell eligible unless approved through a Pell Census Appeal.
- Students on an F-1 visa must meet with a counselor to be sure that dropping or withdrawing from a course will not jeopardize their full-time student status.

REFUNDS

Unless you officially drop a course or totally withdraw from school, you are responsible for full tuition and fees. Failure to attend class does not qualify as a drop or withdraw.

Approved refunds will be issued within fifteen business days. If a course is cancelled or if tuition collection is made in error, the tuition will be adjusted without penalty. If a student has received some form of financial aid (grants or loans), all or a part of any refund may be returned to the financial aid program.

For courses that meet three times or less, a refund will be issued only if the course is dropped 24 hours prior to the first class session.

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 refund of their tuition and fees according to the schedule below. A Student Withdrawal form must be submitted to the Registration Office in order to determine eligibility for a refund.

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

GRADING

Grading Policy

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" 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)

Pass/No Credit

The Pass/No Credit option is for students who are not interested in receiving a letter grade but would like to receive credit for the course. Students must achieve the equivalent of "C" or better in order to receive a passing grade.

P: performance meets course requirements ("C" or better)

NC: performance does not meet course requirements

Grades of "P" or "NC" will not be used in computation of GPA. A grade of "NC" will not satisfy a graduation requirement nor will it count as a course completion for calculation of satisfactory academic progress. No more than 10% of the total credits within a major can be pass (P) grades to count toward graduation.

Audit

The audit (AU) option is for students who want to take a course and not receive a grade. Students selecting this option may or may not choose to participate fully in the class by completing assignments, taking tests, and receiving evaluative feedback.

AU: indicates taking a course without receiving credit or a grade. An "AU" will appear on the student transcript. Audited courses do not count toward course load for students receiving financial aid or veterans' benefits. The cost of auditing a course is the same as taking the course for credit. Audits cannot be converted to a letter grade and will not satisfy a course prerequisite or a graduation requirement.

Other grade types:

- Incomplete: "I" indicates that the instructor has granted an extension of time for course completion. The student and the instructor must enter a formal agreement detailing when the remaining requirements will be completed. An "I" grade automatically becomes an F at the end of the next semester (not including summer term) if all course requirements have not been satisfactorily completed. Note: Instructors are not obligated to give "I" grades or grant extensions for completing course requirements. An "I" is not calculated in GPA but counts as an attempted but not completed course in the calculation of satisfactory academic progress.
- Withdraw: "W" indicates a student has withdrawn from a course. A "W" is not calculated in GPA but counts as an attempted but not completed course in the calculation of satisfactory academic progress.
- 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 reward 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 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.

GPA Example

	Student's Grades	Quality Points		Credits	Total Grade Points
A	=	4.00	X	3	= 12.00
B	=	3.00	X	2	= 6.00
C	=	2.00	X	3	= 6.00
D	=	1.00	X	3	= 3.00
F	=	0.00	X	1	= 0.00
Total				12	= 27.00

27 grade points ÷ 12 credits total = 2.25 GPA

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 student appeal procedure. 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 MnSCU 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:
 - Full-time recognition: 12 or more credits completed during the term
 - Part-time recognition: 6-11 credits completed 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.

Submit Your Application For Award:

Check with the Registration Office if you are not sure if you have completed an Application for Award.

- 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.
- Submit the Application for Award form and \$25 graduation fee to the Registration Office.
- 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 MnSCU institution that have not been transferred, submit an eTranscript Retrieval form. Please contact the Transfer Center at EPC with any questions.
- If you are planning to test out of a course, all test-outs must be scheduled, completed, and transcribed before the deadline.
- Please verify that we have your most current address through your eServices account.
- Watch your myhennepintech email for a response from the Registrar's Office on your graduation status.

Register To Participate in Graduation Ceremony:

- Order your cap and gown online at www.hennepintech.edu/graduation before the deadline.
- Cap and gown packages may be picked up at the reception desk on the posted date.
- Attend the graduation ceremony. Ceremony details will be included in your cap and gown package and online at www.hennepintech.edu/graduation.

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.

Graduate Follow-up

When students graduate, they are asked to provide job placement information for the graduate follow-up report. This follow-up system provides summary data for future students and employers. Each student's assistance is needed to help HTC provide accurate data.

STUDENT RIGHTS AND RESPONSIBILITIES

Please refer to the HTC website for the most current policy information and additional policies not published in this handbook.

Academic Standing and Financial Aid Satisfactory 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.

Satisfactory Academic Standing Procedure

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 66.66% 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 Letter 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 Letter 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 complete an appeal form with a counselor and have it approved in order to be reinstated and continue in their classes for that term. If the appeal is denied or not completed the student registered courses will be dropped by the registrar. If students continue under an approved appeal, they will be placed on warning and need to meet the term standards of a 2.5 or above GPA and have a term completion rate of at least 100%. If students fail to meet the term standards, they will be suspended.

Subpart C. 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.

Subpart D. 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 66.66% 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 66.66% 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, and F 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 72 credits in length, students would be eligible to receive financial aid for up to 108 attempted credits ($72 \times 1.5 = 108$). 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 (years) 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. Failure to Meet Standards

Subpart A. Financial Aid Suspension and Probation

- 1. Maximum Time Frame Failure** Students who have reached or exceeded the maximum number of credits needed 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.
- 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** If at the end of the warning period students who have been on warning status have met the cumulative qualitative and quantitative standards of the college, the students' eligibility for financial aid will be reinstated by the college.
- 4. Suspension of Students on Warning Status** If at the end of the warning period students who have been on warning status have not met the cumulative qualitative and quantitative standards of the college, the students will be suspended immediately by the college upon completion of the evaluation.
- 5. Continuation of Students Who Successfully Appeal Suspension** Students who fail to make satisfactory academic progress and are suspended from financial aid eligibility have the right to appeal based on unusual or extenuating circumstances. At the end of the appeal period, students who have met the minimum academic standards for that period shall have the appeal status extended for an additional semester. Students who fail to meet the minimum academic standards during the appeal period shall be removed from appeal status and financial aid eligibility shall be suspended.

Subpart B. Suspension of Students for Extraordinary Circumstances

Students may be immediately suspended from financial aid eligibility in the event of extraordinary circumstances, including, but not limited to, previously suspended (and reinstated) students whose academic performance falls below acceptable standards during a subsequent term of enrollment; students who register for courses, receive financial aid and do not attend any classes; and students whose attendance patterns appear to abuse the financial aid program's standards.

Part 6. Appeals Any student who has been suspended from financial aid have the right to appeal their status based on unusual or extenuating circumstances that are beyond the control of the student and were not present at the time of initial enrollment.

Some examples of acceptable reasons may be:

- A. Documented death of a close relative.
- B. Documented personal illness, hospitalization, or injury.
- C. Military leave.

Some examples of unacceptable reasons for appeal may be:

- A. Pre-existing conditions that affect student performance.
- B. Poor personal decisions concerning attendance, time or money management, relationships, or poor student habits.

All appeals must be submitted in writing to the counselor with supporting documentation attached. The initial consideration of financial aid appeals will be undertaken by the Director of Financial Aid. Results of an appeal will be sent to the student in writing. The Hennepin Technical College appeals process outlined in this handbook also includes an option of an Appeal Review Committee.

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, or F will be treated as credits attempted but not successfully completed.

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. Remedial/Developmental Credits Remedial/Developmental credits are included in the cumulative GPA and completion percentage measurement of financial aid satisfactory academic progress. Up to 30 remedial/developmental credits will be excluded from the maximum time frame calculation. A student will not receive financial aid for more than one repetition of a previously passed course.

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.

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 in warning financial aid eligibility or suspend financial aid eligibility.

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.

Code of Student Conduct

Part 1. Statement of Purpose

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.

The college has a responsibility to its students and staff to maintain an environment conducive to furthering its educational mission and to take corrective action when necessary. This code of student conduct incorporates appropriate due process and identifies steps to be taken when conduct occurs which may violate the code.

A summary of this code shall be published in the student handbook and other documents as deemed appropriate. The complete document shall be available in the Registrar's Office or viewed on the HTC website. The college may revise the code as needed.

Part 2. Definitions

- A. The term "college property" includes all land, buildings, facilities, and other property, real and personal, possessed, owned, leased, used, or controlled by the college, including adjacent streets and sidewalks.
- B. The term "faculty member" means any person hired by the college to conduct classroom activities.
- C. The term "member of the college community" includes any person who is a student, faculty member, administrator, or any other person employed by the college.
- D. The term "student" includes all persons taking courses at the college, both full-time and part-time. A person who is not officially enrolled for a particular term but who has a continuing relationship with the college is considered a student. A person who was enrolled during a spring term and is expected to enroll for the subsequent fall term is a student during the interim.
- E. The term student conduct panel means a panel appointed to provide formal review and decision in student conduct hearings.

Part 3. College Jurisdiction

College jurisdiction is asserted for violations of the code of student conduct that occur on college property. College jurisdiction shall also extend to violations of the code that are not committed on college property when:

- A. The violation is committed while participating in a college sanctioned or sponsored activity; or
- B. The victim of the violation is a member of the college community; or
- C. The violation is a felony under federal or state law; or
- D. The violation adversely affects the educational, research, or service functions of the college.

Part 4. Student Conduct - Behavioral Proscriptions

- A. All students have the responsibility to:
 - 1. comply with all local, state, and federal laws.
 - 2. comply with all published college and Board of Trustees rules, regulations, policies, and procedures.
 - 3. recognize and respect the rights of others.
 - 4. assist the college staff with maintaining a safe college environment.
 - 5. respect and maintain college property.
 - 6. dress in a manner that meets standards of safety and health and is appropriate for the occupation for which the student is preparing.
 - 7. provide complete and accurate information relative to college matters.
- B. Examples of conduct that violate the code of student conduct and are subject to disciplinary sanctions by the college include, but are not limited to:
 - 1. violation of local, state, or federal laws.
 - 2. violation of published policies, rules, procedures, or regulations of the Board of Trustees or of the college.
 - 3. acts of dishonesty, including but not limited to cheating and plagiarism and forging, altering, or misusing college documents or records. See the HTC website for the Academic Integrity Policy
 - 4. knowingly furnishing false information, oral or written, to the college.
 - 5. failure to comply with directions of, or to present identification to college officials acting in the performance of their duties.
 - 6. failure to comply with conditions of sanctions imposed by the college as a result of previous conduct code action.
 - 7. possession of firearms or other weapons or devices while on college property or at college-sponsored or supervised activities, except possession specifically authorized by the college. Firearms and other weapons or devices include but are not limited to: pistols; rifles; air guns; shotguns; ammunition; incendiary devices; smoke devices; knives; explosives; bows and arrows; or chemical agents. Refer to the HTC website for the Possession or Carry of Firearm and Other Weapons Policy (HTC Policy 04.09).
 - 8. use, possession or distribution of alcoholic beverages, narcotics, or other controlled substances on college property or at college-sponsored or supervised activities except as expressly permitted by law.
 - 9. attending college classes or activities while under the influence of alcohol, narcotics, or other controlled substances.
 - 10. violating tobacco use policy. Refer to the HTC website for the Tobacco Use Policy (HTC Policy 03.02).
 - 11. physical or psychological abuse or harassment of a person, including stalking; abuse or harassment through other persons, or by use of electronic or other communication devices such as audio/video recorders, computers, and telephones.
 - 12. physical abuse, verbal abuse, threats, intimidation, coercion, or other conduct which endangers or threatens to endanger the health or safety of any person.
 - 13. conduct which results in injury or death to a member of the college community, or to a visitor to the college.
 - 14. engaging in fighting; engaging in assault or battery upon a member of the college community or a visitor to the college; engaging in obscene, abusive, lewd or profane language; engaging in boisterous or noisy conduct reasonably intended to arouse alarm, resentment or anger in others; disrupting classes, meetings, or other college activities.
 - 15. unauthorized entry into college property.

16. theft of or damage to college property or the property of any member of the college community or of a visitor to the college.
17. improper or unauthorized use of college computers, software, or other technology.
18. hazing - an act which endangers the mental or physical health or safety of a student, or which destroys or removes public or private property, for the purpose of initiation, admission into affiliation with, or as a condition for continued membership in a group or organization.

C. Academic Integrity is one of the most important values in higher education. This principle requires that a student's work represent his or her own personal efforts and that students acknowledge the intellectual contributions of others.

The following are some examples of unacceptable academic practices that will be viewed as violations of the college's Student Code of Conduct.

Cheating

Cheating includes, but is not limited to:

1. Copying from other students or using any assistance not explicitly granted by the instructor in taking quizzes, tests, or examinations.
2. Dependence upon the aid of sources beyond those authorized by the instructor to complete assignments.
3. Acquisition without permission of tests or other academic material belonging to a faculty member, staff member, or student of the college.
4. Dual submission or resubmission of a paper or project to a different class without express permission from the instructor.
5. Intentionally giving or receiving unauthorized aid or notes on examinations, papers, or class assignments intended to be individually completed.
6. The unauthorized copying of tests or any other deceit or fraud related to the student's academic conduct.

Plagiarism

Plagiarism includes, but is not limited to:

1. The knowing or negligent use by paraphrase, direct quotation, or summary of the published or unpublished work of another person without full and clear acknowledgment.
2. The knowing or negligent unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials.
3. Obtaining someone else's work and presenting those ideas or words as a student's original academic work.

Collusion

Collusion includes, but is not limited to collaborating with another person without instructor authorization when preparing an assignment.

Fabrication

Fabrication includes, but is not limited to, manufacturing data or results and recording or reporting them as verifiable information.

Falsifying Academic Records

Falsifying academic records includes, but is not limited to:

1. Altering grades or other academic records.
2. Assisting in the altering of any official record of the college.
3. Submitting false information.
4. Omitting requested information that is required for or related to any academic record of the college.

Academic records include, but are not limited to, applications for admission, the awarding of a degree, grade reports, test papers, registration materials, grade change forms, and reporting forms used by the Office of the Registrar. Please note that forgery charges are separate from falsifying academic records. An example of forgery is an add/drop form being submitted by a student who has falsified the instructor's signature.

Copyright Infringement

According to <http://legal-dictionary.thefreedictionary.com>, a free legal dictionary, there are two types of copyright infringement:

1. Innocent Infringement: This is when the infringement is unintentional; a person unconsciously copies the work of another person. This is not an infraction.
2. Plagiarized/Intentional Infringement: This is when a work shows "substantial similarity between the original and the copy" (par. 34). This particular infringement relies heavily on circumstantial evidence.

Hennepin Technical College will pursue cases where copyright infringement is suspected to be intentional. Copyrighted works are "original works of authorship fixed in any tangible medium of expression, now known or later developed," and includes, but is not limited to:

- a. Musical or Verbal Recordings

- b. Graphics
- c. Artwork

Things that are not copyrightable include typefaces, words and short phrases, standard calendars, standard forms (IE: bank forms), and other such intangible things.

If an instructor is concerned that a student is violating copyright, it is suggested that they research copyright law before confronting that student.

Students will be notified about the specific course process regarding academic integrity through the faculty's course syllabus. Information on academic integrity may include definitions of academic dishonesty, required documentation process, reference to the HTC Student Code of Conduct and a statement of consequences for any infraction of academic integrity.

In the event of a charge of an infraction of academic integrity, students will be notified of the charge, documentation of the evidence supporting the charge will be gathered, student will have the opportunity to respond, student will be notified of the consequences and information about the appeal process.

There are options available to faculty when dealing with cases of academic integrity violations. They include, but are not limited to, receiving a warning, having an assignment grade lowered, having a course grade lowered, completing an additional assignment or redoing an assignment, failing the assignment, failing the course, or having the charge dropped.

A written summary identifying the specific allegations of academic integrity violation, the consequences, and the documentation to support the charge will be provided to the student by the Dean of Student Success Services. Copies will be kept by the faculty and the Dean of Student Success Services.

Information sent to the Dean of Student Success Services will be used to maintain a file of academic integrity violation cases. The Dean of Student Success Services will identify any ongoing patterns of academic integrity violations and will consider whether an institutional response of Student Code of Conduct is warranted. If such a determination is made, the Dean of Student Success Services will initiate the college's formal disciplinary process.

- D. A person who incites or assists others to engage in conduct that violates the Student Code of Conduct shall be considered and treated the same as the person carrying out such action.
- E. Allegations of discrimination, harassment, violence, or academic dishonesty shall be adjudicated under separate procedures in accordance with the college's policies on these issues, but violators shall be subject to the sanctions described in the code of student conduct.
- F. Academic discipline shall be conducted under a separate college policy. The procedures described in this code of student conduct shall not apply to academic discipline.

Part 5. Charges and Informal Meeting

Any member of the college community may file a charge against a student for violating the code of student conduct. Charges shall be prepared in writing and shall be filed with the Dean of Student Success Services. A charge shall be submitted as soon as possible after the conduct takes place, preferably within three days. The Dean of Student Success Services shall conduct a preliminary investigation of the charge. If the charge is unwarranted, the Dean of Student Success Services may discontinue proceedings.

Upon determination that there may be merit to the charge, the Dean of Student Success Services shall:

- A. provide written notice to the accused student that a charge has been filed alleging that the student has violated the code of student conduct. This notice shall state the specific violation(s) alleged and the dates the alleged violation(s) occurred.
- B. provide the student with a copy of the code of student conduct.
- C. inform the student of the nature of the evidence available to support the charge.
- D. allow the student not less than 48 hours to prepare for the meeting, specify a date and time when the student is required to meet with the Dean of Student Success Services or program dean to attempt an informal resolution of the charge.
- E. inform the student that failure to appear for the informal meeting shall result in the charge being considered with the information available. Appropriate sanctions, if any, shall then be determined by the Dean of Student Success Services. If a mutually acceptable resolution cannot be reached during the informal meeting, including any applicable sanctions, the Dean of Student Success Services shall refer the charge to the student conduct panel for formal adjudication. The student conduct code in its complete form may be obtained from the Registrar's Office or viewed on the HTC website. Those sections that are not included in this publication which are included in the complete code include:
 - Formal hearing process
 - Appeals process
 - Sanctions
 - Summary suspension process

Complaint and Grievance Policies

In accordance with MnSCU Board policy 3.8, a student has the right to seek a remedy for a dispute or disagreement through a designated complaint and grievance policy. A student should use available informal means to have decisions and/or actions reconsidered before filing a complaint or grievance. No retaliation of any kind shall be taken against a student for participation in a complaint or grievance. Complaints and grievance procedures are protected under data privacy rights.

Complaints

A complaint is an informal claim alleging improper, unfair, or arbitrary treatment. Disagreement with an administrative decision or the outcome of an appeal of that decision is not a complaint unless it alleges improper, unfair, or arbitrary treatment.

To Make/Resolve a Complaint

Note: Complaint processes are subject to the time limits as listed within this policy.

1. To resolve a complaint, the student should first contact the employee with whom the complaint exists.
2. Although it is not required that the complaint be written, the student is encouraged to write down:
 - a. the reason for the complaint,
 - b. factual summary of the complaint, and
 - c. the remedy sought before arranging a meeting with the appropriate individual to discuss the complaint.
3. If there is no agreement or resolution during the initial complaint process, the student may schedule a time to discuss the complaint with the employee's direct supervisor.
4. The direct supervisor will review previous resolution steps, discuss the complaint with the student and other appropriate individuals, and communicate an answer to the student.
5. If there is no agreement or resolution during the meeting with the direct supervisor, the student may seek resolution using the grievance process.

Grievances

A grievance is a written formal claim alleging improper, unfair or arbitrary action that violates a specific policy, procedure, or practice of HTC or the MnSCU System. Disagreement with an administrative decision or the outcome of an appeal of that decision is not a grievance unless it alleges improper, unfair, or arbitrary action.

To File/Resolve a Grievance

Note: Grievance processes are subject to the time limits as listed within this policy.

1. If a complaint is not satisfactorily resolved during the complaint process, and/or if the complaint addresses a violation of a specific policy, procedure, or practice of HTC or the MnSCU System, the student may file a written grievance through four (4) steps if necessary:
 - a. To the employee being grieved.
 - b. To the administrator to whom the employee reports; and
 - c. If the grievance involves a college policy or practice, to the college president. The decision of the president is final and binding.
 - d. If the grievance involves a board policy or the actions of the college president, a student may further appeal the college decision through the chancellor to the board. The decision of the board is final and binding.
2. Employees identified in the grievance shall receive copies of the grievance and any supporting documentation. Employees may submit a written response to the grievance.
3. The appropriate administrator will review the material submitted by the student to see if the material constitutes a grievance. If the material does not constitute a grievance, the administrator will communicate to the student and the involved employee.
4. If the material does constitute a grievance, the administrator shall conduct a thorough review and provide a written statement of finding to the student and the involved employee.
5. If the grievance process does not resolve the grievance, the student may consider filing an appeal through the college appeal process.

Time Limits for Complaints and Grievances

The initial complaint or grievance must be presented within twenty (20) business days after the first occurrence of the event giving rise to the complaint or grievance, or twenty (20) business days after the student, through use of reasonable diligence, should have obtained knowledge of the first occurrence of the event giving rise to the complaint or grievance.

All subsequent time limits (written response, appeal, final resolution, etc.) are limited to ten (10) business days.

By mutual agreement of the student and college personnel, time limits may be extended due to extenuating circumstances approved by the appropriate dean or vice president.

If a complaint or grievance is not presented within the established limits, it shall not be considered.

If a complaint or grievance is not appealed to the next step within the established time limits, it shall be considered settled on the basis of the last answer.

If, after presentation at any step, a college staff member does not discuss and/or answer the complaint or grievance with the student within the established time limits, the student may treat the complaint or grievance as denied at that step and may appeal the complaint or grievance to the next step.

Student Appeals Procedure

Student Responsibility

Students are responsible for knowledge of and compliance with Hennepin Technical College policies, procedures, and regulations. Policies and procedures affecting students are stated in this document. If questions arise regarding policies or procedures, students are encouraged to meet with their faculty advisor or a counselor to help clarify understanding and interpretation.

Student Rights

Students have the right to appeal decisions made regarding their academic standing, final course grades, transfer credit evaluations, graduation requirements, tuition requirements, and other similar issues. The college will act on requests for appeal when there is documented evidence of unusual circumstances or an inability of the college to deliver stated educational services.

The student must make the appeal request in writing on the appropriate appeal form. Appeal forms are available on the website or from a counselor. The request must be clear and specific. The student must provide reasons and supportive documentation for the appeal request. The appeal request must be initiated within three (3) weeks from the time the incident or disagreement occurred. Students must meet with a counselor to complete the appeal form.

The request will be reviewed for approval or denial. In certain appeal situations, the appeal request may be forwarded to an administrator in the instructional areas for input.

The college will act on the student appeal request in a timely manner. The student will be informed of the decision and a copy of the decision will be maintained in the student's file.

Students have the right to further appeal a decision. Students must indicate on the form their intention to further appeal the decision, sign and date the form, and return it to the Registrar within seven business days. The appeal will then be forwarded to the Vice President of Academic and Student Affairs, who will make a decision on the request within ten business days.

Transfer Appeal

If you wish to appeal a transfer decision, fill out the transfer appeal form. Submit the completed form to the Registrar's Office. After the appeal has been reviewed you will receive a written response. You may appeal the college's transfer appeal decision through the Minnesota State Colleges and Universities Senior Vice Chancellor of Academic and Student Affairs. For more information, see MnSCU Procedure 3.21.1- Subpart B - System level appeal.

Appeals Review Committee

Occasionally an appeal request may be of such a nature that it may be in the best interest of the student and the school to convene an Appeal Review Committee to advise the campus administration on the request. It will be determined by the vice president of academic and student affairs whether to assemble an Appeal Review Committee.

Representation on the review committee typically would include, but is not limited to, three to five members from the following list of individuals: vice president of academic and student affairs, registrar, faculty, counselor, disability services coordinator, student representative

Appeal to President

If a student contests the appeal decision made by the Appeal Review Committee, the student has the right to further appeal to the president. The student shall submit the appeal request form and accompanying documentation to the president. The decision of the president is final.

Student Records/Transcripts

The student's official academic record is maintained by the Registrar's Office. Questions concerning credits completed, course registration, add/drops, transfer credits, graduation requirements, program requirements, transcripts, and similar concerns should be discussed with a counselor or advisor.

Students wishing to obtain an official transcript must file a transcript request form with the Registration Office. The transcript request form authorizes the release of confidential information. Transcripts will not be released without a signed and dated release from the student. Students who are currently registered may receive one free official transcript during each term of enrollment. The number of free transcripts is not cumulative. Additional official transcripts for students who are currently registered cost \$5 for each transcript. Students who are not currently registered must remit \$5 for each official transcript.

Collection and Release of Student Data

Data Privacy: Students' Rights, Responsibilities, and Authorizations for the Collection and Release of Data

1. Information Collection

When you apply for admission, while you are enrolled and after graduation from Hennepin Technical College, you will be asked to supply information about yourself, including your social security number. You will be asked to report information in the following ways:

- Admissions Application
- Registration Form
- Financial Aid Application
- Assessment Process
- Placement and Employment Follow-up Information Forms
- Oral interviews with college staff
- Health Records
- Disability documentation, if applicable

2. Use of Information

The data is being collected to:

- Report to the Board of Trustees of the Minnesota State Colleges and Universities.
- Report to the Higher Education Services Office.
- Assist technical college staff in developing a plan to help you succeed in your program/major area.
- Create statistical and research reports.
- Assist the technical college in auditing employment follow-up data and other college policies and practices.
- Respond to requests for information from Federal Agencies and Departments and the public.
- Comply with the state immunization law.
- Your social security number is requested to create a unique student identification number, which will be used to identify testing, academic, and employment follow-up information about you. Submitting your social security number is voluntary. The number is requested under the authority granted to the technical colleges through enabling state legislation. Your social security number may be used to identify you for statistical reports conducted between state agencies. Financial aid applicants are required to supply their social security number.
- Provide to the Department of Human Services data necessary for the administration of the Child Support Enforcement Program.

3. Student Rights

Hennepin Technical College maintains records about you in various places within the institution. For example, the Admissions Office maintains records about you, as does the Registrar. Under federal and state law, you have certain rights concerning the records which HTC maintains. This notice is to make you aware of those rights.

Should you have questions concerning your rights, please contact the Registrar's Office at: 9000 Brooklyn Boulevard, Brooklyn Park, MN 55445.

Under the Minnesota Government Data Practices Act (MGDPA) and the Family and Educational Rights Privacy Act (FERPA), you have a right:

- to refuse to provide any or all of the data requested;
- to inspect and review educational records maintained about you;
- to request an amendment to records about you for the purpose of correcting inaccurate or misleading records, or records which violate your privacy or other rights in some fashion;
- to a hearing regarding records which you believe are inaccurate or misleading, if HTC does not amend the records at your request;
- to place a written statement explaining your disagreement with HTC in your records, if HTC does not amend records after the opportunity for a hearing about whether the records are inaccurate or misleading;
- to consent to disclosures of information which identifies you personally, except to the extent that such disclosures are allowed without your consent under state and federal law; FERPA and the MGDPA permit disclosures without consent to school officials with legitimate educational interests. A school official is a person employed by HTC in an administrative, supervisory, academic, or support staff position, a person or company with whom HTC has contracted, a student serving on official College committees, a person serving on the Board of Trustees or in the System Office, or assisting another school official in performing his or her tasks. A school official has legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibility.
- to file a complaint with the United States Department of Education if you believe that the college is not meeting the requirements of the federal law. Written complaints should be sent to the Family Policy Compliance Office, U.S. Dept. of Education, 400 Maryland Avenue SW, Washington, D.C. 20202-4605.
- to obtain a copy of HTC's complete policy regarding educational records. The college has copies of the policy available from the Registrar's Office.

4. Consequences

There are consequences for not supplying data, which may result in denial of the following services:

- You might not be admitted for enrollment if you do not complete the admissions application (except social security number) and optional information.
- You will not receive disability services if you do not identify a need for services.

- You will not receive financial aid assistance if you do not provide information on the financial aid forms.
- You might not receive assistance in occupational placement if you do not provide that data.
- You will not continue in school if you do not comply with immunization information as required by law.

5. Student Access to Educational Records

Hennepin Technical College, in compliance with federal and state laws, protects the privacy of student records. Students have a right to inspect their records and, upon written request, may review their records with a school representative to interpret the contents.

The following information has been designated as “directory information” and is available to the general public:

- Student name
- Dates of enrollment and/or registration
- Major
- Degrees, diplomas, and certificates earned
- Student recognition/achievements (President's List, honors programs, scholarships)
- Email address

To prevent the release of this information, the student should notify the Registrar's Office in writing.

With the exception of “directory information,” which is public information, the data you provide will be released only with your written consent or to the following persons/entities, which are authorized by law to receive and use the data:

- Minnesota State Legislature
- Congress
- Board of Trustees of the Minnesota State Colleges and Universities
- Higher Education Services Office
- State, Federal, and Independent Auditors
- School officials with legitimate educational interests
- Minnesota Department of Jobs and Training
- Department of Human Services

NOTICE: If you are currently enrolled in or receiving services from one college or university within the Minnesota State College and University System (MnSCU), your academic records from that institution are available to officials of other schools within the System while you are in attendance. If you seek or intend to enroll at another institution within the System, your academic records from other institutions are also accessible to officials at the school where you are seeking or intend to enroll. In addition, Hennepin Technical College forwards education records to other agencies or institutions that have requested the records and in which the student seeks or intends to enroll or is already enrolled so long as the disclosure is for purposes related to the student's enrollment or transfer. Disclosures of your records to other schools under other circumstances may require your prior written consent.

You have the right to request a copy of records that have been disclosed. You also have the right to request a hearing to correct any inaccurate, incomplete, or misleading information in those disclosed records. For further information about your rights, please contact the Registrar at the college or university that supplied the records.

HEALTH, SAFETY, AND SECURITY

Crime Awareness and Campus Security Act

HTC Campus Safety & Security publishes an annual Campus Compliance and 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 Safety & Security webpage. Additionally, the report is available at each campus security desk, 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

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 a lockdown event. Campus-specific guides can be found on the HTC Campus Safety & Security webpage, or a copy can be obtained from the Director of Security and Emergency Preparedness.

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. Guards must be in place and adjusted to safeguard operators from injury. Tools must be used that will complete a job safely and effectively.

Personal protective equipment must be worn and used in designated on-campus and off-campus instructional areas. Safety glasses must be worn in designated on-campus and off-campus instructional areas and any other instructional locations where grinding, chipping, sandblasting, welding, and 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 campus areas. Students must purchase their own safety glasses which are 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 instructional location where there is a chance of objects falling from above.

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

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.

Insurance

All students are encouraged to carry health insurance while attending Hennepin Technical College. Application forms and a summary of benefits for optional health insurance are available in the Admissions Office.

Students enrolled in some courses will be required to carry liability insurance coverage. Students who have their own liability coverage must provide verification of this coverage to their course instructor at the start of the course.

International students are required to purchase the health insurance policy that is offered by Minnesota State Colleges and Universities and may purchase it at the Tuition Office.

Immunization Requirement

Minnesota Law (M.S.135A.14) requires that all students born after 1956 and enrolled in a public or private post-secondary school in Minnesota 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. These include: students who graduated from a Minnesota high school in 1997 or later and transfer students from a different post-secondary school in Minnesota if transcripts or other information from the previous school indicate that the student has met immunization requirements.

Immunization forms are available online or at the Registration Office. Students cannot register a second time without providing this information.

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 a different level of seriousness and symptoms.

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

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. The complete policy is available on the HTC website.

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.

Latex Free

Hennepin Technical College promotes a latex free environment.

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.

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 and must have proper identification.

DEGREES & PROGRAMS

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

Business & Information Technology

ACCOUNTING

Accounting A.S. (BP/EP)

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 Bachelors Degree in Accounting.

Program Title:

Accounting Careers

Credits: Total Associate of Science Credits 60

Award Type:

Associate of Science

Award Outcomes:

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

Career Opportunities:

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

Choose Total Associate of Science Credits 60 credits from the following areas:

Technical Studies Required: 29 Credits

ACCT1130 Great Plains Accounting 3

or

ACCT1135 QuickBooks 3

ACCT1145 Business Law for Accountants 3

or

BUSN1140 Business Law 3

ACCT2155 Financial Accounting 4

ACCT2221 Managerial Accounting 4

ACCT2231 Income Tax 4

ACCT-310

Financial Accounting Metro State University 4

ACCT-530

Business Taxation Metro State University 4

CCIS1080 Microsoft Office 2010 3

Technical Studies Electives: 0 Credits

General Education Required: 31 Credits

COMM2130 Public Speaking 3

ECON-201

Principles of Macroeconomics Metro State University 3

ECON2200 Principles of Microeconomics 3

ENGL2121 Writing and Research 4

MATH2150 Introduction to Statistics 3

MATH2200 College Algebra 4

Choose 3 credits from MnTC Goal Area 6 3

Choose 8 credits from 2 of the following MnTC Goal Areas:

2, 3, 7, 8, 9 -or- 10 8

General Education Electives: 0 Credits

Accounting A.A.S. (BP/EP)

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.

Program Title:

Accounting Careers

Credits: Total Associate in Applied Science Degree Credits 60

Award Type:

Associate in Applied Science Degree

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.

Accounting: Academic Planning Guide

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.

Choose Total Associate in Applied Science Degree Credits 60 credits from the following areas:

Technical Studies Required: 40 Credits

ACCT1101 Principles of Accounting I 3

ACCT1106 Principles of Accounting II 3

ACCT1111 Payroll Accounting 3

ACCT1125 Excel 2010 3

ACCT1130 Great Plains Accounting 3

or

ACCT1135 QuickBooks 3

ACCT1145 Business Law for Accountants 3

or

BUSN1140 Business Law 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 & End-of-Year Procedures 3

Technical Studies Electives: 2 Credits

Technical Studies Electives: 2 Credits

Any ACCT, BUSN, -or- CCIS course that is not required for

this award may be used as an elective.

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

MATH2100 Concepts in Mathematics 3
or

MATH2150 Introduction to Statistics 3
or

MATH2200 College Algebra 4

PHIL2200 Ethics 3

General Education Electives: 3 Credits

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

Accounting Technician Diploma (BP/EP)

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.

Program Title:

Accounting Careers

Credits: Total Diploma Credits 30

Award Type:

Diploma

Award Outcomes:

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

Career Opportunities:

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

Choose Total Diploma Credits 30 credits from the following areas:

Technical Studies Required: 22 Credits

ACCT1101 Principles of Accounting I 3

ACCT1106 Principles of Accounting II 3

ACCT1111 Payroll Accounting 3

ACCT1125 Excel 2010 3

ACCT1130 Great Plains Accounting 3

or

ACCT1135 QuickBooks 3

ACCT1145 Business Law for Accountants 3

or

BUSN1140 Business Law 3

ACCT2155 Financial Accounting 4

Technical Studies Electives: 2 Credits

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

General Education Required: 6 Credits

COMM2050 Interpersonal Communication 3

or

COMM2060 Small Group Communication 3

or

COMM2130 Public Speaking 3

PHIL2200 Ethics 3

General Education Electives: 0 Credits

BUSINESS

Business Analyst A.A.S. (BP)

A Business Analyst is a person who acts as a liaison or translator between business people who have a business problem and technology people who know how to create automated solutions to those problems. There is a demand for people who have technology expertise and the ability to apply business knowledge in solving problems face to face. Skill development includes training in areas such as business, management, finance, information systems, systems analysis, business law and e-business. Other areas may also include database concepts, data analysis tools and project management. To be a Business Analyst, a person must have other qualities. Some of these qualities include the ability to work well with others, 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 good oral and written communication skills.

Program Title:

Business

Credits: Total Associate in Applied Science Degree Credits 60

Award Type:

Associate in Applied Science Degree

Award Outcomes:

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

Career Opportunities:

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

Choose Total Associate in Applied Science Degree Credits 60 credits from the following areas:

Technical Studies Required: 44 Credits

ACCT1410 Business Finance 3
BUSN1000 Introduction to Business 3
BUSN1051 Introduction to Management 4
BUSN1140 Business Law 3
BUSN1150 Introduction to Service and Work Team Strategies 3
BUSN1200 Managerial Communication 3
BUSN1300 E-Business 3
BUSN1500 Database Concepts and Data Analysis Tools 3
BUSN2010 Requirements Management with Use Cases 3
BUSN1170 Supervised Occupational Experience 4
or

BUSN2100 Capstone 3
CCIS1000 Information Systems 3
CCIS1080 Microsoft Office 2010 3
CCIS2055 Project Management 3

Technical Studies Electives: 0 Credits

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 Electives: 4 Credits

Hennepin Technical College's 2000-level general education

courses meet the guidelines of the Minnesota Transfer Curriculum (MnTC).

Entrepreneurship Occupational Certificate (BP)

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.

Program Title:

Business

Credits: Total Occupational Certificate Credits 19

Award Type:

Occupational Certificate

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.

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.

Choose Total Occupational Certificate Credits 19 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Management A.A.S. (BP)

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.

Program Title:

Business

Credits: Total Associate in Applied Science Degree Credits 60

Award Type:

Associate in Applied Science Degree

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.

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.

Choose Total Associate in Applied Science Degree Credits 60 credits from the following areas:

Technical Studies Required: 29 Credits

ACCT1000 Introduction to Accounting 3

or

ACCT1101 Principles of Accounting I 3

ACCT1410 Business Finance 3

or

ACCT2155 Financial Accounting 4

BUSN1000 Introduction to Business 3

BUSN1010 Marketing Concepts and Strategies 4

BUSN1051 Introduction to Management 4

BUSN1100 Supervision 3

BUSN1140 Business Law 3

BUSN1200 Managerial Communication 3

BUSN1510 Entrepreneurship 3

Technical Studies Electives: 16 Credits

Technical Studies Electives: 16 Credits (at least 10 credits must be from Business (BUSN); the remaining 6 credits can be from any of the three areas: ACCT, BUSN, and CCIS.)

ACCT1111 Payroll Accounting 3

ACCT1125 Excel 2010 3

ACCT1130 Great Plains Accounting 3

ACCT1135 QuickBooks 3

BUSN1020 Introduction to Selling 3

BUSN1030 Professional Development 3

BUSN1040 Computer Applications for Sales 2

BUSN1060 Territory/Account Management 3

BUSN1070 Manage Customer Relations 3

BUSN1080 Sales Account Analysis 3

BUSN1090 Consultative Selling 4

BUSN1150 Introduction to Service and Work Team Strategies 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

BUSN2100 Capstone 3

CCIS0000 This course is obsolete 0

CCIS1080 Microsoft Office 2010 3

CCIS1101 Windows 8 3

CCIS2055 Project Management 3

CCIS2801 Systems Analysis 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 Electives: 3 Credits

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

Management Occupational Certificate (BP)

This certificate will provide skill development and training in areas such as business, management and entrepreneurship. To be successful in this area, a person must have special personal qualities including the ability to work well with others, the desire to be a part of a team, decision-making, and good oral and written communication skills. 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.

Program Title:

Business

Credits: Total Occupational Certificate Credits 22

Award Type:

Occupational Certificate

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.

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.

Choose Total Occupational Certificate Credits 22 credits from the following areas:

Technical Studies Required: 22 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

BUSN1200 Managerial Communication 3

BUSN1510 Entrepreneurship 3

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Professional Sales (Business-to-Business) Occupational Certificate (BP)

This certificate allows the technical person to add knowledge and skills in sales and marketing for career advancement or change. Emphases are on understanding buyers' needs and promoting solutions through products and services. Students will learn about account management and territory management.

Program Title:

Business

Credits: Total Occupational Certificate Credits 22

Award Type:

Occupational Certificate

Award Outcomes:

- Solve sales problems using critical thinking and decision making techniques.
- Demonstrate interpersonal and team building skills.
- Practice professional and ethical behavior.
- Apply marketing concepts and strategies to sales decision making.
- Demonstrate the steps of the sales process.
- Manage Sales accounts and territories using Customer Relationship Management (CRM) software.

Career Opportunities:

This occupational area includes the following career titles: Sales Representative, Account Manager, Marketing Representative, Customer Sales Representative, Account Specialist, Client Relation Specialist, Sales Manager, Sales Support Specialist and Customer Solution Specialist. Professional Sales Representatives work with virtually every industry in the American economy: finance, real estate, insurance, health-care, manufacturing, construction, automotive and retail industries.

Choose Total Occupational Certificate Credits 22 credits from the following areas:

Technical Studies Required: 22 Credits

BUSN1000 Introduction to Business 3

BUSN1010 Marketing Concepts and Strategies 4

BUSN1020 Introduction to Selling 3

BUSN1040 Computer Applications for Sales 2

BUSN1070 Manage Customer Relations 3

BUSN1080 Sales Account Analysis 3

BUSN1090 Consultative Selling 4

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Professional Sales (Business-to-Business) A.A.S. (BP)

A business-to-business professional sales representative is a person who actively and directly generates revenues for a company. Since people purchase emotionally and out of need, it is necessary to have individuals who can reassure the buyer that a sound logical purchase has been made. This individual is also a problem-solver for a business. The professional salesperson can help the business reach the company's profitability goals by working in coordination with a business to purchase the appropriate products or services. Skill development includes training in areas such as business, management, ethics, account/territory management, fundamentals of selling and managing client relations. To be a professional sales representative, a person must have other qualities. Some of these qualities include the ability to work well with others, the desire to be part of a team, and the ability to work with the unknown. In addition, the successful salesperson needs the following skills: critical thinking, decision-making, problem solving, questioning, diplomacy, and negotiation; as well as good oral and written communication skills.

Program Title:

Business

Credits: Total Associate in Applied Science Degree Credits 60

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Solve sales problems using critical thinking and decision making techniques.
- Demonstrate interpersonal and team building skills.
- Demonstrate effective oral and written communications skills in sales communications.
- Practice professional and ethical behavior.
- Apply marketing concepts and strategies to sales decision making.
- Demonstrate the steps of the sales process.
- Manage Sales accounts and territories using Customer Relationship Management (CRM) software.
- Apply management concepts to business problems.
- Utilize financial concepts in analysis of business problems.

Career Opportunities:

This occupational area includes the following career titles: Sales Representative, Account Manager, Marketing Representative, Customer Sales Representative, Account Specialist, Client Relation Specialist, Sales Manager, Sales Support Specialist and Customer Solution Specialist. Professional Sales Representatives work with virtually every industry in the American economy: finance, real estate, insurance, health-care, manufacturing, construction, automotive and retail industries.

Choose Total Associate in Applied Science Degree Credits 60 credits from the following areas:

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
BUSN1040 Computer Applications for Sales 2
BUSN1051 Introduction to Management 4
BUSN1060 Territory/Account Management 3
BUSN1070 Manage Customer Relations 3
BUSN1080 Sales Account Analysis 3
BUSN1090 Consultative Selling 4
BUSN1150 Introduction to Service and Work Team Strategies 3
BUSN1170 Supervised Occupational Experience 4
BUSN1200 Managerial Communication 3
CCIS1080 Microsoft Office 2010 3

Technical Studies Electives: 0 Credits

General Education Required: 15 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

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 Electives: 0 Credits

INFORMATION TECHNOLOGY/COMPUTER CAREERS

.NET Programmer A.A.S. (BP/EP)

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.

Program Title:

Information Technology/Computer Careers

Credits: Total Associate in Applied Science Degree Credits 60

Award Type:

Associate in Applied Science Degree

Award Outcomes:

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

Career Opportunities:

Positions are available as Computer Programmers.

Choose Total Associate in Applied Science Degree Credits 60 credits from the following areas:

Technical Studies Required: 42 Credits

CCIS1000 Information Systems 3
CCIS1301 HTML 3
CCIS1505 Fundamentals of Programming 4
CCIS2575 .NET Programming I 4
CCIS2585 .NET Programming II 4
CCIS2610 XML I 4
CCIS2645 Introduction to ASP.NET 4
CCIS2701 Database Design and SQL 4
CCIS2781 SQL Server TransactSQL 4
CCIS2801 Systems Analysis 4

Technical Studies Electives: 3 Credits

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

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 Electives: 3 Credits

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

.NET Programmer Diploma (BP/EP)

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.

Program Title:

Information Technology/Computer Careers

Credits: Total Diploma Credits 42

Award Type:

Diploma

Award Outcomes:

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

Career Opportunities:

Positions are available as Computer Programmers.

Choose Total Diploma Credits 42 credits from the following areas:

Technical Studies Required: 34 Credits

CCIS1000 Information Systems 3

CCIS1301 HTML 3

CCIS1505 Fundamentals of Programming 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

Technical Studies Electives: 0 Credits

General Education Required: 8 Credits

COMM1050 Communication in the Workplace 2

or

COMM1131 Customer Service in the Workplace 2

or

ENGL2001 Workplace Correspondence 2

ENGL1021 Essay Fundamentals 3

or

ENGL1026 Writing for Careers 3

MATH1011 Beginning Algebra 3

General Education Electives: 0 Credits

.NET Programmer Advanced Technical Certificate (BP/EP)

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.

Program Title:

Information Technology/Computer Careers

Credits: Total Advanced Technical Certificate Credits 24

Award Type:

Advanced Technical Certificate

Award Outcomes:

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

Career Opportunities:

Positions are available as Computer Programmers and Application Designers.

Choose Total Advanced Technical Certificate Credits 24 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Cisco Networking Advanced Technical Certificate (BP/EP)

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.

Program Title:

Information Technology/Computer Careers

Credits: Total Advanced Technical Certificate Credits 18

Award Type:

Advanced Technical Certificate

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.

Career Opportunities:

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

Choose Total Advanced Technical Certificate Credits 18 credits from the following areas:

Technical Studies Required: 18 Credits

CCIS1105 Network Essentials 4

CCIS1421 CCNA-2: Basic Router and Switch Configuration 4

CCIS1431 CCNA-3: Intermediate Router and Switch Configuration 4

CCIS1442 CCNA-4: WANs, ACLs, and VPNs 3

CCIS2421 CCNA Security 3

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Computer Service Desk Technician Occupational Certificate (BP/EP)

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. 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.

Program Title:

Information Technology/Computer Careers

Credits: Total Occupational Certificate Credits 25

Award Type:

Occupational Certificate

Award Outcomes:

- Demonstrate proficiency in word processing, spreadsheets, presentations and databases.
- Perform operating systems functions.
- Utilize internet resources.
- Apply basic networking functions.
- Exhibit cooperative and customer service skills.
- Demonstrate troubleshooting skills.
- Demonstrate effective oral and written communication skills.

Career Opportunities:

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

Choose Total Occupational Certificate Credits 25 credits from the following areas:

Technical Studies Required: 25 Credits

CCIS1000 Information Systems 3

CCIS1080 Microsoft Office 2010 3

CCIS1101 Windows 8 3

CCIS1105 Network Essentials 4

CCIS1110 Windows Admin 1 3

or

CCIS1121 Linux Admin 1 3

or

CCIS1135 Desktop Linux 3

CCIS2065 Help Desk/User Support 3

CCIS2675 A+ Hardware Support 3

CCIS2680 A+ Software Support 3

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Desktop Support A.A.S. (BP/EP)

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. 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.

Program Title:

Information Technology/Computer Careers

Credits: Total Associate in Applied Science Degree Credits 60

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Demonstrate proficiency in word processing, spreadsheets, presentations, databases and project management.
- Perform operating systems functions.
- Utilize internet resources.
- Apply basic networking functions.
- Exhibit customer service skills.
- Exhibit organizational skills.
- Perform problem-solving skills.
- Demonstrate troubleshooting skills.
- Demonstrate effective communication skills.
- Exhibit professional and ethical behavior.

Career Opportunities:

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

Choose Total Associate in Applied Science Degree Credits 60 credits from the following areas:

Technical Studies Required: 42 Credits

ACCT1125 Excel 2010 3

CCIS1000 Information Systems 3

CCIS1032 Access 2010 3

CCIS1035 Word 2010 3

CCIS1042 PowerPoint 2010 3

CCIS1101 Windows 8 3

CCIS1105 Network Essentials 4

CCIS1110 Windows Admin 1 3

or

CCIS1121 Linux Admin 1 3

or

CCIS1135 Desktop Linux 3

CCIS2055 Project Management 3

CCIS2065 Help Desk/User Support 3

CCIS2090 Office 2010 Integration 3

CCIS2095 Outlook 2010 2

CCIS2675 A+ Hardware Support 3

Technical Studies Electives: 3 Credits

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

CCIS1135 Desktop Linux 3

CCIS1301 HTML 3

CCIS1310 Publisher 2010 3

CCIS1351 Advanced HTML 4

CCIS2320 Help Desk Internship 6

CCIS2360 Desktop Support Internship 2-8

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 Electives: 3 Credits

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

Desktop Support Specialist Diploma (BP/EP)

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. 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.

Program Title:

Information Technology/Computer Careers

Credits: Total Diploma Credits 50

Award Type:

Diploma

Award Outcomes:

- Demonstrate proficiency in word processing, spreadsheets, presentations, databases and project management.
- Perform operating systems functions.
- Utilize internet resources.
- Apply basic networking functions.
- Exhibit customer service skills.
- Perform problem-solving skills.
- Demonstrate troubleshooting skills.
- Demonstrate effective communication skills.
- Exhibit professional and ethical behavior.

Career Opportunities:

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

Choose Total Diploma Credits 50 credits from the following areas:

Technical Studies Required: 42 Credits

ACCT1125 Excel 2010 3

CCIS1000 Information Systems 3

CCIS1032 Access 2010 3

CCIS1035 Word 2010 3

CCIS1042 PowerPoint 2010 3

CCIS1101 Windows 8 3

CCIS1105 Network Essentials 4

CCIS1110 Windows Admin 1 3

or

CCIS1121 Linux Admin 1 3

or

CCIS1135 Desktop Linux 3

CCIS2055 Project Management 3

CCIS2065 Help Desk/User Support 3

CCIS2090 Office 2010 Integration 3

CCIS2095 Outlook 2010 2

CCIS2675 A+ Hardware Support 3

CCIS2680 A+ Software Support 3

Technical Studies Electives: 0 Credits

General Education Required: 8 Credits

COMM1050 Communication in the Workplace 2
or

COMM1131 Customer Service in the Workplace 2
or

ENGL2001 Workplace Correspondence 2
ENGL1021 Essay Fundamentals 3
or

ENGL1026 Writing for Careers 3
MATH1011 Beginning Algebra 3

General Education Electives: 0 Credits

Executive Administrative Professional A.A.S. (BP/EP)

This program prepares students for a career as an 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. 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.

Program Title:

Information Technology/Computer Careers

Credits: Total Associate in Applied Science Degree Credits 60

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Demonstrate proficiency in office suite
- Utilize internet resources
- Exhibit detail-oriented skills
- Perform problem-solving skills
- Demonstrate oral and written communication skills
- Exhibit professional and ethical behavior
- Record business transactions
- Organize using project management software

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.

Choose Total Associate in Applied Science Degree Credits 60 credits from the following areas:

Technical Studies Required: 42 Credits

ACCT1000 Introduction to Accounting 3
ACCT1125 Excel 2010 3
CCIS1032 Access 2010 3
CCIS1035 Word 2010 3
CCIS1042 PowerPoint 2010 3
CCIS1080 Microsoft Office 2010 3
CCIS1101 Windows 8 3
CCIS1310 Publisher 2010 3
CCIS2055 Project Management 3
CCIS2090 Office 2010 Integration 3
CCIS2095 Outlook 2010 2
COMM1050 Communication in the Workplace 2
or
ENGL2001 Workplace Correspondence 2
CPLT1005 Skill Building and Document Processing 3
ENGL1010 Business English 3

Technical Studies Electives: 3 Credits

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

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 Electives: 3 Credits

Hennepin Technical College's 2000-level general education courses meet the guidelines of the Minnesota Transfer

Java Programmer Advanced Technical Certificate (BP/EP)

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

Program Title:

Information Technology/Computer Careers

Credits: Total Advanced Technical Certificate Credits 24

Award Type:

Advanced Technical Certificate

Career Opportunities:

Positions are available as Computer Programmers and Application Designers.

Choose Total Advanced Technical Certificate Credits 24 credits from the following areas:

Technical Studies Required: 24 Credits

CCIS2595 Java I 4

CCIS2651 Java II 4

CCIS2662 Java Server Pages (JSP) 4

CCIS2701 Database Design and SQL 4

CCIS2751 Oracle SQL and PL/SQL 4

or

CCIS2781 SQL Server TransactSQL 4

CCIS2801 Systems Analysis 4

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Java/Open Source A.A.S. (BP/EP)

This degree offers the skills necessary for computer application development and design using Java and Open Source. The open source languages 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.

Program Title:

Information Technology/Computer Careers

Credits: Total Associate in Applied Science Degree Credits 60

Award Type:

Associate in Applied Science Degree

Award Outcomes:

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

Career Opportunities:

Positions are available as Computer Programmers.

Choose Total Associate in Applied Science Degree Credits 60 credits from the following areas:

Technical Studies Required: 40 Credits

CCIS1505 Fundamentals of Programming 4

CCIS2591 JavaScript 4

CCIS2595 Java I 4

CCIS2610 XML I 4

CCIS2651 Java II 4

CCIS2662 Java Server Pages (JSP) 4

CCIS2701 Database Design and SQL 4

CCIS2751 Oracle SQL and PL/SQL 4

CCIS2801 Systems Analysis 4

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 Electives: 5 Credits

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

Technical Studies Electives: 3 Credits

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

General Education Required: 12 Credits

Java/Open Source Diploma (BP/EP)

This diploma offers the skills necessary for computer application development and design. The open source languages 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.

Program Title:

Information Technology/Computer Careers

Credits: Total Diploma Credits 42

Award Type:

Diploma

Award Outcomes:

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

Career Opportunities:

Positions are available as Computer Programmers.

Choose Total Diploma Credits 42 credits from the following areas:

Technical Studies Required: 32 Credits

CCIS1505 Fundamentals of Programming 4

CCIS2591 JavaScript 4

CCIS2595 Java I 4

CCIS2651 Java II 4

CCIS2662 Java Server Pages (JSP) 4

CCIS2701 Database Design and SQL 4

CCIS2751 Oracle SQL and PL/SQL 4

CCIS2841 Client/Server Computing 4

Technical Studies Electives: 2 Credits

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

General Education Required: 8 Credits

COMM1050 Communication in the Workplace 2

or

COMM1131 Customer Service in the Workplace 2

or

ENGL2001 Workplace Correspondence 2

ENGL1021 Essay Fundamentals 3

or

ENGL1026 Writing for Careers 3

MATH1011 Beginning Algebra 3

General Education Electives: 0 Credits

Java/Open Source Advanced Technical Certificate (BP/EP)

This diploma offers the skills necessary for computer application development and design. The open source languages 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.

Program Title:

Information Technology/Computer Careers

Credits: Total Advanced Technical Certificate Credits 24

Award Type:

Advanced Technical Certificate

Award Outcomes:

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

Career Opportunities:

Positions are available as Computer Programmers.

Choose Total Advanced Technical Certificate Credits 24 credits from the following areas:

Technical Studies Required: 24 Credits

CCIS2595 Java I 4

CCIS2651 Java II 4

CCIS2662 Java Server Pages (JSP) 4

CCIS2701 Database Design and SQL 4

CCIS2751 Oracle SQL and PL/SQL 4

CCIS2841 Client/Server Computing 4

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Linux Networking Advanced Technical Certificate (BP/EP)

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.

Program Title:

Information Technology/Computer Careers

Credits: Total Advanced Technical Certificate Credits 15

Award Type:

Advanced Technical Certificate

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.

Career Opportunities:

Positions are available as Network Administrators and Network Developers.

Choose Total Advanced Technical Certificate Credits 15 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Microsoft Database Specialist Advanced Technical Certificate (BP/EP)

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.

Program Title:

Information Technology/Computer Careers

Credits: Total Advanced Technical Certificate Credits 23

Award Type:

Advanced Technical Certificate

Award Outcomes:

- Modify databases.
- Test programs and make modifications.
- Coordinate security measures to safeguard information.
- Calculate values for database parameters.
- Create user access levels.
- Develop data model describing data elements.
- Revise data definitions as defined in data dictionary.

Career Opportunities:

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

Choose Total Advanced Technical Certificate Credits 23 credits from the following areas:

Technical Studies Required: 23 Credits

CCIS1032 Access 2010 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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Network Administrator/Analyst A.A.S. (BP/EP)

This degree provides the skills needed to design, manage, troubleshoot and secure a network environment. Platforms include Windows 2000/XP, Linux, Cisco and the Internet. Skill development includes data communications, TCP/IP, hardware, software, network operating systems, and security.

Program Title:

Information Technology/Computer Careers

Credits: Total Associate in Applied Science Degree Credits 60

Award Type:

Associate in Applied Science Degree

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.

Career Opportunities:

Positions are available as Network Administrators and Network Developers.

Choose Total Associate in Applied Science Degree Credits 60 credits from the following areas:

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
CCIS1442 CCNA-4: WANs, ACLs, and VPNs 3
or

CCIS2421 CCNA Security 3
CCIS1505 Fundamentals of Programming 4
or

CCIS1515 Web 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

Technical Studies Electives: 3 Credits

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

[CCIS1135](#) Desktop Linux 3
[CCIS1301](#) HTML 3
[CCIS1480](#) CCNA (Cisco Certified Network Associate) Exam Prep 1
[CCIS2380](#) Network Support Internship 2-8
[CCIS2680](#) A+ Software Support 3
[CCIS2685](#) A+ Exam Prep 1

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 Electives: 3 Credits

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

Network Support Specialist Diploma (BP/EP)

This diploma provides the skills needed to design, manage, troubleshoot and secure a network environment. Platforms include Windows 2000/XP, Linux, Cisco and the Internet. Skill development includes data communications, TCP/IP, hardware, software, network operating systems, and security.

Program Title:

Information Technology/Computer Careers

Credits: Total Diploma Credits 44

Award Type:

Diploma

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.

Career Opportunities:

Positions are available as Network Administrators or Network Developers.

Choose Total Diploma Credits 44 credits from the following areas:

Technical Studies Required: 33 Credits

CCIS1000 Information Systems 3
CCIS1080 Microsoft Office 2010 3
CCIS1101 Windows 8 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 Web Programming Overview 3

Technical Studies Electives: 4 Credits

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

CCIS1135 Desktop Linux 3
CCIS1301 HTML 3
CCIS2380 Network Support Internship 2-8
CCIS2680 A+ Software Support 3
CCIS2685 A+ Exam Prep 1
CCIS2380 Network Support Internship 2-8

General Education Required: 7 Credits

Choose two of the following:

COMM1040 Job Seeking Skills 2
COMM1050 Communication in the Workplace 2
COMM1131 Customer Service 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 Electives: 0 Credits

Web Programmer Diploma (BP/EP)

The Web Programmer Diploma coursework prepares the student to develop business applications for the Internet, using leading-edge technologies. The student will master object oriented design and development principles, Java, HTTP protocol, HTML, CGI, database connectivity via web applications, and learn how these technologies are implemented in the Microsoft and Unix platforms.

Program Title:

Information Technology/Computer Careers

Credits: Total Diploma Credits 58

Award Type:

Diploma

Award Outcomes:

- Design and code business applications.
- Demonstrate knowledge of program flow/control.
- Generate data structures using relational databases.
- Develop code using programming languages common to the industry.
- Create an application that demonstrates the principles of content management.
- Create graphical user interface.
- Construct web-based applications.

Career Opportunities:

Positions are available as WEB Programmers.

Choose Total Diploma Credits 58 credits from the following areas:

Technical Studies Required: 45 Credits

CCIS1000 Information Systems 3
CCIS1101 Windows 8 3
CCIS1301 HTML 3
CCIS1351 Advanced HTML 4
CCIS1505 Fundamentals of Programming 4
CCIS2591 JavaScript 4
CCIS2595 Java I 4
CCIS2651 Java II 4
CCIS2610 XML I 4
CCIS2630 PHP 4
or
CCIS2645 Introduction to ASP.NET 4
or
CCIS2662 Java Server Pages (JSP) 4
CCIS2701 Database Design and SQL 4
CCIS2801 Systems Analysis 4

General Education Required: 10 Credits

COMM1040 Job Seeking Skills 2
COMM1050 Communication in the Workplace 2
or
COMM1131 Customer Service in the Workplace 2
ENGL1021 Essay Fundamentals 3
or
ENGL1026 Writing for Careers 3
MATH1011 Beginning Algebra 3

General Education Electives: 0 Credits

Technical Studies Electives: 3 Credits

CCIS1135 Desktop Linux 3
CCIS1310 Publisher 2010 3
CCIS2005 C# and the Microsoft .NET Framework 4
CCIS2055 Project Management 3
CCIS2311 Web Programmer Internship 2-8
CCIS2625 AJAX 4
CCIS2630 PHP 4
CCIS2645 Introduction to ASP.NET 4
CCIS2662 Java Server Pages (JSP) 4
CCIS2841 Client/Server Computing 4

Web Programmer A.A.S. (BP/EP)

The Web Programmer Degree coursework prepares the student to develop business applications for the Internet, using leading edge technologies. The student will master object oriented design and development principles, Java, HTTP protocol, HTML, CGI, database connectivity via web applications, and learn how these technologies are implemented in the Microsoft and Unix platforms.

Program Title:

Information Technology/Computer Careers

Credits: Total Associate in Applied Science Degree Credits 60

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Demonstrate validating and using HTML and XHTML code.
- Construct web pages using HTML, XHTML, JavaScript, styles, and other related languages according to industry standards.
- Design and code business applications.
- Demonstrate knowledge of program flow/control.
- Analyze business communication systems.
- Use structured approach to solving business problems.
- Generate data structures using relational databases.
- Develop code using programming languages common to the industry.
- Create an application that demonstrates the principles of content management.
- Create graphical user interface.

Career Opportunities:

Positions are available as WEB Programmers.

Choose Total Associate in Applied Science Degree Credits 60 credits from the following areas:

Technical Studies Required: 40 Credits

CCIS1351 Advanced HTML 4

CCIS1505 Fundamentals of Programming 4

CCIS2591 JavaScript 4

CCIS2595 Java I 4

CCIS2610 XML I 4

CCIS2625 AJAX 4

CCIS2651 Java II 4

CCIS2630 PHP 4

or

CCIS2645 Introduction to ASP.NET 4

or

CCIS2662 Java Server Pages (JSP) 4

CCIS2701 Database Design and SQL 4

CCIS2801 Systems Analysis 4

Technical Studies Electives: 5 Credits

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

[CCIS1101](#) Windows 8 3

[CCIS1135](#) Desktop Linux 3

[CCIS1301](#) HTML 3

[CCIS1310](#) Publisher 2010 3

[CCIS2005](#) C# and the Microsoft .NET Framework 4

[CCIS2055](#) Project Management 3

[CCIS2311](#) Web Programmer Internship 2-8

[CCIS2615](#) XML II 4

[CCIS2630](#) PHP 4

General Education Required: 12 Credits

[CCIS2662](#) Java Server Pages (JSP) 4

[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 Electives: 3 Credits

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

Windows Networking Advanced Technical Certificate (BP/EP)

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.

Program Title:

Information Technology/Computer Careers

Credits: Total Advanced Technical Certificate Credits 16

Award Type:

Advanced Technical Certificate

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.

Career Opportunities:

Positions are available as Network Administrators and Network Developers.

Choose Total Advanced Technical Certificate Credits 16 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Workplace Administrative Assistant Occupational Certificate (BP/EP)

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. 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.

Program Title:

Information Technology/Computer Careers

Credits: Total Occupational Certificate Credits 22

Award Type:

Occupational Certificate

Award Outcomes:

- Demonstrate problem-solving skills.
- Exhibit organizational skills.
- Exhibit detail-oriented skills.
- Demonstrate effective communication skills.
- Demon. prof. in word pro., spreadsht., datab. & present. softw.
- Key at a minimum rate of 35 net words per minute.
- Demonstrate knowledge of basic computer operations.

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.

Choose Total Occupational Certificate Credits 22 credits from the following areas:

Technical Studies Required: 22 Credits

ACCT1000 Introduction to Accounting 3

ACCT1125 Excel 2010 3

CCIS1035 Word 2010 3

CCIS1080 Microsoft Office 2010 3

COMM1050 Communication in the Workplace 2

or

ENGL2001 Workplace Correspondence 2

CPLT1005 Skill Building and Document Processing 3

ENGL1010 Business English 3

MATH1000 Prealgebra 2

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Workplace Administrative Professional Diploma (BP/EP)

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 business presentations. As a workplace administrative professional, you may have the opportunity to serve as a communications link to the technology staff. Excellent interpersonal skills and the ability to assume additional responsibility are essential. 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.

Program Title:

Information Technology/Computer Careers

Credits: Total Diploma Credits 34

Award Type:

Diploma

Award Outcomes:

- Demonstrate problem-solving skills.
- Exhibit organizational skills.
- Exhibit detail-oriented skills.
- Demonstrate effective communication skills.
- Demon. prof. in word pro., spreadsheet., database. & present. software.
- Key at a minimum rate of 35 net words per minute.
- Demonstrate knowledge of basic computer operations.

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.

Choose Total Diploma Credits 34 credits from the following areas:

Technical Studies Required: 24 Credits

ACCT1000 Introduction to Accounting 3

ACCT1125 Excel 2010 3

CCIS1032 Access 2010 3

CCIS1035 Word 2010 3

CCIS1042 PowerPoint 2010 3

CCIS1080 Microsoft Office 2010 3

CCIS1101 Windows 8 3

CPLT1005 Skill Building and Document Processing 3

Technical Studies Electives: 3 Credits

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

CCIS1135 Desktop Linux 3

CCIS1310 Publisher 2010 3

General Education Required: 7 Credits

COMM1050 Communication in the Workplace 2

or

ENGL2001 Workplace Correspondence 2

ENGL1010 Business English 3

MATH1000 Prealgebra 2

General Education Electives: 0 Credits

MEDICAL OFFICE CAREERS

Medical Administrative Assistant Diploma (BP/EP)

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.

Program Title:

Medical Office Careers

Credits: Total Diploma Credits 49

Award Type:

Diploma

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.

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.

Choose Total Diploma Credits 49 credits from the following areas:

Technical Studies Required: 36 Credits

ACCT1000 Introduction to Accounting 3

or

ACCT1101 Principles of Accounting I 3

ACCT1125 Excel 2010 3

CCIS1035 Word 2010 3

CCIS1080 Microsoft Office 2010 3

CPLT1005 Skill Building and Document Processing 3

ENGL1010 Business English 3

OFCR1301 Medical Terminology 4

OFCR1316 Medical Office Procedures 3

OFCR1331 Medical Transcription 4

OFCR1335 Medical Coding and Reimbursement Fundamentals 4

OFCR1340 Medical Office Management 3

Technical Studies Electives: 4 Credits

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

General Education Required: 6 Credits

COMM1050 Communication in the Workplace 2

COMM1040 Job Seeking Skills 2

MATH1000 Prealgebra 2

General Education Electives: 3 Credits

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

Medical Administrative Assistant A.A.S. (BP/EP)

MEDICAL ADMINISTRATIVE ASSISTANT

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.

Program Title:

Medical Office Careers

Credits: Total Associate in Applied Science Degree Credits 60

Award Type:

Associate in Applied Science Degree

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.

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.

Choose Total Associate in Applied Science Degree Credits 60 credits from the following areas:

Technical Studies Required: 40 Credits

ACCT1000 Introduction to Accounting 3
or

ACCT1101 Principles of Accounting I 3

ACCT1125 Excel 2010 3

CCIS1035 Word 2010 3

CCIS1080 Microsoft Office 2010 3

COMM1040 Job Seeking Skills 2

CPLT1005 Skill Building and Document Processing 3

ENGL1010 Business English 3

OFCR1301 Medical Terminology 4

OFCR1316 Medical Office Procedures 3

OFCR1331 Medical Transcription 4

OFCR1335 Medical Coding and Reimbursement
Fundamentals 4

OFCR1340 Medical Office Management 3

MATH1000 Prealgebra 2

General Education Required: 18 Credits

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

SOCI2100 Introduction to Sociology 3

or

COMM2020 Intercultural Communication 3

General Education Electives: 0 Credits

Technical Studies Electives: 2 Credits

Any ACCT, BUSN, CCIS, -or- OFCR course that is not

required for this award may be used as an elective.

Medical Coding Specialist Diploma (BP/EP)

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.

Program Title:

Medical Office Careers

Credits: Total Diploma Credits 43

Award Type:

Diploma

Award Outcomes:

- Analyze medical record documentation in order to assign diagnostic and procedure codes.
- Provide important information for the health care reimbursement process.
- Assist in medical research and statistics.

Career Opportunities:

Career opportunities are available for individuals in health care settings such as clinics, hospitals, and nursing homes.

Note: A minimum course grade of a "C" must be earned in each of the courses to meet graduation requirements.

Choose Total Diploma Credits 43 credits from the following areas:

Technical Studies Required: 36 Credits

ACCT1125 Excel 2010 3

ADSC1221 Introduction to Health Information Management (Anoka) 3

ADSC1231 ICD-9-CM Coding (Anoka) 3

ADSC1240 Coding & Reimbursement for Physician's Services (Anoka) 3

ADSC1244 Legal and Ethical Aspects in Health Care (Anoka) 2

ADSC1249 Advanced Coding and Reimbursement (Anoka) 2

ADSC1252 Professional Practice for Coding Specialists (Anoka) 3

CCIS1080 Microsoft Office 2010 3

CPLT1005 Skill Building and Document Processing 3

HLTH1000 Disease Conditions (Anoka) 2

or

HLTH1020 Disease Conditions 3

BIOL2045 Human Biology 4

or

HLTH1005 Anatomy and Physiology (Anoka) 4

OFCR1301 Medical Terminology 4

NURS1140 Pharmacology I (Anoka) 1

Technical Studies Electives: 0 Credits

General Education Required: 7 Credits

COMM2050 Interpersonal Communication 3

ENGL1105 Composition I (Anoka) 4

General Education Electives: 0 Credits

Medical Receptionist Occupational Certificate (BP/EP)

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.

Program Title:

Medical Office Careers

Credits: Total Occupational Certificate Credits 28

Award Type:

Occupational Certificate

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.

Career Opportunities:

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

Choose Total Occupational Certificate Credits 28 credits from the following areas:

Technical Studies Required: 22 Credits

ACCT1000 Introduction to Accounting 3

or

ACCT1101 Principles of Accounting I 3

CCIS1035 Word 2010 3

CCIS1080 Microsoft Office 2010 3

CPLT1005 Skill Building and Document Processing 3

ENGL1010 Business English 3

OFCR1301 Medical Terminology 4

OFCR1316 Medical Office Procedures 3

Technical Studies Electives: 0 Credits

General Education Required: 6 Credits

COMM1050 Communication in the Workplace 2

COMM1040 Job Seeking Skills 2

MATH1000 Prealgebra 2

General Education Electives: 0 Credits

Construction & Building Careers

ARCHITECTURAL TECHNOLOGY

Architectural Technology A.A.S. (BP/EP)

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.

Program Title:

Architectural Technology

Credits: Total Associate in Applied Science Degree Credits 72

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Demonstrate proficiency using CAD software and related computer tools.
- Demonstrate knowledge of construction process, from design to completion.
- Apply building codes and construction standards.
- Perform preliminary structural design calculations.
- Perform construction material take-offs and cost estimating.
- Model effective communication skills.
- Produce construction drawings.
- Demonstrate knowledge of the materials and methods used in construction.
- Model effective problem-solving strategies.

Career Opportunities:

Students in the Architectural Technology program are prepared for entry level employment in a design or construction related position within the architecture, engineering or construction industry. Employment opportunities for graduates range from Computer Aided Design (CAD) or Building Information Modeling (BIM) technicians working in architectural, engineering or building firms to estimators working with contractors to detailers and representatives working with material and product supplier. 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.

Choose Total Associate in Applied Science Degree Credits 72 credits from the following areas:

Technical Studies Required: 55 Credits

ARCH1002 Introduction to Architectural Technology 4
ARCH1007 Architectural Drafting I 4
ARCH1011 Architectural Drafting II 5
ARCH1202 Materials and Methods of Construction I 2
ARCH1206 Strength of Materials 3
ARCH1340 Building Codes 2
ARCH1345 Building Systems 3
ARCH1480 Architectural Practices and Procedures 3
ARCH2121 Architectural Drafting III 5
ARCH2141 Architectural Drafting IV 5
ARCH2330 Architectural Presentation 3
ARCH2340 Design Development for Architectural Draft 3
ARCH2370 Architectural CAD: Revit Architecture 4
ARCH2466 Materials and Methods of Construction II 2
ARCH2561 Estimating 3
ARCH2935 Architectural CAD: Advanced Revit Tools 1
ARCH2940 Architectural CAD: Revit Structure 1
ARCH2945 Architectural CAD: Revit MEP 1

ARCH2950 Architectural CAD: Revit Site Development 1

Technical Studies Electives: 2 Credits

Recommended:

ARCH1100 Architectural CAD: Basic AutoCAD 4
ARCH1225 Technical Drawing 1
ARCH1500 Introduction to Construction Management 2
ARCH1505 LEED AP Preparation 2
ARCH1900 Specialized Lab 1-4
ARCH2300 SketchUp for Design 3
ARCH2310 Architectural CAD: Intro to Revit Architecture 2
ARCH2640 Architectural History 3
ARCH2640 Architectural History 3
ARCH2900 Internship 2-4
ARCH2920 Photoshop for Architecture 4
ARCH2930 Architectural CAD: 3D Studio Max 4

General Education Required: 15 Credits

ENGL2125 Technical Writing 3
Choose 3 credits from MnTC Goal Area 1 3
Choose 3 credits from MnTC Goal Area 2 3
Choose 3 credits from MnTC Goal Area 5 3

Architectural Technology Diploma (BP/EP)

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.

Program Title:

Architectural Technology

Credits: Total Diploma Credits 64

Award Type:

Diploma

Award Outcomes:

- Demonstrate proficiency using CAD software and related computer tools.
- Demonstrate knowledge of construction process, from design to completion.
- Apply building codes and construction standards.
- Perform preliminary structural design calculations.
- Perform construction material take-offs and cost estimating.
- Model effective communication skills.
- Produce construction drawings.
- Demonstrate knowledge of the materials and methods used in construction.
- Model effective problem-solving strategies.

Career Opportunities:

Students in the Architectural Technology program are prepared for entry level employment in a design or construction related position within the architecture, engineering or construction industry. Employment opportunities for graduates range from Computer Aided Design (CAD) or Building Information Modeling (BIM) technicians working in architectural, engineering or building firms to estimators working with contractors to detailers and representatives working with material and product suppliers. Hennepin Technical College graduates have advanced to senior positions in many area architecture, engineering or construction offices with experience and continuing education. Articulation agreements with other schools also give students the opportunity to continue their education for advanced degrees in areas such as construction management or operations management.

Choose Total Diploma Credits 64 credits from the following areas:

Technical Studies Required: 55 Credits

ARCH1002 Introduction to Architectural Technology 4
 ARCH1007 Architectural Drafting I 4
 ARCH1011 Architectural Drafting II 5
 ARCH1202 Materials and Methods of Construction I 2
 ARCH1206 Strength of Materials 3
 ARCH1340 Building Codes 2
 ARCH1345 Building Systems 3
 ARCH1480 Architectural Practices and Procedures 3
 ARCH2121 Architectural Drafting III 5
 ARCH2141 Architectural Drafting IV 5
 ARCH2330 Architectural Presentation 3
 ARCH2340 Design Development for Architectural Drafting 3
 ARCH2370 Architectural CAD: Revit Architecture 4
 ARCH2466 Materials and Methods of Construction II 2
 ARCH2561 Estimating 3
 ARCH2935 Architectural CAD: Advanced Revit Tools 1
 ARCH2940 Architectural CAD: Revit Structure 1
 ARCH2945 Architectural CAD: Revit MEP 1
 ARCH2950 Architectural CAD: Revit Site Development 1

Technical Studies Electives: 2 Credits

Recommended:
 ARCH1225 Technical Drawing 1
 ARCH1230 Sketching (On Hold) 1
 ARCH1500 Introduction to Construction Management 2
 ARCH1505 LEED AP Preparation 2
 ARCH1900 Specialized Lab 1-4
 ARCH2300 SketchUp for Design 3
 ARCH2310 Architectural CAD: Introduction to Revit Architecture 2
 ARCH2640 Architectural History 3
 ARCH2900 Internship 2-4
 ARCH2920 Photoshop for Architecture 4
 ARCH2930 Architectural CAD: 3D Studio Max 4

General Education Required: 3 Credits

ENGL1026 Writing for Careers 3

General Education Electives: 4 Credits

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

WOODWORKING TECHNOLOGY

Cabinetmaking Diploma (BP)

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.

Program Title:

Woodworking Technology

Credits: Total Diploma Credits 64

Award Type:

Diploma

Award Outcomes:

- Operate woodworking machinery safely and effectively.
- Design cabinetry and furniture.
- Lay out cabinetry and furniture.
- Determine appropriate materials for project.
- Interpret blueprints and shop drawings.
- Coordinate production operations.
- Produce cabinetry and furniture.
- Apply wood finishes.
- Fabricate laminate and solid surface materials.
- Estimate costs of cabinetry and furniture.

Career Opportunities:

Graduates of this program choose careers in many different venues including residential cabinet shops, store fixture shops, furniture manufacturers, millwork shops and plastics industries. Some graduates operate their own businesses or shops.

Choose Total Diploma Credits 64 credits from the following areas:

Technical Studies Required: 55 Credits

CBTG1110 Basic Joinery 2
CBTG1120 Power Tool Operation 3
CBTG1130 Materials 1
CBTG1141 Basic Case Construction 4
CBTG1161 Basic Laminating 2
CBTG1170 AutoCAD 4
CBTG1210 Laminated Product Fabrication 3
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
CBTG2420 Furniture Joinery 3
CBTG2430 Furniture Fabrication 4
CBTG2450 Solid Surface Fabrication 2

Technical Studies Electives: 2 Credits

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

General Education Required: 5 Credits

MATH1000 Prealgebra 2
METS1000 Computers in Manufacturing 3

General Education Electives: 2 Credits

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

Cabinetmaking A.A.S. (BP)

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.

Program Title:

Woodworking Technology

Credits: Total Associate in Applied Science Degree Credits 72

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Operate woodworking machinery safely and effectively.
- Design cabinetry and furniture.
- Lay out cabinetry and furniture.
- Determine appropriate materials for project.
- Interpret blueprints and shop drawings.
- Coordinate production operations.
- Produce cabinetry and furniture.
- Apply wood finishes.
- Fabricate laminate and solid surface materials.
- Estimate costs of cabinetry and furniture.

Career Opportunities:

Graduates of this program choose careers in many different venues including residential cabinet shops, store fixture shops, furniture manufacturers, millwork shops and plastics industries. Some graduates operate their own businesses or shops.

Choose Total Associate in Applied Science Degree Credits 72 credits from the following areas:

Technical Studies Required: 57 Credits

CBTG1110 Basic Joinery 2
CBTG1120 Power Tool Operation 3
CBTG1130 Materials 1
CBTG1141 Basic Case Construction 4
CBTG1161 Basic Laminating 2
CBTG1170 AutoCAD 4
CBTG1210 Laminated Product Fabrication 3
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
CBTG2420 Furniture Joinery 3
CBTG2430 Furniture Fabrication 4
CBTG2450 Solid Surface Fabrication 2
MATH1000 Prealgebra 2

Technical Studies Electives: 0 Credits

General Education Required: 9 Credits

ENGL2125 Technical Writing 3

Choose one of the following:

COMM2060 Small Group Communication 3

PHIL2100 Critical Thinking 3

Choose one of the following:

SOCI2100 Introduction to Sociology 3

ECON2200 Principles of Microeconomics 3

PSYC2300 General Psychology 3

General Education Electives: 6 Credits

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

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

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.

Program Title:

Woodworking Technology

Credits: Total Advanced Technical Certificate Credits 12

Award Type:

Advanced Technical Certificate

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.

CNC Machining for Wood and Plastics: Academic Planning Guide

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.

Choose Total Advanced Technical Certificate Credits 12 credits from the following areas:

Technical Studies Required: 12 Credits

CBTG1170 AutoCAD 4

CBTG2522 CNC Router Programming 3

CBTG2532 CNC Router Operation 3

CBTG2550 Point to Point Machining 2

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Wood Product Engineering Advanced Technical Certificate (BP)

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.

Program Title:

Woodworking Technology

Credits: Total Advanced Technical Certificate Credits 12

Award Type:

Advanced Technical Certificate

Award Outcomes:

- Exhibit safety on CNC machinery.
- Draw using a CAD program.
- Assign tooling using CAM programs.
- Set up CNC machines.
- Operate CNC machines.
- Manufacture parts using CNC machines.
- Troubleshoot the manufacturing process of a part.

Career Opportunities:

This certificate program prepares individuals to enter the wood and plastics CNC machining industry. The student will gain experience preparing parts drawings, generating machine code and operating a CNC router. This training may lead to entry-level employment in this very exciting and challenging field.

Choose Total Advanced Technical Certificate Credits 12 credits from the following areas:

Technical Studies Required: 12 Credits

CBTG1170 AutoCAD 4

CBTG2522 CNC Router Programming 3

CBTG2532 CNC Router Operation 3

CBTG2550 Point to Point Machining 2

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

CARPENTRY

Carpentry Diploma (EP)

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.

Program Title:

Carpentry

Credits: Total Diploma Credits 36

Award Type:

Diploma

Award Outcomes:

- Practice safe work habits.
- Develop blueprint reading skills.
- Assemble floor, wall, roof and stair systems.
- Install windows and doors.
- Install interior trim.
- Apply sustainable/energy efficient building practices.
- Develop an awareness of environmental responsibility.
- Exhibit professionalism and related soft skills.

Career Opportunities:

A person who has carpenter training may be an all around carpenter or may specialize in areas such as framer, interior finisher, sider, shingler, drywall installer, acoustical ceiling installer, maintenance carpenter, millwright, bridge builder or prefabrication production builder. A carpenter may advance to the position of crew supervisor or job superintendent. Carpenters may go into business for themselves and become contractors for new construction or remodeling work. They may also go into related fields of work such as sales, lumber yard management, building inspection or factory representative.

Choose Total Diploma Credits 36 credits from the following areas:

Technical Studies Required: 26 Credits

CARP1111 Floor and Wall Framing 5

CARP1140 Engineered Roof Systems 2

CARP1180 Stair Framing 2

CARP1210 Residential Roof Coverings 1

CARP1220 Siding 2

CARP1230 Cornice 1

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

Technical Studies Electives: 6 Credits

Technical Studies Electives: 6 Credits

CARP1100 Introduction to Residential Construction 1

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

General Education Required: 4 Credits

COMM1040 Job Seeking Skills 2

MATH1000 Prealgebra 2

General Education Electives: 0 Credits

Residential Remodeling and Design A.A.S. (EP)

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.

Program Title:

Carpentry

Credits: Total Associate in Applied Science Degree Credits 68

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Practice Safe Work habits.
- Operate tools and equipment correctly.
- Interpret blueprints and applicable building codes.
- Utilize computers and CAD software for plan development and research.
- Identify materials used in residential construction.
- Construct floor, wall, and roof systems.
- Install interior and exterior finishes.
- Apply various moisture and vapor management techniques.
- Install doors and windows.
- Discuss outmoded building systems.
- Apply cabinet design, construction, and installation techniques.
- Demonstrate professionalism with clients and the allied trades.
- Understand elements of project coordination

Career Opportunities:

This program is designed to prepare students to enter the residential remodeling field. Graduates may find employment with remodeling contractors or weatherization firms. A program graduate may advance to the position of crew supervisor or job superintendent. They may start their own business specializing in general remodeling or in a certain areas of remodeling such as kitchens or bathrooms. Graduates of the program may also go into related fields of work such as sales, lumber yard management, building inspection or factory representative.

Choose Total Associate in Applied Science Degree Credits 68 credits from the following areas:

Technical Studies Required: 53 Credits

ARCH1100 Architectural CAD: Basic AutoCAD 4

or

CBTG1170 AutoCAD 4

ARCH1345 Building Systems 3

ARCH1500 Introduction to Construction Management 2

CARP1111 Floor and Wall Framing 5

CARP1140 Engineered Roof Systems 2

CARP1180 Stair Framing 2

CARP1210 Residential Roof Coverings 1

CARP1220 Siding 2

CARP1230 Cornice 1

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 2

CARP2000 Green Building Concepts 3

CARP2005 Green Building Materials 2

or

CARP2010 The House as an Integrated System 4

CBTG1120 Power Tool Operation 3

CBTG1130 Materials 1

CBTG2311 Cabinet Layout and Design 3

HVAC1005 OSHA 30-Hour Construction Safety Training 2

RRBD1000 Computers in Construction 2

MATH1000 Prealgebra 2

Technical Studies Electives: 0 Credits

General Education Required: 15 Credits

ENGL2121 Writing and Research 4

or

ENGL2125 Technical Writing 3

Choose one course from MnTC Goal Areas 2, 8, 9, and 10 1-2

General Education Electives: 0 Credits

HEATING, VENTILATION AND AIR CONDITIONING

Commercial Heating, Ventilation, Air Conditioning and Refrigeration Diploma (BP/EP)

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.

Program Title:

Heating, Ventilation, Air Conditioning and Refrigeration

Credits: Total Diploma Credits 36

Award Type:

Diploma

Award Outcomes:

- Obtain OSHA 30 Certification.
- Obtain the EPA Section 608 Refrigerant Handling License.
- Demonstrate knowledge of International Fuel, Gas and Mechanical codes.
- Troubleshoot electrical motors.
- Troubleshoot control circuits for refrigeration and A/C equipment.
- Troubleshoot gas heating equipment.
- Adjust water systems for HVAC and refrigeration equipment.
- Troubleshoot airflow systems for HVAC equipment.
- Solve problems using analytical thinking.

Career Opportunities:

Employment opportunities in the commercial heating, air conditioning and refrigeration field are based on each person's goals and qualifications. Manufacturing, installation, servicing and engineering firms could employ an individual. Possible positions include: installer, quality control technician, service technician, layout person and designer.

Choose Total Diploma Credits 36 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 2 Credits

COMM1040 Job Seeking Skills 2
or

COMM1050 Communication in the Workplace 2
or

ENGL1026 Writing for Careers 3

General Education Electives: 2 Credits

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

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

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.

Program Title:

Heating, Ventilation, Air Conditioning and Refrigeration

Credits: Total Associate in Applied Science Degree Credits 72

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Obtain OSHA 30 Certification.
- Obtain the EPS Section 608 Refrigerant Handling License.
- Practice human relation skills.
- Demonstrate basic tool usage.
- Apply mathematical, reading, and communication skills essential to the HVAC industry.
- Demonstrate knowledge of International Fuel, Gas and Mechanical codes.
- Troubleshoot electrical motors.
- Troubleshoot control circuits for refrigeration and A/C equipment.
- Troubleshoot gas heating equipment.
- Adjust water systems for HVAC and refrigeration equipment.
- Troubleshoot airflow systems for HVAC equipment.
- Solve problems using analytical thinking.

Career Opportunities:

Employment opportunities in the residential/commercial heating, cooling, air conditioning and refrigeration field are based on each individual's goals and qualifications. Opportunities exist in management, sales, service, installation and maintenance of HVAC and refrigeration equipment. Possible positions include: installer, quality control technician, service technician, manufacturer's representative, sales consultant, layout person and designer. In addition, the A.A.S. degree will help qualify individuals for management positions in the sales, installation, and service of HVAC equipment.

Choose Total Associate in Applied Science Degree Credits 72 credits from the following areas:

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
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
MATH1000 Prealgebra 2

Technical Studies Electives: 2 Credits

Recommended:

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
HVAC2020 Pneumatic Controls 2
HVAC2060 Computer Room Air Conditioning 1

HVAC2100 Water Chiller Machines 3

Continued on the following page

General Education Required: 9 Credits

COMM2050 Interpersonal Communication 3

SOCI2100 Introduction to Sociology 3

PHIL2100 Critical Thinking 3

General Education Electives: 6 Credits

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

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

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.

Program Title:

Heating, Ventilation, Air Conditioning and Refrigeration

Credits: Total Diploma Credits 35

Award Type:

Diploma

Award Outcomes:

- Obtain OSHA 30 Certification.
- Obtain the EPS Section 608 Refrigerant Handling License.
- Practice human relation skills.
- Demonstrate basic tool usage.
- Apply mathematical, reading, and communication skills essential to the HVAC industry.
- Troubleshoot electrical motors.
- Troubleshoot control circuits for refrigeration and A/C equipment.
- Troubleshoot gas heating equipment.

Career Opportunities:

Employment is available in management, sales, service and the installation and maintenance of residential HVAC equipment. Qualified graduates can be employed as installers, quality control technicians, service technicians, manufacturer's representatives, sales consultants, layout persons, and designers.

Choose Total Diploma Credits 35 credits from the following areas:

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

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

Technical Studies Electives: 1 Credits

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

General Education Required: 2 Credits

MATH1000 Prealgebra 2

General Education Electives: 2 Credits

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

Education Careers

CHILD DEVELOPMENT

Child Development Diploma (BP/EP)

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.

Program Title:

Child Development Careers

Credits: Total Diploma Credits 32

Award Type:

Diploma

Award Outcomes:

- Develop self-reflective habits as an early childhood professional.
- Implement developmentally appropriate curriculum and teaching practices.
- Apply developmental theories and practices.
- Implement assessment and curriculum cycle.

Career Opportunities:

Job opportunities are available in child care centers, special needs programs, in home care (nanny), family child care, schoolage care, recreational and parent/child programs.

Choose Total Diploma Credits 32 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 4 Credits

ENGL2121 Writing and Research 4

General Education Electives: 3 Credits

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

Child Development A.A.S. (BP/EP)

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.

Program Title:

Child Development Careers

Credits: Total Associate in Applied Science Degree Credits 60

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Develop self-reflective habits as an early childhood professional.
- Implement developmentally appropriate curriculum and teaching practices.
- Apply developmental theories and practices.
- Implement assessment and curriculum cycle.
- Cultivate family and community relationships.
- Develop an environment that honors diversity.

Career Opportunities:

Job opportunities are available in child care centers, special needs programs, in home care (nanny), family child care, schoolage care, recreational and parent/child programs.

Choose Total Associate in Applied Science Degree Credits 60 credits from the following areas:

Technical Studies Required: 42 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

Technical Studies Electives: 2 Credits

Recommended:

CDEV1900 Specialized Lab 1-4

CDEV2230 Preschool Development and Learning 2

CDEV2255 Schoolage Development and Learning 2

CDEV2300 Multicultural Learning Experiences 2

General Education Required: 16 Credits

ENGL2121 Writing and Research 4

Choose an additional course from MnTC Goal Area 1 3

Choose two courses from MnTC Goal Area 5 6

Choose one course from MnTC Goal Area 7 3

General Education Electives: 0 Credits

Child Development A.S. (BP/EP)

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.

Program Title:

Child Development Careers

Credits: Total Associate of Science Credits 60

Award Type:

Associate of Science

Award Outcomes:

- Develop self-reflective habits as an early childhood professional.
- Implement developmentally appropriate curriculum and teaching practices.
- Apply developmental theories and practices.
- Implement assessment and curriculum cycle.
- Cultivate family and community relationships.
- Develop an environment that honors diversity.

Career Opportunities:

Job opportunities are available in child care centers, special needs programs, in home care (nanny), family child care, schoolage care, recreational and parent/child programs. 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.

Choose Total Associate of Science Credits 60 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 30 Credits

BIOL2001 Biology in Society 4

ENGL2121 Writing and Research 4

MATH2200 College Algebra 4

Choose one additional 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

Choose one course from MnTC Goal Area 7 3

Choose an addition 6 credits from the MnTC Goal Areas 6

General Education Electives: 0 Credits

Emergency & Public Safety Careers

EMERGENCY MEDICAL SERVICES

Community Paramedic Advanced Technical Certificate (BP/EP)

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 benefiting 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: <http://www.hennepintech.edu/customizedtraining/cts/44> 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.

Program Title:

Emergency Medical Services

Credits: Total Advanced Technical Certificate Credits 12

Award Type:

Advanced Technical Certificate

Award Outcomes:

- Explain the scope of service for the role of the Community Paramedic (CP).
- Differentiate between the role of the Community Paramedic, traditional community health care workers and the emergency medical personnel.
- Demonstrate knowledge and skills required to perform clinical interventions.
- Evaluate treatment and referral programs according to policies and protocols.
- Evaluate the characteristics of health in the community.
- Identify relevant health and welfare services.
- Characterize the role of the CP as a liaison between patients, health and welfare service providers and community advocates.

Career Opportunities:

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

Choose Total Advanced Technical Certificate Credits 12 credits from the following areas:

Technical Studies Required: 12 Credits

EMSV2000 Role Advocacy and Outreach 2

EMSV2005 Community Assessment 2

EMSV2010 Care and Prevention Development Strategies 3

EMSV2020 Community Paramedic Clinicals 5

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Emergency Medical Services Specialist Occupational Certificate (BP/EP)

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.

Program Title:

Emergency Medical Services

Credits: Total Occupational Certificate Credits 26

Award Type:

Occupational Certificate

Award Outcomes:

- Demonstrate his/her role and responsibilities as a member of the emergency medical team.
- Apply emergency medical safety principles in the work place.
- Apply critical thinking skills in care management.
- Assess patient for traumatic injuries.
- Assess patient for medical illnesses.
- Demonstrate clear oral communications.
- Exhibit personal, professional and academic ethics.
- Apply quality improvement concepts.
- Classify patient conditions for treatments needed.
- Demonstrate effective treatment skills.
- Demonstrate safe transport of patients.
- Demonstrate skills for the National Registry of EMT's.

Career Opportunities:

The EMS Certificate prepare and enhances a person's job opportunities for work as an EMT in a BLS medical transportation service or in a ALS service that combines EMT's and paramedics. The certificate meets several prerequisites in course work and the ride-along ambulance experience required for entry into paramedic programs.

Choose Total Occupational Certificate Credits 26 credits from the following areas:**Technical Studies Required: 13 Credits**

EMSV1050 Emergency Medical Responder
(First Responder) 3

EMSV1100 Emergency Medical Technician Basic 6

EMSV1105 Ambulance Operations 2

EMSV1120 Ambulance Clinical 2

Technical Studies Electives: 10 Credits**Technical Studies Elective: 10 Credits**

COMM1040 Job Seeking Skills 2

CPLT1100 Essential Computer Applications 3

EMGT1100 Orientation to Emergency Management 3

EMSV1000 Introduction to EMS Systems 1

EMSV1060 EMPACT 1

EMSV1070 Pediatric Education for Prehospital Providers 1

EMSV1080 Documentation for Emergency Medical
Services 1

EMSV1115 Passenger Assistant Technician 1

EMSV1130 Emergency Vehicle Driving Skills 1

EMSV1135 Understanding EKGs 1

EMSV1140 CPR Instructor 1

EMSV1146 Medical Terminology for EMS/ER Personnel 3

EMSV1155 Phlebotomy Techniques 3

EMSV1170 ER Procedures and Clinical 3

EMSV1185 Critical Care Simulation Scenarios 1

EMSV1190 Intravenous (IV) Access 1

EMSV1195 International Trauma Life Support (ITLS) 1

EMSV1225 Advanced Cardiac Life Support (ACLS) 1

PHIL2400 Medical Ethics 4

General Education Required: 3 Credits

COMM2050 Interpersonal Communication 3
or

COMM2060 Small Group Communication 3

General Education Electives: 0 Credits

Emergency Room Technician Occupational Certificate (BP/EP)

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.

Program Title:

Emergency Medical Services

Credits: Total Occupational Certificate Credits 20

Award Type:

Occupational Certificate

Award Outcomes:

- Demonstrate his/her role and responsibilities as a member of the emergency medical team.
- Apply emergency medical safety principles in the work place.
- Apply critical thinking skills in care management.
- Assess patient for traumatic injuries.
- Assess patient for medical illnesses.
- Demonstrate clear oral communications.
- Exhibit personal, professional and academic ethics.
- Apply quality improvement concepts.
- Classify patient conditions for treatments needed.
- Demonstrate effective treatment skills.
- Demonstrate safe transport of patients.
- Demonstrate skills for the National Registry of EMT's.

Career Opportunities:

The new ER Tech Certification provides a standard that Hospital ED's and Urgent Care Centers and clinics are seeking in this entry-level position for a health care career. This training and work experience will expose you and prepare you for other health care careers in hospitals and clinics.

Choose Total Occupational Certificate Credits 20 credits from the following areas:

Technical Studies Required: 17 Credits

EMSV1050 Emergency Medical Responder (First Responder) 3

EMSV1100 Emergency Medical Technician Basic 6

EMSV1110 Lifting Techniques for Health Professionals 1

EMSV1135 Understanding EKGs 1

EMSV1155 Phlebotomy Techniques 3

EMSV1170 ER Procedures and Clinical 3

EMSV1146 Medical Terminology for EMS/ER Personnel 3

Technical Studies Electives: 0 Credits

General Education Required: 3 Credits

COMM2050 Interpersonal Communication 3

or

COMM2060 Small Group Communication 3

General Education Electives: 0 Credits

ENVIRONMENTAL HEALTH AND SAFETY

Hazardous Materials Technology Occupational Certificate (BP/EP)

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.

Program Title:

Environmental Health and Safety

Credits: Total Occupational Certificate Credits 10

Award Type:

Occupational Certificate

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

Career Opportunities:

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

Choose Total Occupational Certificate Credits 10 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Safety Coordinator Occupational Certificate (BP/EP)

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.

Program Title:

Environmental Health and Safety

Credits: Total Occupational Certificate Credits 30

Award Type:

Occupational Certificate

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

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.

Choose Total Occupational Certificate Credits 30 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

FIRE PROTECTION

Company Officer Advanced Technical Certificate (EP)

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.

Program Title:

Fire Protection

Credits: Total Advanced Technical Certificate Credits 13

Award Type:

Advanced Technical Certificate

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

Career Opportunities:

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

Choose Total Advanced Technical Certificate Credits 13 credits from the following areas:

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 Fire Ground Control 2

FRPT2115 Fire Officer II 2

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Fire Inspection/Investigation Occupational Certificate (EP)

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.

Program Title:

Fire Protection

Credits: Total Occupational Certificate Credits 10

Award Type:

Occupational Certificate

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

Career Opportunities:

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

Choose Total Occupational Certificate Credits 10 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Fire Protection Technician Diploma (EP)

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.

Program Title:

Fire Protection

Credits: Total Diploma Credits 48

Award Type:

Diploma

Award Outcomes:

- Demonstrate full-range of fire fighter skills
- Operate fire apparatus
- Exhibit basic supervisory skills
- Identify how fire affects construction systems of buildings
- Demonstrate effective oral and written communication

Career Opportunities:

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

Choose Total Diploma Credits 48 credits from the following areas:

Technical Studies Required: 38 Credits

FRPT1100 Fire Fighter I 5

FRPT1105 Fire Fighter II 2

FRPT1110 Fire Instructor I 2

FRPT1115 Company Functions 2

FRPT1120 Fire Officer I 2

FRPT1125 Fire Investigation I 2

FRPT1130 Fire Inspector I 2

FRPT1136 Principles of Emergency Services 2

FRPT1145 Candidate Physical Ability Test 1

FRPT1150 Incident Management 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 Fire Ground Control 2

FRPT2115 Fire Officer II 2

FRPT2130 Fire Officer III 2

Technical Studies Electives: 4 Credits

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

EMSV1050 Emergency Medical Responder (First Responder) 3

EMSV1100 Emergency Medical Technician Basic 6

FRPT1200 Vehicle and Machinery Extrication 1

FRPT1205 Confined Space Operations 1

FRPT1210 Confined Space Technician 1

FRPT1215 Structural Collapse Awareness 1

FRPT1220 Trench Rescue Operations 1

FRPT1225 Introduction to Rescue Technician 3

General Education Required: 4 Credits

COMM1040 Job Seeking Skills 2

COMM1050 Communication in the Workplace 2

General Education Electives: 2 Credits

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

Fire Science Technology A.A.S. (EP)

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.

Program Title:

Fire Protection

Credits: Total Associate in Applied Science Degree Credits 72

Award Type:

Associate in Applied Science Degree

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

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.

Choose Total Associate in Applied Science Degree Credits 72 credits from the following areas:

Technical Studies Required: 48 Credits

FRPT1100 Fire Fighter I 5

FRPT1105 Fire Fighter II 2

FRPT1130 Fire Inspector I 2

FRPT1136 Principles of Emergency Services 2

FRPT1145 Candidate Physical Ability Test 1

FRPT1150 Incident Management 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

FRPT1180 Hazardous Materials Technician 3

FRPT2130 Fire Officer III 2

FRPT2135 Fire Officer IV 3

FRPT2140 Personnel Management for Fire Department
Services 3

EMGT1100 Orientation to Emergency Management 3

Choose 10 credits from the following:

FRPT1110 Fire Instructor I 2

FRPT1115 Company Functions 2

FRPT1120 Fire Officer I 2

FRPT1125 Fire Investigation I 2

FRPT2105 Fire Instructor II 2

FRPT2110 Fire Ground Control 2

FRPT2115 Fire Officer II 2

FRPT2120 Fire Investigation II 2

FRPT2125 Fire Inspector II 2

Continued on the following page

Technical Studies Electives: 6 Credits

EMSV1050 Emergency Medical Responder (First Responder) 3
EMSV1100 Emergency Medical Technician Basic 6
FRPT1200 Vehicle and Machinery Extrication 1
FRPT1205 Confined Space Operations 1
FRPT1210 Confined Space Technician 1
FRPT1215 Structural Collapse Awareness 1
FRPT1220 Trench Rescue Operations 1
FRPT1225 Introduction to Rescue Technician 3
FRPT2200 Hazardous Materials Specialty Safety Officer 1
FRPT2205 Hazardous Materials Specialty Branch Director 1
FRPT2210 Specialized Monitoring 1
FRPT2215 Hazardous Materials Specialty Containers 1
FRPT2220 Hazardous Materials Specialty Flammables Solids, Liquids, Gases 1
FRPT2225 Hazardous Materials Specialty Corrosive and Toxic 1
FRPT2230 Hazardous Materials Specialty Poisons,

Radioactives and Explosives 1
FRPT2235 Specialty Mitigation I 1
FRPT2240 Specialty Mitigation II 1

General Education Required: 18 Credits

COMM2130 Public Speaking 3
CPLT1100 Essential Computer Applications 3
or

CPLT1200 Introduction to Macintosh 3
ENGL2121 Writing and Research 4
or

ENGL2125 Technical Writing 3 3 *

Choose one course from Goal Area 1 (Communications) of the MnTC 3

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

Choose one course from Goal Area 9 (Ethics and Civic Responsibility) of the MinTC *The same course cannot satisfy more than one Minnesota Transfer Curriculum (MnTC) Goal Area requirement.

General Education Electives: 0 Credits

Fire Suppression Technician Occupational Certificate (EP)

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.

Program Title:

Fire Protection

Credits: Total Occupational Certificate Credits 24

Award Type:

Occupational Certificate

Award Outcomes:

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

Career Opportunities:

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

Choose Total Occupational Certificate Credits 24 credits from the following areas:

Technical Studies Required: 24 Credits

EMSV1100 Emergency Medical Technician Basic 6

FRPT1100 Fire Fighter I 5

FRPT1105 Fire Fighter II 2

FRPT1115 Company Functions 2

FRPT1145 Candidate Physical Ability Test 1

FRPT1161 Building Construction for the Fire Service 3

FRPT1165 Apparatus Operator 3

FRPT1176 Hazardous Materials First Responder Operational 2

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Hazardous Materials Occupational Certificate (EP)

This certificate prepares the Public Safety Responder, Police, Fire, EMS or Emergency Management to be able to handle responses to hazardous material spills. It will prepare them to be members of public hazardous materials response teams. It meets the requirements of OSHA 1910.120 and NFPA 472.

Program Title:

Fire Protection

Credits: Total Occupational Certificate Credits 14

Award Type:

Occupational Certificate

Award Outcomes:

- Demonstrate response to hazardous materials incident in accordance with NFPA 472
- Perform mitigation skills at the hazmat technician level
- Identify the classes of hazardous materials
- Identify hazardous materials containers and containment systems
- Perform supervisory duties within a hazardous materials team

Career Opportunities:

Completion of this certificate prepares public safety professionals to be members of public hazardous materials response teams.

Choose Total Occupational Certificate Credits 14 credits from the following areas:

Technical Studies Required: 14 Credits

FRPT1176 Hazardous Materials First Responder Operational 2

FRPT1180 Hazardous Materials Technician 3

FRPT2200 Hazardous Materials Specialty Safety Officer 1

FRPT2205 Hazardous Materials Specialty Branch Director 1

FRPT2210 Specialized Monitoring 1

FRPT2215 Hazardous Materials Specialty Containers 1

FRPT2220 Hazardous Materials Specialty Flammables Solids, Liquids, Gases 1

FRPT2225 Hazardous Materials Specialty Corrosive and Toxic 1

FRPT2230 Hazardous Materials Specialty Poisons, Radioactives and Explosives 1

FRPT2235 Specialty Mitigation I 1

FRPT2240 Specialty Mitigation II 1

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

PUBLIC WORKS

Street, Utility, and Park Maintenance Technician Diploma (EP)

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.

Program Title:

Public Works

Credits: Total Diploma Credits 32

Award Type:

Diploma

Award Outcomes:

- Identify the role of public works agencies in local government.
- Perform maintenance of surfaces and external grounds.
- Demonstrate basic computing skills.
- Identify role in a public safety emergency.
- Demonstrate the elements of teamwork.
- Demonstrate effective customer service techniques.
- Use effective oral and written communication skills.
- Identify health and safety hazards in accordance with OSHA and industry standards.
- Perform repairs to small engines, physical structures and their mechanical systems.
- Operate mechanized equipment in accordance with OSHA/industry standards.

Career Opportunities:

There are a number of options to choose from in this field. According to the state labor statistics, employment outlook for positions in this field is expected to increase. Employees in this field can expect good pay & benefits, year round employment, and challenging outdoor work assignments.

Choose Total Diploma Credits 32 credits from the following areas:

Technical Studies Required: 25 Credits

PWRK1001 Introduction to Public Works Employment 3

PWRK1005 Introduction to Maintenance Operations and Activities 3

PWRK1025 Street Maintenance, Materials and Applications 3

PWRK1050 Introduction to Municipal Utilities 3

PWRK1055 Public Works Safety 3

PWRK1061 Public Works Skills 4

PWRK1065 Introduction to Park Maintenance 3

PWRK2000 Public Works Internship 3

Technical Studies Electives: 3 Credits

Recommended:

PWRK1020 Basic Engine Repair 3

General Education Required: 4 Credits

Any HTC college level general education course may be used to satisfy the elective 4 requirement, except for EMSV1020 CPR/First Aid.

General Education Electives: 0 Credits

LAW ENFORCEMENT

Law Enforcement Advanced Technical Certificate (BP)

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 Minnesota Peace Officer and Standards Board.

Program Title:

Law Enforcement

Credits: Total Advanced Technical Certificate Credits 21

Award Type:

Advanced Technical Certificate

Award Outcomes:

- Understand 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.
- Support concepts of policing.
- Distinguish 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.

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.

Choose Total Advanced Technical Certificate Credits 21 credits from the following areas:

Technical Studies Required: 21 Credits

LAWE2225 Criminal Investigation 3

LAWE2230 Legal Issues for Law Enforcement 3

LAWE2231 MN Criminal and Traffic Codes 3

LAWE2240 Patrol Operations 3

LAWE2299 Law Enforcement Integrated Practicum 9

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Floral & Landscape Careers

FLORAL DESIGN

Greenhouse Production and Professional Floral Design A.A.S. (BP)

This program is designed for students seeking careers in plant production and floral businesses. Course work focuses on floral design as well as greenhouse production. Students will utilize the program greenhouses for the growing of flower crops. Topics covered in this program include basic and advanced floral design, flower shop and greenhouse operations, marketing merchandise, wedding and funeral floral design. Other duties include the growing of and caring for foliage and flowering plants, processing cut flowers and customer service. Some of the qualities desired to be successful include: the ability to work well with others, the desire to be part of a team, manual dexterity, good communication skills, the ability to be a self-starter and the desire to help others.

Program Title:

Landscape and Horticulture Careers

Credits: Total Associate in Applied Science Degree Credits 70

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Apply care and handling techniques to all floral and plant materials.
- Identify cut flowers, foliage and greenhouse crops.
- Design with fresh and permanent materials.
- Apply plant propagation methods.
- Maintain Greenhouse crops.
- Perform basic daily floral shop and greenhouse operations.
- Display awareness of industry standards (floral and greenhouse) and expectations.
- Develop plans for floral and greenhouse businesses.
- Demonstrate advanced floral design techniques and styles.
- Demonstrate knowledge of calculations within the industries.
- Operate industry equipment properly and efficiently.

Career Opportunities:

The knowledge and skills learned in this program provide students with the opportunity to work in wholesale and retail floral businesses and in the greenhouse production industry. Typical career positions include: Professional Florist, Floral Designer, Flower Shop Owner or Manager, Garden Center Owner or Manager, Floral Wholesale Sales.

Choose Total Associate in Applied Science Degree Credits 70 credits from the following areas:

Technical Studies Required: 55 Credits

LNDC1141 Nursery Propagation and Production 3
LNDC1160 Greenhouse Operation and Management 2
LNDC1166 Greenhouse Crop Production Fall 3
LNDC1176 Greenhouse Crop Production Winter 3
LNDC1187 Greenhouse Crop Production Summer 2
LNDC1220 Integrated Pest Management 2
LNDC1242 Plant Biology 4
LNDC1250 Bedding Plant Production 3
LNDC1271 Soil Science 3
LNDC2210 Interior Foliage Plants 2
LNDC2261 Professional Gardening 3
FLWR1100 Fresh Cut Flower/Foliage Care, Handling and Identification 2
FLWR1201 Fresh Flower Design 3
FLWR1220 Contemporary Fresh Flower Design 2
FLWR1301 Permanent Flower and Foliage Design 3

FLWR1400 Visual Merchandising in the Floral Industry 2
FLWR1421 Internship 3
FLWR1430 Entrepreneurship in the Floral Industry 2
FLWR1440 Customer Service in the Floral Industry 1
FLWR1500 Sympathy Design 2
FLWR1600 Personal Flowers to Wear 2
FLWR1610 Wedding Design 3

Technical Studies Electives: 0 Credits

General Education Required: 9 Credits

ENGL2121 Writing and Research 4
or
ENGL2125 Technical Writing 3

Choose 1 course from MnTC Goal Area 2 3
Choose 1 course from MnTC Goal Area 9 3

General Education Electives: 6 Credits

Hennepin Technical College's 2000-level general education

courses meet the guidelines of the Minnesota Transfer Curriculum (MnTC).

Professional Floral Designer Diploma (BP)

A Professional Floral Designer is a person who has trained in beginning as well as advanced levels of all floral shop operations. That training is necessary for those individuals who wish to be at an advanced level of competence and who wish to own or operate their own flower shop at some point in their career. Skill development includes training in basic, advanced and contemporary design, flower shop operations, selling merchandise, floral software and computer operations, as well as advanced wedding and funeral design training. Many other duties include caring for foliage and flowering plants, processing cut flowers and foliages and taking orders both over the phone and in person. To be a Professional Floral Designer a person must have special personal qualities. Some of these qualities include the ability to work well with others, the desire to be part of a team, manual dexterity, good communication skills, the ability to be a self-starter and the desire to help others. Many orders are general in nature and it is up to the Professional Florist to assist the customer in selecting the appropriate colors and types of flowers and plants to express the desired sentiment.

Program Title:

Floral Design Careers

Credits: Total Diploma Credits 33

Award Type:

Diploma

Award Outcomes:

- Apply care and handling techniques to all floral materials.
- Identify flowers and foliage.
- Design with fresh materials.
- Design with permanent materials.
- Identify houseplants.
- Explain houseplant basic care.
- Perform basic daily floral shop operations.
- Display awareness of industry standards.
- Design flowers to wear.
- Design flowers to carry.
- Demonstrate advanced design techniques and styles.
- Calculate prices for arrangements.

Career Opportunities:

Trained Professional Floral Designers are in high demand and career opportunities are very good for well prepared individuals. Professional Floral Designers are employed by full-service florists, mass market florists, wholesale florist suppliers and as manufacturer reps. With ability, design creativity and professional business management skills, individuals can develop their own business as a very profitable venture. Many full-service flower shops in Minnesota are owned or managed by former students of the Floral Design program.

Choose Total Diploma Credits 33 credits from the following areas:

Technical Studies Required: 26 Credits

FLWR1100 Fresh Cut Flower/Foliage Care, Handling and Identification 2

FLWR1112 Foliage and Flowering Plant Care, Handling and Identification 1

FLWR1201 Fresh Flower Design 3

FLWR1220 Contemporary Fresh Flower Design 2

FLWR1301 Permanent Flower and Foliage Design 3

FLWR1400 Visual Merchandising in the Floral Industry 2

FLWR1440 Customer Service in the Floral Industry 1

FLWR1421 Internship 3

FLWR1430 Entrepreneurship in the Floral Industry 2

FLWR1500 Sympathy Design 2

FLWR1600 Personal Flowers to Wear 2

FLWR1610 Wedding Design 3

Technical Studies Electives: 3 Credits

FLWR1231 Party Design 1

FLWR1650 Advanced Floral Design 2

FLWR1900 Specialized Lab 1-4

General Education Required: 0 Credits

General Education Electives: 4 Credits

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

LANDSCAPE AND HORTICULTURE

Arboriculture Occupational Certificate (BP)

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.

Program Title:

Landscape and Horticulture Careers

Credits: Total Occupational Certificate Credits 21

Award Type:

Occupational Certificate

Award Outcomes:

- Identify Minnesota native woody plants by botanical/common name.
- Select plant needs with proper site characteristics.
- Implement proper planting techniques.
- Implement proper tree care to potential clients.
- Identify common urban tree pests.
- Prescribe treatment for common urban tree pests.
- Integrate a sustainable approach to landscape installation and maintenance.

Career Opportunities:

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

Choose Total Occupational Certificate Credits 21 credits from the following areas:

Technical Studies Required: 21 Credits

LNDC1120 Woody Plants I Trees 4

LNDC1131 Arboriculture I 3

LNDC1151 Insects and Diseases of Landscape Plants 3

LNDC1190 Woody Plants II Shrubs 4

LNDC2150 Introduction to Basic Tree Climbing 2

LNDC2155 Tree Climbing II Advanced Climbing Techniques and Methods 2

LNDC2341 Arboriculture Internship Certificate 3

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Greenhouse Management Technician A.A.S. (BP)

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.

Program Title:

Landscape and Horticulture Careers

Credits: Total Associate in Applied Science Degree Credits 60

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Identify crops to be grown and their cultural needs.
- Maintain crops.
- Diagnose greenhouse pests using an IPM program.
- Design a master plan for a business based on growing or selling crops.
- Propagate woody and herbaceous plants sexually and asexually.
- Operate greenhouse equipment efficiently.
- Select pesticides and fertilizer formulations.
- Calculate pesticide and fertilizer formulations.
- Select proper media and amendments for plant crops.
- Demonstrate technical knowledge of the greenhouse physical structure.
- Select proper containers for crops.
- Demonstrate technical knowledge of the environmental systems in the greenhouse.
- Interpret soil and water tests.
- Market crops.

Career Opportunities:

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

Choose Total Associate in Applied Science Degree Credits 60 credits from the following areas:

Technical Studies Required: 37 Credits

LNDC1110 Introduction to Landscape/Horticulture Careers
1

LNDC1141 Nursery Propagation and Production 3

LNDC1160 Greenhouse Operation and Management 2

LNDC1166 Greenhouse Crop Production Fall 3

LNDC1176 Greenhouse Crop Production Winter 3

LNDC1187 Greenhouse Crop 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 Interior Foliage Plants 2

LNDC2261 Professional Gardening 3

Technical Studies Electives: 8 Credits

Technical Studies Electives: 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

General Education Required: 9 Credits

ENGL2121 Writing and Research 4
or

ENGL2125 Technical Writing 3

Choose 1 course from MnTC Goal Area 2 3

Choose 1 course from MnTC Goal Area 5 3

General Education Electives: 6 Credits

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

Greenhouse Production & Professional Floral Design A.A.S. (BP)

This program is designed for students seeking careers in plant production and floral businesses. Course work focuses on floral design as well as greenhouse production. Students will utilize the program greenhouses for the growing of flower crops. Topics covered in this program include basic and advanced floral design, flower shop and greenhouse operations, marketing merchandise, wedding and funeral floral design. Other duties include the growing of and caring for foliage and flowering plants, processing cut flowers and customer service. Some of the qualities desired to be successful include: the ability to work well with others, the desire to be part of a team, manual dexterity, good communication skills, the ability to be a self-starter and the desire to help others.

Program Title:

Landscape and Horticulture Careers

Credits: Total Associate in Applied Science Degree Credits 70

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Apply care and handling techniques to all floral and plant materials.
- Identify cut flowers, foliages and greenhouse crops.
- Design with fresh and permanent materials.
- Apply plant propagation methods.
- Maintain Greenhouse crops.
- Perform basic daily floral shop and greenhouse operations.
- Display awareness of industry standards (floral and greenhouse) and expectations.
- Develop plans for floral and greenhouse businesses.
- Demonstrate advanced floral design techniques and styles.
- Demonstrate knowledge of calculations within the industries.
- Operate industry equipment properly and efficiently.

Career Opportunities:

The knowledge and skills learned in this program provide students with the opportunity to work in wholesale and retail floral businesses and in the greenhouse production industry. Typical career positions include: Professional Florist, Floral Designer, Flower Shop Owner or Manager, Garden Center Owner or Manager, Floral Wholesale Sales.

Choose Total Associate in Applied Science Degree Credits 70 credits from the following areas:

Technical Studies Required: 55 Credits

LNDC1141 Nursery Propagation and Production 3
LNDC1160 Greenhouse Operation and Management 2
LNDC1166 Greenhouse Crop Production Fall 3
LNDC1176 Greenhouse Crop Production Winter 3
LNDC1187 Greenhouse Crop Production Summer 2
LNDC1220 Integrated Pest Management 2
LNDC1242 Plant Biology 4
LNDC1250 Bedding Plant Production 3
LNDC1271 Soil Science 3
LNDC2210 Interior Foliage Plants 2
LNDC2261 Professional Gardening 3
FLWR1100 Fresh Cut Flower/Foliage Care, Handling &ID 2
FLWR1201 Fresh Flower Design 3
FLWR1220 Contemporary Fresh Flower Design 2
FLWR1301 Permanent Flower and Foliage Design 3
FLWR1400 Visual Merchandising in the Floral Industry 2
FLWR1421 Internship 3
FLWR1430 Entrepreneurship in the Floral Industry 2
FLWR1440 Customer Service in the Floral Industry 1
FLWR1500 Sympathy Design 2
FLWR1600 Personal Flowers to Wear 2

FLWR1610 Wedding Design 3

Technical Studies Electives: 0 Credits

General Education Required: 9 Credits

ENGL2121 Writing and Research 4
or

ENGL2125 Technical Writing 3

Choose 1 course from MnTC Goal Area 2 3

Choose 1 course from MnTC Goal Area 9 3

General Education Electives: 6 Credits

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

Greenhouse Technian Diploma (BP)

This program of study is for the student seeking a career in the plant production industry. Courses focus on the green plant industry and may also be applied to many aspects of nursery crop production as well. Students will utilize the program greenhouses for the many production/growing laboratory projects.

Program Title:

Landscape and Horticulture Careers

Credits: Total Diploma Credits 38

Award Type:

Diploma

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 pesticides and fertilizer formulations.
- Select proper media and amendments for plant crops.
- Demonstrate technical knowledge of the greenhouse physical structure.
- Select proper containers for crops.
- Demonstrate technical knowledge of the environmental systems in the greenhouse.
- Interpret soil and water tests.
- Market crops.

Career Opportunities:

Students completing this area of study may be employed as growing technicians, greenhouse managers or plant production specialists.

Choose Total Diploma Credits 38 credits from the following areas:

Technical Studies Required: 31 Credits

LNDC1110 Introduction to Landscape/Horticulture Careers 1

LNDC1141 Nursery Propagation and Production 3

LNDC1160 Greenhouse Operation and Management 2

LNDC1166 Greenhouse Crop Production Fall 3

LNDC1176 Greenhouse Crop Production Winter 3

LNDC1187 Greenhouse Crop Production Summer 2

LNDC1220 Integrated Pest Management 2

LNDC1242 Plant Biology 4

LNDC1250 Bedding Plant Production 3

LNDC1271 Soil Science 3

LNDC2210 Interior Foliage Plants 2

LNDC2261 Professional Gardening 3

Technical Studies Electives: 3 Credits

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

LNDC1900 Specialized Lab 1-4

LNDC2360 Horticulture Internship 1-4

General Education Required: 4 Credits

COMM1050 Communication in the Workplace 2

Landscape Construction Advanced Technical Certificate (BP)

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.

Program Title:

Landscape and Horticulture Careers

Credits: Total Advanced Technical Certificate Credits 18

Award Type:

Advanced Technical Certificate

Award Outcomes:

- Identify plants and recommended uses.
- Operate landscape equipment safely and efficiently.
- Use hand tools safely and efficiently.
- Interpret blueprints and landscape plans.
- Measure a residential property.
- Complete working drawings with details for a residential property.
- Create complete landscape plans using CAD software.
- Construct landscape elements from plans and detail drawings.
- Layout landscape plans in the field.
- Demonstrate presentation techniques for landscape plans.
- Calculate material quantities from plans.
- Determine and set grades and elevations in field.
- Communicate effectively with staff and clients.
- Analyze customer needs and recommend solutions.

Career Opportunities:

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

Choose Total Advanced Technical Certificate Credits 18 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Landscape Design and Construction A.A.S. (BP)

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.

Program Title:

Landscape and Horticulture Careers

Credits: Total Associate in Applied Science Degree Credits 72

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Identify plants and recommended uses.
- Operate landscape equipment safely and efficiently.
- Use hand tools safely and efficiently.
- Interpret blueprints and landscape plans.
- Measure a residential property.
- Design a master plan for a residential property.
- Complete working drawings with details for a residential property.
- Create complete landscape plans using CAD software.
- Construct landscape elements from plans and detail drawings.
- Layout landscape plans in the field.
- Demonstrate presentation techniques for landscape plans.
- Diagnose insect and disease problems of landscape plans.
- Calculate material quantities from plans.
- Determine and set grades and elevations in field.
- Communicate effectively with staff and clients.
- Analyze customer needs and recommend solutions.

Career Opportunities:

Students completing this area of study will have employment options as landscape designers or construction specialists with design/building firms or landscape construction businesses.

Choose Total Associate in Applied Science Degree Credits 72 credits from the following areas:

Technical Studies Required: 48 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
MATH1000 Prealgebra 2

Technical Studies Electives: 6 Credits

LNDC1131 Arboriculture I 3
LNDC1141 Nursery Propagation and Production 3
LNDC1160 Greenhouse Operation and Management 2
LNDC1166 Greenhouse Crop Production Fall 3
LNDC1176 Greenhouse Crop Production Winter 3
LNDC1187 Greenhouse Crop Production Summer 2
LNDC1220 Integrated Pest Management 2
LNDC1250 Bedding Plant Production 3
LNDC1900 Specialized Lab 1-4
LNDC2210 Interior Foliage Plants 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

Continued on the following page

General Education Required: 15 Credits

CPLT1100 Essential Computer Applications 3

ENGL2121 Writing and Research 4

or

ENGL2125 Technical Writing 3

Choose 1 course from MnTC Goal Area 1 3

Choose 1 course from MnTC Goal Area 2 3

Choose 1 course from MnTC Goal Area 5 3

General Education Electives: 3 Credits

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

Landscape Design and Construction Diploma (BP)

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.

Program Title:

Landscape and Horticulture Careers

Credits: Total Diploma Credits 64

Award Type:

Diploma

Award Outcomes:

- Identify plants and recommended uses.
- Operate landscape equipment safely and efficiently.
- Use hand tools safely and efficiently.
- Interpret blueprints and landscape plans.
- Measure a residential property.
- Design a master plan for a residential property.
- Complete working drawings with details for a residential property.
- Create complete landscape plans using CAD software.
- Construct landscape elements from plans and detail drawings.
- Layout landscape plans in the field.
- Demonstrate presentation techniques for landscape plans.
- Diagnose insect and disease problems of landscape plans.
- Calculate material quantities from plans.
- Determine and set grades and elevations in field.
- Communicate effectively with staff and clients.
- Analyze customer needs and recommend solutions.

Career Opportunities:

Students completing this area of study will have employment options as landscape designers or construction specialists with design/building firms or landscape construction businesses.

Choose Total Diploma Credits 64 credits from the following areas:

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

Technical Studies Electives: 10 Credits

LNDC1131 Arboriculture I 3
LNDC1141 Nursery Propagation and Production 3
LNDC1220 Integrated Pest Management 2
LNDC1900 Specialized Lab 1-4
LNDC2210 Interior Foliage Plants 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

General Education Required: 4 Credits

COMM1050 Communication in the Workplace 2
MATH1000 Prealgebra 2

General Education Electives: 4 Credits

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

Landscape/Horticulture Diploma (BP)

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.

Program Title:

Landscape and Horticulture Careers

Credits: Total Diploma Credits 64

Award Type:

Diploma

Award Outcomes:

- Demonstrate knowledge of greenhouse operation and management.
- Demonstrate knowledge of nursery production and nursery crop management.
- Demonstrate knowledge of the care and maintenance of trees in the landscape.
- Demonstrate knowledge of the care and maintenance of turf.
- Demonstrate knowledge of the care and maintenance of landscapes.
- Diagnose abiotic and biotic tree problems.
- Recommend solutions for tree problems.
- Communicate effectively with staff and clients.
- Design flowerbeds.
- Install landscapes.
- Demonstrate knowledge of pesticides and their safe use.
- Diagnose abiotic and biotic turf problems.
- Recommend solutions for turf problems.
- Diagnose abiotic and biotic landscape plant problems.
- Recommend solutions for landscape plant problems.
- Propagate nursery crops.
- Use hand tools safely and efficiently.
- Operate landscape and turf equipment safely and efficiently.
- Identify plants and recommend uses.

Career Opportunities:

Employment options include greenhouse/nursery production, grounds care, retail and wholesale sales, interior landscaping, landscape installation and many specialized areas such as garden design and as municipal tree inspectors.

Choose Total Diploma Credits 64 credits from the following areas:

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

Technical Studies Electives: 9 Credits

LNDC1160 Greenhouse Operation and Management 2
LNDC1166 Greenhouse Crop Production Fall 3
LNDC1176 Greenhouse Crop Production Winter 3
LNDC1187 Greenhouse Crop 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 Interior Foliage Plants 2
LNDC2335 Landscape Construction Internship 1-4
LNDC2345 Arboriculture Internship 1-4
LNDC2350 Grounds Maintenance Internship 1-4
LNDC2360 Horticulture Internship 1-4
FLWR1100 Fresh Cut Flower/Foliage Care, Handling and Identification 2
FLWR1112 Foliage and Flowering Plant Care, Handling and Identification 1

FLWR1201 Fresh Flower Design 3

Continued on the following page

General Education Required: 4 Credits

COMM1050 Communication in the Workplace 2

MATH1000 Prealgebra 2

General Education Electives: 4 Credits

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

Landscape/Horticulture A.A.S. (BP)

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.

Program Title:

Landscape and Horticulture Careers

Credits: Total Associate in Applied Science Degree Credits 72

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Demonstrate knowledge of greenhouse operation and management.
- Demonstrate knowledge of nursery production and nursery crop management.
- Demonstrate knowledge of the care and maintenance of trees in the landscape.
- Demonstrate knowledge of the care and maintenance of turf.
- Demonstrate knowledge of the care and maintenance of landscapes.
- Diagnose abiotic and biotic tree problems.
- Recommend solutions for tree problems.
- Communicate effectively with staff and clients.
- Design flowerbeds.
- Install landscapes.
- Demonstrate knowledge of pesticides and their safe use.
- Diagnose abiotic and biotic turf problems.
- Recommend solutions for turf problems.
- Diagnose abiotic and biotic landscape plant problems.
- Recommend solutions for landscape plant problems.
- Propagate nursery crops.
- Use hand tools safely and efficiently.
- Operate landscape and turf equipment safely and efficiently.
- Identify plants and recommend uses.

Career Opportunities:

Employment options include greenhouse/nursery production, grounds care, retail and wholesale sales, interior landscaping, landscape installation and many specialized areas such as garden design and as municipal tree inspectors.

Choose Total Associate in Applied Science Degree Credits 72 credits from the following areas:

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

MATH1000 Prealgebra 2

Technical Studies Electives: 5 Credits

LNDC1160 Greenhouse Operation and Management 2

LNDC1166 Greenhouse Crop Production Fall 3

LNDC1176 Greenhouse Crop Production Winter 3

LNDC1187 Greenhouse Crop 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 Interior Foliage Plants 2

LNDC2335 Landscape Construction Internship 1-4

LNDC2345 Arboriculture Internship 1-4

LNDC2350 Grounds Maintenance Internship 1-4

LNDC2360 Horticulture Internship 1-4

FLWR1100 Fresh Cut Flower/Foliage Care, Handling and Identification 2

FLWR1112 Foliage and Flowering Plant Care, Handling and Identification 1

FLWR1201 Fresh Flower Design 3

Continued on the next page

General Education Required: 15 Credits

CPLT1100 Essential Computer Applications 3

ENGL2121 Writing and Research 4

or

ENGL2125 Technical Writing 3

Choose 1 course from MnTC Goal Area 1 3

Choose 1 course from MnTC Goal Area 2 3

Choose 1 course from MnTC Goal Area 5 3

General Education Electives: 3 Credits

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

Urban Forestry Technician A.A.S. (BP)

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.

Program Title:

Landscape and Horticulture Careers

Credits: Total Associate in Applied Science Degree Credits 60

Award Type:

Associate in Applied Science Degree

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).

Urban Forestry Technician: Academic Planning Guide

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.

Choose Total Associate in Applied Science Degree Credits 60 credits from the following areas:

Technical Studies Required: 39 Credits

LNDC1110 Introduction to Landscape/Horticulture Careers
1

LNDC1120 Woody Plants I Trees 4

LNDC1131 Arboriculture I 3

LNDC1135 Arboriculture II 2

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

LNDC1305 Hazard Tree Identification and Risk
Management 2

LNDC1311 Ground Worker Operations 2

LNDC1315 Minnesota Native Plants and Communities 4

LNDC2241 Landscape Equipment Operation 3

Technical Studies Electives: 6 Credits

LNDC1141 Nursery Propagation and Production 3

LNDC1160 Greenhouse Operation and Management 2

LNDC1202 Herbaceous Plant Materials 4

LNDC1231 Nursery Operations 2

LNDC1235 Landscape Operations 2

LNDC2150 Introduction to Basic Tree Climbing 2

LNDC2155 Tree Climbing II Advanced Climbing
Techniques and Methods 2

LNDC2220 Turf Culture and Management 3

LNDC2261 Professional Gardening 3

LNDC2345 Arboriculture Internship 1-4

General Education Required: 12 Credits

ENGL2121 Writing and Research 4
or

ENGL2125 Technical Writing 3

Choose 1 course from MnTC Goal Area 1 3

Choose 1 course from MnTC Goal Area 2 3

Choose 1 course from MnTC Goal Area 5 3

General Education Electives: 3 Credits

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

General Education

GENERAL EDUCATION DEPARTMENTS

Arts Department

ARTS 2000 Elements of Design

Biology Department

BIOL2001 Biology in Society

BIOL2003 Nutrition and Health

BIOL2005 General Biology I

BIOL2010 General Biology II

BIOL2045 Human Biology

BIOL2115 Human Anatomy

BIOL2215 Human Physiology

BIOL2235 Microbiology

Chemistry Department

CHEM2000 Introduction to Chemistry

CHEM2200 Essentials of General, Organic and Biochemistry

Communications Department

COMM1005 Effective Study Skills

COMM 1010 Interviewing Skills (link to information coming soon!!!)

COMM1040 Job Seeking Skills

COMM1050 Communication in the Workplace

COMM 2020 Intercultural Communication

COMM 2050 Interpersonal Communication

COMM 2060 Small Group Communication

COMM 2070 Computer Mediated Communication in the Digital Age

COMM 2130 Public Speaking

Economics Department

ECON 2200 Principles of Microeconomics

Continued on the next page

English Department

ENGL0901 Reading Techniques *

ENGL0921 Applied Reading Techniques *

ENGL0930 Fundamentals of Writing *

ENGL0931 Basic Grammar Skills I*

ENGL0932 Basic Grammar Skills II*

ENGL0933 Basic Grammar Skills III*

ENGL1010 Business English

ENGL1021 Essay Fundamentals

ENGL1026 Writing for Careers

ENGL2000 Workplace Correspondence

ENGL2121 Writing and Research

ENGL2125 Technical Writing

ENGL2130 Creative Writing

ENGL2135 Special Topics: English Composition Transfer Curriculum

**Developmental courses - these cannot be used to satisfy a General Education Requirement.*

English for Speakers of Other Languages Department

ESOL0841 Grammar/Writing IV

ESOL0842 Reading IV

ESOL0843 Listening/Speaking IV

ESOL0831 Grammar/Writing III

ESOL0832 Reading III

ESOL0833 Listening/Speaking III

ESOL0821 Grammar/Writing II

ESOL0822 Reading II

ESOL0823 Listening/Speaking II

Health Science (Broad Field)

Please see Individualized Studies section listing for Health Science (Broad Field) A.A.S. following these General Education listings

Language Department

LANG 2000 American Sign Language/Deaf Culture I

LANG 2010 (available Summer 2014)

Continued on the next page

Math Department

MATH 0900 Fundamentals of Mathematics *

MATH 1000 Prealgebra

MATH 1007 Math for the Trades

MATH 1011 Beginning Algebra

MATH 1020 Geometry and Trigonometry

MATH 1031 Intermediate Algebra

MATH 2100 Concepts in Mathematics

MATH 2150 Introduction to Statistics

MATH 2200 College Algebra

MATH 2250 Precalculus with Trigonometry

MATH 2300 Calculus I

**Developmental courses - these cannot be used to satisfy a General Education Requirement.*

Philosophy Department

PHIL2100 Critical Thinking

PHIL2200 Ethics

PHIL2400 Medical Ethics

PHIL2500 World Religions

PHIL2600 Environmental Ethics

Physics Department

PHYS2000 Introduction to Physics

PHYS2005 College Physics I

PHYS2010 College Physics II

Psychology Department

PSYC2300 General Psychology

PSYC2310 Psychology throughout the Lifespan

PSYC2320 Psychology of Living in the 21st Century

Sociology Department

SOCI2000 Marriage & Family

SOCI2100 Introduction to Sociology

SOCI2130 Food, Culture and Society

SOCI2200 Racial and Ethnic Relations

Continued on the next page

Minnesota Transfer Curriculum

Effective 2013-14 Academic Year

**MnTC at Hennepin Technical College (Click on course number to retrieve course outlines/descriptions)
(effective FY2013/2014)**

Minimum of 40 credits total

Course(s) may meet more than one goal area, however, credits are counted only once toward the 40 credit minimum requirement. A 2.0 MnTC GPA is required for recognition of a student's completion of the entire Minnesota Transfer Curriculum with or without completing an Associate Degree. This GPA may include transfer courses with grades of A - D.

Program instructors, with the guidance of their advisory committee, have selected MnTC courses that are provided by the general education department. Questions regarding the MnTC should be directed to the Transfer Specialist or a college counselor.

MnTC Goal 1: Communication - At least 9 credits

(including ENGL2121 and at least 3 credits in COMM)

ENGL2001 Workplace Correspondence (2 credit)

ENGL2121 Writing and Research (4 credits)

ENGL2125 Technical Writing (3 credits)

ENGL2130 Creative Writing (3 credits)

COMM2050 Interpersonal Communication (3 credits)

COMM2060 Small Group Communication (3 credits)

COMM2070 Computer Mediated Communication in the Digital Age (3 credits)

COMM2130 Public Speaking (3 Credits)

MnTC Goal 2: Critical Thinking - At least 3 credits

COMM2060 Small Group Communication (3 credits)

MATH2250 Precalculus with Trigonometry (5 credits)

MATH2300 Calculus I (5 credits)

PHIL2100 Critical Thinking (3 credits)

PHIL2200 Ethics (3 credits)

PHIL2400 Medical Ethics (4 credits)

SOCI2100 Introduction to Sociology (3 credits)

MnTC Goal 3: Natural Sciences - At least 7 credits

(one course must include a lab)

BIOL2001 Biology in Society (4 credits)

BIOL2005 General Biology I (4 credits)

BIOL2045 Human Biology (4 credits)

BIOL2105 General Biology II (4 credits)

BIOL2115 Human Anatomy (4 credits)

BIOL2215 Human Physiology (4 credits)

BIOL2235 Microbiology (4 credits)

CHEM2000 Introduction to Chemistry (4 credits)

CHEM2200 Essentials of General, Organic, Biochemistry (5 credits)

PHYS2001 Introductory Physics (3 credits)

PHYS2005 College Physics I (4 credits)

MnTC Goal 4: Mathematical/Logical Reasoning - At least 3 credits

MATH2100 Concepts in Mathematics (3 credits)

MATH2150 Introduction to Statistics (3 credits)

MATH2200 College Algebra (4 credits)

MATH2250 Precalculus with Trigonometry (5 credits)

MATH2300 Calculus I (5 credits)

Continued on the following page

MnTC Goal 5: History and the Social and Behavioral Sciences

At least 9 credits (at least 3 credits in SOCI and 3 credits in PSYC)

ECON2200 Principles of Microeconomics (3 credits)

PSYC2300 General Psychology (3 credits)

PSYC2310 Psychology throughout the Lifespan (3 credits)

PSYC2320 Psychology of Living in the 21st Century (3 credits)

SOCI2000 Marriage & Family (3 credits)

SOCI2100 Introduction to Sociology (3 credits)

SOCI2130 Food, Culture & Society (3 credits)

SOCI2200 Racial and Ethnic Relations (3 credits)

MnTC Goal 6: Humanities and Fine Arts - At least 3 credits

ARTS2000 Elements of Design (3 credits)

ARTS2120 Survey of the Photographic Arts (3 credits)

ENGL2130 Creative Writing (3 credits)

ENGL2140 Topics in Literature: Trades and Industry (3 credits)

ENGL2200 Intro to Cinema (3 credits)

PHIL2500 World Religions (3 credits)

MnTC Goal 7: Human Diversity - At least 3 credits

COMM2020 Intercultural Communication (3 credits)

COMM2050 Interpersonal Communication (3 credits)

LANG2000 American Sign Language I (3 credits)

PSYC2310 Psychology throughout the Lifespan (3 credits)

SOCI2000 Marriage & Family (3 credits)

SOCI2200 Racial and Ethnic Relations (3 credits)

MnTC Goal 8: Global Perspective - At least 3 credits

BIOL2003 Nutrition and Health (3 credits)

COMM2020 Intercultural Communication (3 credits)

PHIL2500 World Religions (3 credits)

MnTC Goal 9: Ethical and Civic Responsibility - At least 3 credits

PHIL2200 Ethics (3 credits)

PHIL2400 Medical Ethics (4 credits)

PHIL2600 Environmental Ethics (3 credits)

MnTC Goal 10: People and the Environment - At least 3 credits

BIOL2001 Biology in Society (4 credits)

BIOL2003 Nutrition and Health (3 credits)

PHIL2600 Environmental Ethics (3 credits)

SOCI2130 Food, Culture and Society (3 credits) (Summer 2012)

HEALTH SCIENCE (BROAD FIELD)

Health Science (Broad Field) A.S.

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.

Program Title:

Biology

Credits: Total Associate of Science Credits 60

Award Type:

Associate of Science

Award Outcomes:

- Develop as writers and speakers who use the English language effectively and who read, write, speak and listen critically
- Apply mathematical, scientific and logical modes of thinking
- Develop the ability to use technology to improve and facilitate their learning
- Explain processes of humans and other biological systems
- Demonstrate safe, environmentally responsible procedures in varied situations
- Expand their ability to identify, discuss and reflect upon social, ethical and behavioral issues
- Extend their awareness of cultural, global and environmental topics

Career Opportunities:

Obtaining a Health Science Broad Field degree at HTC opens the door to additional career pathways 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.

Choose Total Associate of Science Credits 60 credits from the following areas:

Technical Studies Required: 0 Credits

Technical Studies Electives: 4 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).

General Education Required: 56 Credits

Science Core Courses

BIOL2003 Nutrition and Health 3

BIOL2005 General Biology I 4

BIOL2115 Human Anatomy 4

BIOL2215 Human Physiology 4

BIOL2235 Microbiology 4

CHEM2200 Essentials of General, Organic and Biochemistry 5

General Education Core Courses

[COMM2050](#) Interpersonal Communication 3

[ENGL2121](#) Writing and Research 4

[MATH2150](#) Introduction to Statistics 3

[MATH2200](#) College Algebra 4

[PHIL2200](#) Ethics 3

[PSYC2300](#) General Psychology 3

[PSYC2310](#) Psychology Throughout the Lifespan 3

[SOC12100](#) Introduction to Sociology 3

[COMM2020](#) Intercultural Communication 3

or

[PHIL2500](#) World Religions 3

Choose 1 course from MnTC Goal Area 6 (Humanities/Fine Arts) 3

General Education Electives: 0 Credits

Health Careers

COMMUNITY PARAMEDIC

Community Paramedic Advanced Technical Certificate (BP/EP)

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 benefiting 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: <http://www.hennepintech.edu/customizedtraining/cts/44> 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.

Program Title:

Emergency Medical Services

Credits: Total Advanced Technical Certificate Credits 12

Award Type:

Advanced Technical Certificate

Award Outcomes:

- Explain the scope of service for the role of the Community Paramedic (CP).
- Differentiate between the role of the Community Paramedic, traditional community health care workers and the emergency medical personnel.
- Demonstrate knowledge and skills required to perform clinical interventions.
- Evaluate treatment and referral programs according to policies and protocols.
- Evaluate the characteristics of health in the community.
- Identify relevant health and welfare services.
- Characterize the role of the CP as a liaison between patients, health and welfare service providers and community advocates.

Career Opportunities:

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

Choose Total Advanced Technical Certificate Credits 12 credits from the following areas:

Technical Studies Required: 12 Credits

EMSV2000 Role Advocacy and Outreach 2

EMSV2005 Community Assessment 2

EMSV2010 Care and Prevention Development Strategies 3

EMSV2020 Community Paramedic Clinicals 5

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

DENTAL ASSISTANT

Dental Assistant Diploma (BP/EP)

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, COMM1040, COMM2050 or COMM2060, DNTL1120, ENGL2121, EMSV1020 or currently certified in CPR for the Healthcare Provider and MATH0900.

Program Title:

Dental Assistant

Credits: Total Diploma Credits 50

Award Type:

Diploma

Award Outcomes:

- Demonstrate an understanding of dental sciences.
- Facilitate effective communication with patients and dental team members.
- Perform clinical, laboratory and administrative procedures in various dental environments.
- Apply current concepts of infection control and occupational safety.
- Demonstrate the legal and ethical Minnesota Board of Dentistry statutes.

Career Opportunities:

Dental Assistants are employed in private and group practices, government public health clinics, dental sales, insurance companies, educational facilities, and the armed forces.

Choose Total Diploma Credits 50 credits from the following areas:

Technical Studies Required: 41 Credits

DNTL1000 Dental Team/Practice Management 2

DNTL1120 Dental Science 3

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

Technical Studies Electives: 0 Credits

General Education Required: 9 Credits

COMM2050 Interpersonal Communication 3

or

COMM2060 Small Group Communication 3

COMM1040 Job Seeking Skills 2

ENGL2121 Writing and Research 4

General Education Electives: 0 Credits

Dental Assistant A.A.S. (BP/EP)

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, COMM1040, COMM2050 or COMM2060, DNTL1120, ENGL2121, EMSV1020 or currently certified in CPR for the Healthcare Provider and MATH0900.

Program Title:

Dental Assistant

Credits: Total Associate in Applied Science Degree Credits 61

Award Type:

Associate in Applied Science Degree

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.

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.

Choose Total Associate in Applied Science Degree Credits 61 credits from the following areas:

Technical Studies Required: 43 Credits

DNTL1000 Dental Team/Practice Management 2
DNTL1120 Dental Science 3
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
COMM1040 Job Seeking Skills 2

Technical Studies Electives: 0 Credits

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 Electives: 8 Credits

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

EMERGENCY MEDICAL SERVICES

Community Paramedic Advanced Technical Certificate (BP/EP)

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: <http://www.hennepintech.edu/customizedtraining/cts/44> 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.

Program Title:

Emergency Medical Services

Credits: Total Advanced Technical Certificate Credits 12

Award Type:

Advanced Technical Certificate

Award Outcomes:

- Explain the scope of service for the role of the Community Paramedic (CP).
- Differentiate between the role of the Community Paramedic, traditional community health care workers and the emergency medical personnel.
- Demonstrate knowledge and skills required to perform clinical interventions.
- Evaluate treatment and referral programs according to policies and protocols.
- Evaluate the characteristics of health in the community.
- Identify relevant health and welfare services.
- Characterize the role of the CP as a liaison between patients, health and welfare service providers and community advocates.

Career Opportunities:

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

Choose Total Advanced Technical Certificate Credits 12 credits from the following areas:

Technical Studies Required: 12 Credits

EMSV2000 Role Advocacy and Outreach 2

EMSV2005 Community Assessment 2

EMSV2010 Care and Prevention Development Strategies 3

EMSV2020 Community Paramedic Clinicals 5

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Emergency Medical Services Specialist Occupational Certificate (BP/EP)

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.

Program Title:

Emergency Medical Services

Credits: Total Occupational Certificate Credits 26

Award Type:

Occupational Certificate

Award Outcomes:

- Demonstrate his/her role and responsibilities as a member of the emergency medical team.
- Apply emergency medical safety principles in the work place.
- Apply critical thinking skills in care management.
- Assess patient for traumatic injuries.
- Assess patient for medical illnesses.
- Demonstrate clear oral communications.
- Exhibit personal, professional and academic ethics.
- Apply quality improvement concepts.
- Classify patient conditions for treatments needed.
- Demonstrate effective treatment skills.
- Demonstrate safe transport of patients.
- Demonstrate skills for the National Registry of EMT's.

Career Opportunities:

The EMS Certificate prepare and enhances a person's job opportunities for work as an EMT in a BLS medical transportation service or in a ALS service that combines EMT's and paramedics. The certificate meets several prerequisites in course work and the ride-along ambulance experience required for entry into paramedic programs.

Choose Total Occupational Certificate Credits 26 credits from the following areas:

Technical Studies Required: 13 Credits

EMSV1050 Emergency Medical Responder
(First Responder) 3

EMSV1100 Emergency Medical Technician Basic 6

EMSV1105 Ambulance Operations 2

EMSV1120 Ambulance Clinical 2

Technical Studies Electives: 10 Credits

Technical Studies Elective: 10 Credits

COMM1040 Job Seeking Skills 2

CPLT1100 Essential Computer Applications 3

EMGT1100 Orientation to Emergency Management 3

EMSV1000 Introduction to EMS Systems 1

EMSV1060 EMPACT 1

EMSV1070 Pediatric Education for Prehospital Providers 1

EMSV1080 Documentation for Emergency Medical
Services 1

EMSV1115 Passenger Assistant Technician 1

EMSV1130 Emergency Vehicle Driving Skills 1

EMSV1135 Understanding EKGs 1

EMSV1140 CPR Instructor 1

EMSV1146 Medical Terminology for EMS/ER Personnel 3

EMSV1155 Phlebotomy Techniques 3

EMSV1170 ER Procedures and Clinical 3

EMSV1185 Critical Care Simulation Scenarios 1

EMSV1190 Intravenous (IV) Access 1

EMSV1195 International Trauma Life Support (ITLS) 1

EMSV1225 Advanced Cardiac Life Support (ACLS) 1

PHIL2400 Medical Ethics 4

General Education Required: 3 Credits

COMM2050 Interpersonal Communication 3
or

COMM2060 Small Group Communication 3

General Education Electives: 0 Credits

Emergency Room Technician Occupational Certificate (BP/EP)

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.

Program Title:

Emergency Medical Services

Credits: Total Occupational Certificate Credits 20

Award Type:

Occupational Certificate

Award Outcomes:

- Demonstrate his/her role and responsibilities as a member of the emergency medical team.
- Apply emergency medical safety principles in the work place.
- Apply critical thinking skills in care management.
- Assess patient for traumatic injuries.
- Assess patient for medical illnesses.
- Demonstrate clear oral communications.
- Exhibit personal, professional and academic ethics.
- Apply quality improvement concepts.
- Classify patient conditions for treatments needed.
- Demonstrate effective treatment skills.
- Demonstrate safe transport of patients.
- Demonstrate skills for the National Registry of EMT's.

Career Opportunities:

The new ER Tech Certification provides a standard that Hospital ED's and Urgent Care Centers and clinics are seeking in this entry-level position for a health care career. This training and work experience will expose you and prepare you for other health care careers in hospitals and clinics.

Choose Total Occupational Certificate Credits 20 credits from the following areas:

Technical Studies Required: 17 Credits

EMSV1050 Emergency Medical Responder (First Responder) 3

EMSV1100 Emergency Medical Technician Basic 6

EMSV1110 Lifting Techniques for Health Professionals 1

EMSV1135 Understanding EKGs 1

EMSV1155 Phlebotomy Techniques 3

EMSV1170 ER Procedures and Clinical 3

EMSV1146 Medical Terminology for EMS/ER Personnel 3

Technical Studies Electives: 0 Credits

General Education Required: 3 Credits

COMM2050 Interpersonal Communication 3

or

COMM2060 Small Group Communication 3

General Education Electives: 0 Credits

HEALTH SCIENCE (BROAD FIELD)

Health Science (Broad Field) A.S.

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.

Program Title:

Biology

Credits: Total Associate of Science Credits 60

Award Type:

Associate of Science

Award Outcomes:

- Develop as writers and speakers who use the English language effectively and who read, write, speak and listen critically
- Apply mathematical, scientific and logical modes of thinking
- Develop the ability to use technology to improve and facilitate their learning
- Explain processes of humans and other biological systems
- Demonstrate safe, environmentally responsible procedures in varied situations
- Expand their ability to identify, discuss and reflect upon social, ethical and behavioral issues
- Extend their awareness of cultural, global and environmental topics

Career Opportunities:

Obtaining a Health Science Broad Field degree at HTC opens the door to additional career pathways 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.

Choose Total Associate of Science Credits 60 credits from the following areas:

Technical Studies Required: 0 Credits

Technical Studies Electives: 4 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).

General Education Required: 56 Credits

Science Core Courses

BIOL2003 Nutrition and Health 3

BIOL2005 General Biology I 4

BIOL2115 Human Anatomy 4

BIOL2215 Human Physiology 4

BIOL2235 Microbiology 4

CHEM2200 Essentials of General, Organic and Biochemistry 5

General Education Core Courses

[COMM2050](#) Interpersonal Communication 3

[ENGL2121](#) Writing and Research 4

[MATH2150](#) Introduction to Statistics 3

[MATH2200](#) College Algebra 4

[PHIL2200](#) Ethics 3

[PSYC2300](#) General Psychology 3

[PSYC2310](#) Psychology Throughout the Lifespan 3

[SOC12100](#) Introduction to Sociology 3

[COMM2020](#) Intercultural Communication 3

or

[PHIL2500](#) World Religions 3

Choose 1 course from MnTC Goal Area 6 (Humanities/Fine Arts) 3

General Education Electives: 0 Credits

HEALTH UNIT COORDINATOR

Health Unit Coordinator Occupational Certificate (BP/EP)

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.

Program Title:

Health Unit Coordinator

Credits: Total Occupational Certificate Credits 17

Award Type:

Occupational Certificate

Award Outcomes:

- Demonstrate knowledge of medical terms needed to perform job duties.
- Differentiate between hospital departments.
- Exhibit professionalism.
- Utilize computer software effectively.
- Demonstrate skills and knowledge needed to process physician orders.
- Demonstrate customer service and telephone etiquette skills.
- Function as a member of the health care team.
- Operate unit equipment.
- Manage clerical duties on the nursing unit.
- Understand HIPAA and patient confidentiality requirements.

Career Opportunities:

At the completion of the HUC Certificate the graduate may be employed in a hospital, extended care facility or medical office or other health care setting.

Choose Total Occupational Certificate Credits 17 credits from the following areas:

Technical Studies Required: 14 Credits

HLUC1001 Health Unit Coordinator Fundamentals 3

HLUC1010 Essentials of Health Care Facilities 1

HLUC1020 Medical Terminology 2

HLUC1061 Diagnostic and Therapeutic Procedures 3

HLUC1101 Processing Physician's Orders 2

HLUC1200 Health Unit Coordinator Internship 3

Technical Studies Electives: 0 Credits

General Education Required: 3 Credits

CPLT1100 Essential Computer Applications 3

General Education Electives: 0 Credits

Nursing Station Technician Diploma (BP/EP)

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.

Program Title:

Health Unit Coordinator

Credits: Total Diploma Credits 33

Award Type:

Diploma

Award Outcomes:

- Manage clerical duties on the nursing unit.
- Demonstrate team building and effective communication skills.
- Function as a member of the health care team.
- Demonstrate knowledge of medical terms needed to perform job duties.
- Operate unit equipment.
- Utilize computer software effectively.
- Exhibit professionalism.
- Differentiate between hospital departments.
- Perform patient care duties safely and effectively.
- Demonstrate skills and knowledge needed to process physician orders.
- Understand HIPAA and patient confidentiality requirements.

Career Opportunities:

Positions are available as Health Unit Coordinators (HUC), Patient Care Technicians (PCT), Nursing Station Technician (NST) and Unit Coordinators (UC) in hospitals, nursing homes, clinics, doctor's offices, insurance companies and other healthcare settings. Graduates are eligible to sit for the National Association of Health Unit Coordinators (NAHUC) certification exam and the Nursing Assistant state examination.

Choose Total Diploma Credits 33 credits from the following areas:

Technical Studies Required: 24 Credits

HLUC1001 Health Unit Coordinator Fundamentals 3
HLUC1010 Essentials of Health Care Facilities 1
HLUC1020 Medical Terminology 2
HLUC1061 Diagnostic and Therapeutic Procedures 3
HLUC1101 Processing Physician's Orders 2
HLUC1200 Health Unit Coordinator Internship 3
CCIS1080 Microsoft Office 2010 3
EMSV1020 CPR/First Aid 1
HLTH2001 Nutrition and Health 2
NURS1001 Nursing Assistant 4

Technical Studies Electives: 0 Credits

General Education Required: 9 Credits

CPLT1100 Essential Computer Applications 3
COMM2050 Interpersonal Communication 3
PSYC2310 Psychology Throughout the Lifespan 3

General Education Electives: 0 Credits

MEDICAL ASSISTANT

Medical Assistant A.A.S. (EP)

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, BIOL2115 or BIOL2045, ENGL2121, COMM2020 or COMM2050, MAST1010 and qualifying score reading, writing, math, computer literacy and keyboarding assessment tests.

Program Title:

Medical Assistant

Credits: Total Associate in Applied Science Degree Credits 60

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Analyze Medical Assistant Knowledge to deliver quality health care to the patient in the ambulatory care setting.
- Complete Required American Association Medical Assistant Competencies.
- Demonstrate the role and responsibilities of the medical assistant as a member of the health care team.
- Apply accurate oral and written communication skills.
- Utilize effective critical thinking skills.
- Value legal and ethical obligations within the medical assistant scope of practice.

Career Opportunities:

By the year 2020, one out of four Americans will be age 65 or older. With both an aging population and workforce, the demand for health care professionals will continue to increase. As professionals with knowledge in three areas of patient care (clinical, laboratory and administrative procedures), Medical Assistants are in high demand throughout the health care industry. The program can also serve as a stepping stone to other health care careers, such as Emergency Medical Technician, Licensed Practical Nurse, Registered Nurse, and physician's assistant, which all require further training.

Choose Total Associate in Applied Science Degree Credits 60 credits from the following areas:

Technical Studies Required: 44 Credits

BIOL2045 Human Biology 4
or

BIOL2115 Human Anatomy 4
HLTH1020 Disease Conditions 3
MAST1010 Medical Terminology 2
MAST1015 Medical Assistant Administrative I 3
MAST1020 Lab I 4
MAST1030 Clinical Procedures I 4
MAST1045 Pharmacology 3
MAST2000 Fundamentals of Radiographic Imaging 2
or

HLTH2001 Nutrition and Health 2
MAST2015 Medical Assistant Administrative II 3
MAST2020 Lab II 5
MAST2035 Clinical Procedures II 5
MAST2041 Practicum 6

Technical Studies Electives: 0 Credits

General Education Required: 13 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

General Education Electives: 3 Credits

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

MEDICAL OFFICE CAREERS

Medical Administrative Assistant Diploma (BP/EP)

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.

Program Title:

Medical Office Careers

Credits: Total Diploma Credits 49

Award Type:

Diploma

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.

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.

Choose Total Diploma Credits 49 credits from the following areas:

Technical Studies Required: 36 Credits

ACCT1000 Introduction to Accounting 3

or

ACCT1101 Principles of Accounting I 3

ACCT1125 Excel 2010 3

CCIS1035 Word 2010 3

CCIS1080 Microsoft Office 2010 3

CPLT1005 Skill Building and Document Processing 3

ENGL1010 Business English 3

OFCR1301 Medical Terminology 4

OFCR1316 Medical Office Procedures 3

OFCR1331 Medical Transcription 4

OFCR1335 Medical Coding and Reimbursement Fundamentals 4

OFCR1340 Medical Office Management 3

Technical Studies Electives: 4 Credits

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

General Education Required: 6 Credits

COMM1050 Communication in the Workplace 2

COMM1040 Job Seeking Skills 2

MATH1000 Prealgebra 2

General Education Electives: 3 Credits

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

Medical Administrative Assistant A.A.S. (BP/EP)

MEDICAL ADMINISTRATIVE ASSISTANT

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.

Program Title:

Medical Office Careers

Credits: Total Associate in Applied Science Degree Credits 60

Award Type:

Associate in Applied Science Degree

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.

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.

Choose Total Associate in Applied Science Degree Credits 60 credits from the following areas:

Technical Studies Required: 40 Credits

ACCT1000 Introduction to Accounting 3
or

ACCT1101 Principles of Accounting I 3

ACCT1125 Excel 2010 3

CCIS1035 Word 2010 3

CCIS1080 Microsoft Office 2010 3

COMM1040 Job Seeking Skills 2

CPLT1005 Skill Building and Document Processing 3

ENGL1010 Business English 3

OFCR1301 Medical Terminology 4

OFCR1316 Medical Office Procedures 3

OFCR1331 Medical Transcription 4

OFCR1335 Medical Coding and Reimbursement Fundamentals 4

OFCR1340 Medical Office Management 3

MATH1000 Prealgebra 2

General Education Required: 18 Credits

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

SOCI2100 Introduction to Sociology 3

or

COMM2020 Intercultural Communication 3

General Education Electives: 0 Credits

Technical Studies Electives: 2 Credits

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

Medical Coding Specialist Diploma (BP/EP)

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.

Program Title:

Medical Office Careers

Credits: Total Diploma Credits 43

Award Type:

Diploma

Award Outcomes:

- Analyze medical record documentation in order to assign diagnostic and procedure codes.
- Provide important information for the health care reimbursement process.
- Assist in medical research and statistics.

Career Opportunities:

Career opportunities are available for individuals in health care settings such as clinics, hospitals, and nursing homes. Note: A minimum course grade of a "C" must be earned in each of the courses to meet graduation requirements.

Choose Total Diploma Credits 43 credits from the following areas:**Technical Studies Required: 36 Credits**

ACCT1125 Excel 2010 3

ADSC1221 Introduction to Health Information Management (Anoka) 3

ADSC1231 ICD-9-CM Coding (Anoka) 3

ADSC1240 Coding & Reimbursement for Physician's Services (Anoka) 3

ADSC1244 Legal and Ethical Aspects in Health Care (Anoka) 2

ADSC1249 Advanced Coding and Reimbursement (Anoka) 2

ADSC1252 Professional Practice for Coding Specialists (Anoka) 3

CCIS1080 Microsoft Office 2010 3

CPLT1005 Skill Building and Document Processing 3

HLTH1000 Disease Conditions (Anoka) 2

or

HLTH1020 Disease Conditions 3

BIOL2045 Human Biology 4

or

HLTH1005 Anatomy and Physiology (Anoka) 4

OFCR1301 Medical Terminology 4

NURS1140 Pharmacology I (Anoka) 1

Technical Studies Electives: 0 Credits**General Education Required: 7 Credits**

COMM2050 Interpersonal Communication 3

ENGL1105 Composition I (Anoka) 4

General Education Electives: 0 Credits

Medical Receptionist Occupational Certificate (BP/EP)

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.

Program Title:

Medical Office Careers

Credits: Total Occupational Certificate Credits 28

Award Type:

Occupational Certificate

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.

Career Opportunities:

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

Choose Total Occupational Certificate Credits 28 credits from the following areas:

Technical Studies Required: 22 Credits

ACCT1000 Introduction to Accounting 3

or

ACCT1101 Principles of Accounting I 3

CCIS1035 Word 2010 3

CCIS1080 Microsoft Office 2010 3

CPLT1005 Skill Building and Document Processing 3

ENGL1010 Business English 3

OFCR1301 Medical Terminology 4

OFCR1316 Medical Office Procedures 3

Technical Studies Electives: 0 Credits

General Education Required: 6 Credits

COMM1050 Communication in the Workplace 2

COMM1040 Job Seeking Skills 2

MATH1000 Prealgebra 2

General Education Electives: 0 Credits

NURSING STATION TECHNICIAN

Health Unit Coordinator Occupational Certificate (BP/EP)

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.

Program Title:

Health Unit Coordinator

Credits: Total Occupational Certificate Credits 17

Award Type:

Occupational Certificate

Award Outcomes:

- Demonstrate knowledge of medical terms needed to perform job duties.
- Differentiate between hospital departments.
- Exhibit professionalism.
- Utilize computer software effectively.
- Demonstrate skills and knowledge needed to process physician orders.
- Demonstrate customer service and telephone etiquette skills.
- Function as a member of the health care team.
- Operate unit equipment.
- Manage clerical duties on the nursing unit.
- Understand HIPAA and patient confidentiality requirements.

Career Opportunities:

At the completion of the HUC Certificate the graduate may be employed in a hospital, extended care facility or medical office or other health care setting.

Choose Total Occupational Certificate Credits 17 credits from the following areas:

Technical Studies Required: 14 Credits

HLUC1001 Health Unit Coordinator Fundamentals 3

HLUC1010 Essentials of Health Care Facilities 1

HLUC1020 Medical Terminology 2

HLUC1061 Diagnostic and Therapeutic Procedures 3

HLUC1101 Processing Physician's Orders 2

HLUC1200 Health Unit Coordinator Internship 3

Technical Studies Electives: 0 Credits

General Education Required: 3 Credits

CPLT1100 Essential Computer Applications 3

General Education Electives: 0 Credits

Nursing Station Technician Diploma (BP/EP)

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.

Program Title:

Health Unit Coordinator

Credits: Total Diploma Credits 33

Award Type:

Diploma

Award Outcomes:

- Manage clerical duties on the nursing unit.
- Demonstrate team building and effective communication skills.
- Function as a member of the health care team.
- Demonstrate knowledge of medical terms needed to perform job duties.
- Operate unit equipment.
- Utilize computer software effectively.
- Exhibit professionalism.
- Differentiate between hospital departments.
- Perform patient care duties safely and effectively.
- Demonstrate skills and knowledge needed to process physician orders.
- Understand HIPAA and patient confidentiality requirements.

Career Opportunities:

Positions are available as Health Unit Coordinators (HUC), Patient Care Technicians (PCT), Nursing Station Technician (NST) and Unit Coordinators (UC) in hospitals, nursing homes, clinics, doctor's offices, insurance companies and other healthcare settings. Graduates are eligible to sit for the National Association of Health Unit Coordinators (NAHUC) certification exam and the Nursing Assistant state examination.

Choose Total Diploma Credits 33 credits from the following areas:

Technical Studies Required: 24 Credits

HLUC1001 Health Unit Coordinator Fundamentals 3
HLUC1010 Essentials of Health Care Facilities 1
HLUC1020 Medical Terminology 2
HLUC1061 Diagnostic and Therapeutic Procedures 3
HLUC1101 Processing Physician's Orders 2
HLUC1200 Health Unit Coordinator Internship 3
CCIS1080 Microsoft Office 2010 3
EMSV1020 CPR/First Aid 1
HLTH2001 Nutrition and Health 2
NURS1001 Nursing Assistant 4

Technical Studies Electives: 0 Credits

General Education Required: 9 Credits

CPLT1100 Essential Computer Applications 3
COMM2050 Interpersonal Communication 3
PSYC2310 Psychology Throughout the Lifespan 3

General Education Electives: 0 Credits

PHARMACY TECHNOLOGY

Pharmacy Technician Diploma (EP)

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.

Program Title:

Pharmacy Technology

Credits: Total Diploma Credits 38

Award Type:

Diploma

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.

Career Opportunities:

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

Choose Total Diploma Credits 38 credits from the following areas:

Technical Studies Required: 31 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

BIOL2045 Human Biology 4

or

BIOL2115 Human Anatomy 4

Technical Studies Electives: 0 Credits

General Education Required: 7 Credits

CHEM2000 Introduction to Chemistry 4

COMM2050 Interpersonal Communication 3

General Education Electives: 0 Credits

PRACTICAL NURSING

Practical Nursing Diploma (BP/EP)

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 3 semesters. Part-time students can complete this program in 5 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; NURS1001 taken within the last 3 years of program admission or currently on the MN Department of Health Registry with a minimum of a 75 hour course; BIOL2005, BIOL2115, ENGL2121, PSYC2310 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.

Program Title:

Practical Nursing, Nursing Assistant, Other Health Related

Credits: Total Diploma Credits 52

Award Type:

Diploma

Award Outcomes:

- Integrate nursing theory and psychomotor skills to deliver competent nursing care.
- Demonstrate nursing safety principles.
- Utilize a team approach when carrying out the responsibilities of the practical nurse.
- Communicate effectively to establish therapeutic relationships and promote positive health outcomes.
- Utilize the nursing process to provide effective nursing care.
- Practice nursing according to the legal, ethical, and regulatory standards within the LPN scope of practice .

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.

Choose Total Diploma Credits 52 credits from the following areas:**Technical Studies Required: 37 Credits**

NURS1103 Foundations I 4

NURS1201 Foundations II 4

NURS1141 Pharmacology for Practical Nurses 4

NURS1161 Nursing Skills I 3

NURS1191 Adult Nursing I 4

NURS1222 Adult Nursing II 4

NURS1242 Maternal Child Nursing 2

NURS1261 Nursing Skills II 3

NURS2110 Psychosocial Nursing 2

NURS2550 Capstone 5

HLTH2001 Nutrition and Health 2

Technical Studies Electives: 0 Credits**General Education Required: 15 Credits**

BIOL2005 General Biology I 4

BIOL2115 Human Anatomy 4

ENGL2121 Writing and Research 4

PSYC2310 Psychology Throughout the Lifespan 3

General Education Electives: 0 Credits

Practical Nursing A.A.S. (BP/EP)

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 3 semesters. Part-time students can complete this program in 5 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; NURS1001 taken within the last 3 years of program admission or currently on the MN Department of Health Registry with a minimum of a 75 hour course; BIOL2005, BIOL2115, ENGL2121, PSYC2310 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.

Program Title:

Practical Nursing, Nursing Assistant, Other Health Related

Credits: Total Associate in Applied Science Degree Credits 63

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Integrate nursing theory and psychomotor skills to deliver competent nursing care.
- Demonstrate nursing safety principles.
- Utilize a team approach when carrying out the responsibilities of the practical nurse.
- Communicate effectively to establish therapeutic relationships and promote positive health outcomes.
- Utilize the nursing process to provide effective nursing care.
- Practice nursing according to the legal, ethical, and regulatory standards within the LPN scope of practice.

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.

Choose Total Associate in Applied Science Degree Credits 63 credits from the following areas:

Technical Studies Required: 37 Credits

NURS1103 Foundations I 4
NURS1141 Pharmacology for Practical Nurses 4
NURS1161 Nursing Skills I 3
NURS1191 Adult Nursing I 4
NURS1201 Foundations II 4
NURS1222 Adult Nursing II 4
NURS1242 Maternal Child Nursing 2
NURS1261 Nursing Skills II 3
NURS2110 Psychosocial Nursing 2
NURS2550 Capstone 5
HLTH2001 Nutrition and Health 2

Technical Studies Electives: 0 Credits

General Education Required: 26 Credits

BIOL2005 General Biology I 4
BIOL2115 Human Anatomy 4
BIOL2215 Human Physiology 4
BIOL2235 Microbiology 4
or
CHEM2200 Essentials of General, Organic and Biochemistry 5
ENGL2121 Writing and Research 4
COMM2050 Interpersonal Communication 3
or
PHIL2200 Ethics 3
or
PHIL2400 Medical Ethics 4
PSYC2310 Psychology Throughout the Lifespan 3
General Education Electives: 0 Credits

INDIVIDUALIZED STUDIES

Individualized Studies A.A.S. and A.S. (EP/BP)

As more industry partners and students come to us with niche needs and skills, these flexible degree options provide the rigor and focus needed for individual student's career goals that are not represented in other degree offerings. The Associate in Applied Science Degree and Associate of Science Degree in Individualized Studies are 60 credits in length each. A key component of these degrees are the required 2 credit CCDS1500 course. In this course, a student is exposed to career development theory and develops the resources, contacts and skills necessary to design a degree program that will prepare them for success. Through consultation with their instructor, other faculty and industry representatives, a student will construct a degree plan that meets both the requirements of MnSCU's "Design Criteria for Undergraduate Individualized Programs" policy and HTC requirements for a degree. This degree plan, along with an assessment plan, will be key outcomes of the CCDS1500 course. The degree plan will then go on file with the Registrar. After successfully completing this degree plan and demonstrating that the assessment plan has been met, the student will then be eligible for graduation.

After completion of the CCDS1505 course, students may work individually with counselors to request changes to the approved degree plan on an as needed basis. Maintaining an up-to-date degree plan is essential to maintain financial aid eligibility.

Award	Title	Campus	Credits
A.A.S. Degree	Associate in Applied Science Degree	BPC/EPC	60
A.S. Degree	Associate of Science Degree	BPC/EPC	60

Manufacturing & Engineering Technology

AUTOMATION ROBOTICS ENGINEERING TECHNOLOGY

Automated Machinery Adjuster Diploma (EP)

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.

Program Title:

Automation Robotics Engineering Technology

Credits: Total Diploma Credits 33

Award Type:

Diploma

Award Outcomes:

- Diagnose root problems impacting production flow
- Solve root problems to maintain production flow
- Perform basic electrical, electronic, welding, machining, laser, vision system, robotic, and fluid power operations
- Apply electrical and mechanical machine control concepts
- Set up production lines
- Work effectively with a wide variety of packaging materials
- Accept responsibility
- Display a professional attitude

Career Opportunities:

Career opportunities are entry-level positions in manufacturing companies.

Choose Total Diploma Credits 33 credits from the following areas:

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

Technical Studies Electives: 1 Credits

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

General Education Required: 4 Credits

COMM1050 Communication in the Workplace 2

MATH1000 Prealgebra 2

or

MATH1006 Math for the Trades 3

General Education Electives: 0 Credits

Automated Machinery Systems Diploma (EP)

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.

Program Title:

Automation Robotics Engineering Technology

Credits: Total Diploma Credits 60

Award Type:

Diploma

Award Outcomes:

- Diagnose root problems impacting production flow
- Solve root problems to maintain production flow
- Perform basic electrical, electronic, welding, machining, laser, vision system, robotic, and fluid power operations
- Apply electrical and mechanical machine control concepts
- Use technical documents to assemble, install, troubleshoot, and repair automated packaging systems
- Set up production lines
- Utilize local area network for remote system control
- Work effectively with a wide variety of packaging materials
- Apply communication skills to interact with people in business and industry
- Manage time and resources
- Accept responsibility
- Display a professional attitude

Career Opportunities:

Automated packaging machine mechanics and technicians are in high demand; surveys indicate even a greater demand as technologies advance. Before reaching the consumer, almost every product is packaged and packed in several forms. Automation in the manufacturing industry is a high opportunity field. This is a Packaging Machinery Manufacturers Institute (PMMI) approved program.

Choose Total Diploma Credits 60 credits from the following areas:

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

Technical Studies Electives: 3 Credits

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

ARET1900 Specialized Lab 1-4

ARET2181 Internship 1-4

General Education Required: 7 Credits

COMM1050 Communication in the Workplace 2

MATH1000 Prealgebra 2

or

MATH1006 Math for the Trades 3

METS1000 Computers in Manufacturing 3

General Education Electives: 0 Credits

Automation Robotics Engineering Technology A.A.S. (EP)

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.

Program Title:

Automation Robotics Engineering Technology

Credits: Total Associate in Applied Science Degree Credits 60

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Diagnose root problems impacting production flow
- Solve root problems to maintain production flow
- Perform basic electrical, electronic, welding, machining, laser, vision system, robotic, and fluid power operations
- Apply electrical and mechanical machine control concepts
- Use technical documents to assemble, install, troubleshoot, and repair automated packaging systems
- Set up production lines
- Utilize local area network for remote system control
- Work effectively with a wide variety of packaging materials
- Apply communication skills to interact with people in business and industry
- Manage time and resources
- Accept responsibility
- Display a professional attitude

Career Opportunities:

Automated packaging machine mechanics and technicians are in high demand; surveys indicate even a greater demand as technologies advance. Before reaching the consumer, almost every product is packaged and packed in several forms. Automation in the manufacturing industry is a high opportunity field. This is a Packaging Machinery Manufacturers Institute (PMMI) approved program.

Choose Total Associate in Applied Science Degree Credits 60 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 9 Credits

ENGL2125 Technical Writing 3

MATH2100 Concepts in Mathematics 3

or

MATH2200 College Algebra 4

PHIL2100 Critical Thinking 3

General Education Electives: 6 Credits

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

ELECTRONICS TECHNOLOGY

Electronics Technician Diploma (BP)

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.

Program Title:

Electronics Technology

Credits: Total Diploma Credits 64

Award Type:

Diploma

Award Outcomes:

- Exhibit professional and ethical behavior.
- Apply basic computer skills in a technical setting.
- Apply effective team skills in the workplace.
- Apply basic mathematical and problem solving skills.
- Demonstrate critical thinking skills.
- Use electronic simulation software to construct and analyze circuit operation.
- Disassemble, reassemble and build electromechanical hardware.
- Practice safety in the workplace.
- Troubleshoot, repair, test and report on electromechanical equipment.
- Use standard electronic test equipment.
- Interpret blueprint and electronic schematics.
- Apply accurate writing and oral skills.

Career Opportunities:

Electronic Technicians are in demand in small to large companies and virtually all government agencies including the Department of Transportation, Federal Aviation Administration and the US Post Office. Technicians may work for the manufacturers, sellers, end users or third party maintenance organizations. Technicians may hold any one of the following job titles: Technical Sales, Troubleshooter, Installer, Support Specialist, Field Service, Depot Repair Technician, Test Technician, Quality Control Technician, Network Technician, Telecommunication Technician or Engineer Assistant.

Choose Total Diploma Credits 64 credits from the following areas:

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 Computer Circuits and Applications I 4
ELEC2020 Computer Circuits and Applications II 3
ELEC2050 Advanced Troubleshooting 4
ELEC2200 Microprocessors and Microcomputers I 4
ELEC2220 Microprocessors and Microcomputers II 4
ELEC2450 Regulated Power Supplies 2

Technical Studies Electives: 5 Credits

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

General Education Required: 11 Credits

COMM1050 Communication in the Workplace 2
METS1000 Computers in Manufacturing 3
MATH1011 Beginning Algebra 3
MATH1031 Intermediate Algebra 3

General Education Electives: 0 Credits

Electronics Technician A.A.S. (BP)

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.

Program Title:

Electronics Technology

Credits: Total Associate in Applied Science Degree Credits 72

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Exhibit professional and ethical behavior.
- Apply basic computer skills in a technical setting.
- Apply effective team skills in the workplace.
- Apply basic mathematical and problem solving skills.
- Demonstrate critical thinking skills.
- Use electronic simulation software to construct and analyze circuit operation.
- Disassemble, reassemble and build electromechanical hardware.
- Practice safety in the workplace.
- Troubleshoot, repair, test and report on electromechanical equipment.
- Use standard electronic test equipment.
- Interpret blueprint and electronic schematics.
- Apply accurate writing and oral skills.

Career Opportunities:

Electronics Technicians are in demand in small to large companies and virtually all government agencies including the Department of Transportation, Federal Aviation Administration and the US Post Office. Technicians may work for the manufacturers, sellers, end users or third party maintenance organizations. Technicians may hold any one of the following job titles: Technical Sales, Troubleshooter, Installer, Support Specialist, Field Service, Depot Repair Technician, Test Technician, Quality Control Technician, Network Technician, Telecommunication Technician or Engineer Assistant.

Choose Total Associate in Applied Science Degree Credits 72 credits from the following areas:

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 Computer Circuits and Applications I 4
ELEC2020 Computer Circuits and Applications II 3
ELEC2050 Advanced Troubleshooting 4
ELEC2200 Microprocessors and Microcomputers I 4
ELEC2220 Microprocessors and Microcomputers II 4
ELEC2450 Regulated Power Supplies 2

Technical Studies Electives: 6 Credits

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

General Education Required: 12 Credits

ENGL2121 Writing and Research 4

or

ENGL2125 Technical Writing 3

MATH2100 Concepts in Mathematics 3

or

MATH2200 College Algebra 4

METS1000 Computers in Manufacturing 3

PHIL2100 Critical Thinking 3

General Education Electives: 6 Credits

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

ENGINEERING CAD TECHNOLOGY

AutoCAD Operator Advanced Technical Certificate (BP/EP)

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.

Program Title:

Engineering CAD Technology

Credits: Total Advanced Technical Certificate Credits 17

Award Type:

Advanced Technical Certificate

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.

Choose Total Advanced Technical Certificate Credits 17 credits from the following areas:

Technical Studies Required: 14 Credits

ENGC1021 Engineering Drawing II 3

ENGC1100 AutoCAD 4

ENGC1160 Inventor 4

ENGC2075 Engineering Design Project 3

Technical Studies Electives: 3 Credits

ENGC1011 Engineering Drawing I 3

ENGC1050 Additive Manufacturing 3

ENGC1250 SolidWorks I 4

ENGC1255 SolidWorks II 4

ENGC1900 Specialized Lab 1-4

ENGC2100 Pro/ENGINEER I 4

MACH1056 Blueprint Reading I 3

MACH2410 CAD/CAM 3

METS1000 Computers in Manufacturing 3

METS1020 Industrial Manufacturing Processes 3

General Education Required: 0 Credits

General Education Electives: 0 Credits

Engineering CAD Technology Diploma (BP/EP)

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.

Program Title:

Engineering CAD Technology

Credits: Total Diploma Credits 64

Award Type:

Diploma

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.

Choose Total Diploma Credits 64 credits from the following areas:

Technical Studies Required: 53 Credits

ENGC1011 Engineering Drawing I 3
ENGC1021 Engineering Drawing II 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 Pro/ENGINEER I 4
ENGC2110 Pro/ENGINEER II 4
MACH1056 Blueprint Reading I 3
MACH2425 Geometry/Trigonometry for Machinists 2
METS1020 Industrial Manufacturing Processes 3
METS2000 Engineering Design Principles 3

Technical Studies Electives: 3 Credits

ARET1200 Introduction to Robotics 2
FLPW1101 Fluid Power Technology I 3
ENGC1050 Additive Manufacturing 3
ENGC1900 Specialized Lab 1-4
ENGC2050 AutoCAD Upgrade Training 1
ENGC2200 Engineering CAD Technology Internship 3-4
MACH1205 Machine Tool Technology 3
METS2100 Statics and Strength of Materials 3

General Education Required: 8 Credits

COMM1050 Communication in the Workplace 2
MATH1011 Beginning Algebra 3
METS1000 Computers in Manufacturing 3

General Education Electives: 0 Credits

Engineering CAD Technology A.A.S. (BP/EP)

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.

Program Title:

Engineering CAD Technology

Credits: Total Associate in Applied Science Degree Credits 72

Award Type:

Associate in Applied Science Degree

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.

Choose Total Associate in Applied Science Degree Credits 72 credits from the following areas:

Technical Studies Required: 51 Credits

ENGC1011 Engineering Drawing I 3
ENGC1021 Engineering Drawing II 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 Pro/ENGINEER I 4
ENGC2110 Pro/ENGINEER II 4
MACH1056 Blueprint Reading I 3
METS1020 Industrial Manufacturing Processes 3
METS2000 Engineering Design Principles 3

Technical Studies Electives: 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 3-4
FLPW1101 Fluid Power Technology I 3
MACH1205 Machine Tool Technology 3
METS2100 Statics and Strength of Materials 3

General Education Required: 12 Credits

ENGL2121 Writing and Research 4
or

ENGL2125 Technical Writing 3
MATH2100 Concepts in Mathematics 3
or

MATH2200 College Algebra 4
METS1000 Computers in Manufacturing 3
PHIL2100 Critical Thinking 3

General Education Electives: 6 Credits

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

Pro/ENGINEER Operator Advanced Technical Certificate (BP/EP)

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.

Program Title:

Engineering CAD Technology

Credits: Total Advanced Technical Certificate Credits 17

Award Type:

Advanced Technical Certificate

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.

Choose Total Advanced Technical Certificate Credits 17 credits from the following areas:

Technical Studies Required: 14 Credits

ENGC1021 Engineering Drawing II 3
ENGC2075 Engineering Design Project 3
ENGC2100 Pro/ENGINEER I 4
ENGC2110 Pro/ENGINEER II 4

Technical Studies Electives: 3 Credits

ENGC1011 Engineering Drawing I 3
ENGC1050 Additive Manufacturing 3
ENGC1100 AutoCAD 4
ENGC1160 Inventor 4
ENGC1201 Industrial CAD Project 3
ENGC1250 SolidWorks I 4
ENGC1255 SolidWorks II 4
ENGC1900 Specialized Lab 1-4
MACH1056 Blueprint Reading I 3
MACH2410 CAD/CAM 3
METS1000 Computers in Manufacturing 3
METS1020 Industrial Manufacturing Processes 3

General Education Required: 0 Credits

General Education Electives: 0 Credits

SolidWorks Operator Advanced Technical Certificate (BP/EP)

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 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.

Program Title:

Engineering CAD Technology

Credits: Total Advanced Technical Certificate Credits 17

Award Type:

Advanced Technical Certificate

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.

Choose Total Advanced Technical Certificate Credits 17 credits from the following areas:

Technical Studies Required: 14 Credits

ENGC1021 Engineering Drawing II 3
ENGC1250 SolidWorks I 4
ENGC1255 SolidWorks II 4
ENGC2075 Engineering Design Project 3

Technical Studies Electives: 3 Credits

ENGC1011 Engineering Drawing I 3
ENGC1050 Additive Manufacturing 3
ENGC1041 Geometric Dimensioning & Tolerancing 3
ENGC1100 AutoCAD 4
ENGC1160 Inventor 4
ENGC1201 Industrial CAD Project 3
ENGC1900 Specialized Lab 1-4
ENGC2011 Special Fields of Drafting 3
ENGC2100 Pro/ENGINEER I 4
ENGC2110 Pro/ENGINEER II 4
ENGC2200 Engineering CAD Technology Internship 3-4
MACH1056 Blueprint Reading I 3
MACH2410 CAD/CAM 3
METS1000 Computers in Manufacturing 3

General Education Required: 0 Credits

General Education Electives: 0 Credits

FLUID POWER ENGINEERING TECHNOLOGY

Fluid Power Engineering Technician A.A.S. (BP/EP)

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.

Program Title:

Fluid Power Engineering Technology

Credits: Total Associate in Applied Science Degree Credits 72

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Demonstrate teamwork.
- Adhere to Occupational Safety & Health Administration (O.S.H.A.) safety guidelines and practices.
- Identify components that are utilized in the fluid power industry.
- Apply engineering concepts as they relate to fluid power applications.
- Employ fluid power best-practices methods when troubleshooting and repairing fluid power systems.
- Apply National Electrical Manufacturers Association (N.E.M.A.) and International Electrotechnical Commission (I.E.C.) electrical standards and practices as they relate to electrical concepts and equipment.
- Design fluid power systems in accordance with National Fluid Power Association (NFPA) and International Organization for Standardization (ISO) standards and practices.
- Utilize calculations as they relate to the design of efficient fluid power applications.
- Examine engineering design practices as they relate to the transmission of power.
- Develop programmable logic controller (PLC) programs using Boolean algebra methods and computer software applications.
- Integrate electrical, programmable logic controller (PLC) and electronic hardware with motion control components.
- Instrument fluid power systems.
- Utilize data acquisition methods when analyzing fluid power application efficiency.
- Incorporate human machine interface (HMI) technologies with fluid power applications.
- Produce engineering drawings and schematics using American National Standards Institute (ANSI), International Organization for Standardization (ISO) and industry symbols and standards.
- Use applied physics to investigate power transmission methods.
- Collaborate with others to create a capstone project that utilizes the engineering portfolio concept.

Career Opportunities:

The fluid power industry is one of the fastest growing technologies today. Technicians will find employment with industries in automation, material handling and processing, heavy equipment, plant automation and fluid power distribution. These opportunities will exist in large and small companies in local as well as international markets. Jobs will include supervision, engineering, inside and outside sales consultant and product development.

Continued on the next page

Choose Total Associate in Applied Science Degree Credits 72 credits from the following areas:

Technical Studies Required: 54 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

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 Pro/ENGINEER I 4

FLPW1400 Engineering Drawings and Schematics 4

Technical Studies Electives: 0 Credits

General Education Required: 12 Credits

ENGL2121 Writing and Research 4

or

ENGL2125 Technical Writing 3

METS1000 Computers in Manufacturing 3

Choose 6 Credits from within two of the MnTC Goal Areas 2-10 6

General Education Electives: 6 Credits

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

Fluid Power Engineering Technician Diploma (BP/EP)

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.

Program Title:

Fluid Power Engineering Technology

Credits: Total Diploma Credits 66

Award Type:

Diploma

Award Outcomes:

- Demonstrate teamwork.
- Adhere to Occupational Safety & Health Administration (O.S.H.A.) safety guidelines and practices.
- Identify components that are utilized in the fluid power industry.
- Apply engineering concepts as they relate to fluid power applications.
- Employ fluid power best-practices methods when troubleshooting and repairing fluid power systems.
- Apply National Electrical Manufacturers Association (N.E.M.A.) and International Electrotechnical Commission (I.E.C.) electrical standards and practices as they relate to electrical concepts and equipment.
- Design fluid power systems in accordance with National Fluid Power Association (NFPA) and International Organization for Standardization (ISO) standards and practices.
- Utilize calculations as they relate to the design of efficient fluid power applications.
- Examine engineering design practices as they relate to the transmission of power.
- Develop programmable logic controller (PLC) programs using Boolean algebra methods and computer software applications.
- Integrate electrical, programmable logic controller (PLC) and electronic hardware with motion control components.
- Instrument fluid power systems.
- Utilize data acquisition methods when analyzing fluid power application efficiency.
- Incorporate human machine interface (HMI) technologies with fluid power applications.
- Produce engineering drawings and schematics using American National Standards Institute (ANSI), International Organization for Standardization (ISO) and industry symbols and standards.
- Use applied physics to investigate power transmission methods.
- Collaborate with others to create a capstone project that utilizes the engineering portfolio concept.

Career Opportunities:

Fluid Power Technicians will find employment with fluid power manufacturing companies, sales organizations and distributors. Positions vary from fluid power technician, inside sales consultant, industrial maintenance technician and product testing.

Continued on the following page

Choose Total Diploma Credits 66 credits from the following areas:

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 Pro/ENGINEER I 4
FLPW1400 Engineering Drawings and Schematics 4

Technical Studies Electives: 6 Credits

FLPW1150 Pneumatic Components 4
FLPW1236 Industrial Electricity II 3
FLPW2020 Advanced Programmable Logic Controllers 3
FLPW2350 Hydraulic Specialist Certification Review 2
FLPW2360 Pneumatic Specialist Certification Review 2

General Education Required: 3 Credits

METS1000 Computers in Manufacturing 3

General Education Electives: 3 Credits

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

Fluid Power Mechanic Diploma (BP/EP)

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.

Program Title:

Fluid Power Engineering Technology

Credits: Total Diploma Credits 34

Award Type:

Diploma

Award Outcomes:

- Demonstrate teamwork.
- Adhere to Occupational Safety & Health Administration (O.S.H.A.) safety guidelines and practices.
- Identify components that are utilized in the fluid power industry.
- Apply engineering concepts as they relate to fluid power applications.
- Employ fluid power best-practices methods when troubleshooting and repairing fluid power systems.
- Apply National Electrical Manufacturers Association (N.E.M.A.) and International Electrotechnical Commission (I.E.C.) electrical standards and practices as they relate to electrical concepts and equipment.
- Utilize calculations as they relate to the design of efficient fluid power applications.
- Examine engineering design practices as they relate to the transmission of power.
- Develop programmable logic controller (PLC) programs using Boolean algebra methods and computer software applications.
- Integrate electrical, programmable logic controller (PLC) and electronic hardware with motion control components.
- Instrument fluid power systems.
- Utilize data acquisition methods when analyzing fluid power application efficiency.
- Incorporate human machine interface (HMI) technologies with fluid power applications.
- Produce engineering drawings and schematics using American National Standards Institute (ANSI), International Organization for Standardization (ISO) and industry symbols and standards.
- Use applied physics to investigate power transmission methods.

Career Opportunities:

The Fluid Power Mechanic will find employment in hydraulic repair facilities, heavy equipment repair and service and manufacturing (food processing, plastics, printing, precision metal and woodworking industries.)

Choose Total Diploma Credits 34 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 3 Credits

METS1000 Computers in Manufacturing 3

General Education Electives: 1 Credits

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

Hydraulic Engineering Technician A.A.S. (BP/EP)

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.

Program Title:

Fluid Power Engineering Technology

Credits: Total Associate in Applied Science Degree Credits 72

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Demonstrate teamwork.
- Adhere to Occupational Safety & Health Administration (O.S.H.A.) safety guidelines and practices.
- Identify components that are utilized in the fluid power industry.
- Apply engineering concepts as they relate to fluid power applications.
- Employ fluid power best-practices methods when troubleshooting and repairing fluid power systems.
- Apply National Electrical Manufacturers Association (N.E.M.A.) and International Electrotechnical Commission (I.E.C.) electrical standards and practices as they relate to electrical concepts and equipment.
- Design fluid power systems in accordance with National Fluid Power Association (NFPA) and International Organization for Standardization (ISO) standards and practices.
- Utilize calculations as they relate to the design of efficient fluid power applications.
- Examine engineering design practices as they relate to the transmission of power.
- Develop programmable logic controller (PLC) programs using Boolean algebra methods and computer software applications.
- Integrate electrical, programmable logic controller (PLC) and electronic hardware with motion control components.
- Instrument fluid power systems.
- Utilize data acquisition methods when analyzing fluid power application efficiency.
- Incorporate human machine interface (HMI) technologies with fluid power applications.
- Produce engineering drawings and schematics using American National Standards Institute (ANSI), International Organization for Standardization (ISO) and industry symbols and standards.
- Use applied physics to investigate power transmission methods.
- Collaborate with others to create a capstone project that utilizes the engineering portfolio concept.

Career Opportunities:

The fluid power industry is one of the fastest growing technologies today. Hydraulic Engineering Technicians will find employment with industries in automation, material handling and processing, heavy equipment, plant automation and fluid power distribution. These opportunities will exist in large and small companies in local as well as international markets. Jobs will include supervision, hydraulic engineering, inside and outside sales consultant and product development.

Continued on the following page

Choose Total Associate in Applied Science Degree Credits 72 credits from the following areas:

Technical Studies Required: 53 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
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 Pro/ENGINEER I 4
FLPW1400 Engineering Drawings and Schematics 4

Technical Studies Electives: 1 Credits

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

General Education Required: 12 Credits

ENGL2121 Writing and Research 4

or

ENGL2125 Technical Writing 3
METS1000 Computers in Manufacturing 3

Choose 6 Credits from within two of the MnTC Goal Areas 2-10 6

General Education Electives: 6 Credits

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

Hydraulic Engineering Technician Diploma (BP/EP)

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.

Program Title:

Fluid Power Engineering Technology

Credits: Total Diploma Credits 64

Award Type:

Diploma

Award Outcomes:

- Demonstrate teamwork.
- Adhere to Occupational Safety & Health Administration (O.S.H.A.) safety guidelines and practices.
- Identify components that are utilized in the fluid power industry.
- Apply engineering concepts as they relate to fluid power applications.
- Employ fluid power best-practices methods when troubleshooting and repairing fluid power systems.
- Apply National Electrical Manufacturers Association (N.E.M.A.) and International Electrotechnical Commission (I.E.C.) electrical standards and practices as they relate to electrical concepts and equipment.
- Design fluid power systems in accordance with National Fluid Power Association (NFPA) and International Organization for Standardization (ISO) standards and practices.
- Utilize calculations as they relate to the design of efficient fluid power applications.
- Examine engineering design practices as they relate to the transmission of power.
- Develop programmable logic controller (PLC) programs using Boolean algebra methods and computer software applications.
- Integrate electrical, programmable logic controller (PLC) and electronic hardware with motion control components.
- Instrument fluid power systems.
- Utilize data acquisition methods when analyzing fluid power application efficiency.
- Incorporate human machine interface (HMI) technologies with fluid power applications.
- Produce engineering drawings and schematics using American National Standards Institute (ANSI), International Organization for Standardization (ISO) and industry symbols and standards.
- Use applied physics to investigate power transmission methods.
- Collaborate with others to create a capstone project that utilizes the engineering portfolio concept.

Career Opportunities:

Hydraulic Engineering Technicians will find employment with fluid power manufacturing companies, sales organizations and distributors. Positions vary from fluid power technician, inside sales consultant, industrial maintenance technician and product testing.

Continued on the following page

Choose Total Diploma Credits 64 credits from the following areas:

Technical Studies Required: 55 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
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 Pro/ENGINEER I 4
FLPW1400 Engineering Drawings and Schematics 4

Technical Studies Electives: 3 Credits

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

General Education Required: 3 Credits

METS1000 Computers in Manufacturing 3

General Education Electives: 3 Credits

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

Industrial Maintenance Mechanic Occupational Certificate (BP/EP)

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.

Program Title:

Fluid Power Engineering Technology

Credits: Total Occupational Certificate Credits 18

Award Type:

Occupational Certificate

Award Outcomes:

- Demonstrate teamwork.
- Adhere to Occupational Safety & Health Administration (O.S.H.A.) safety guidelines and practices.
- Identify components that are utilized in the fluid power industry.
- Apply engineering concepts as they relate to fluid power applications.
- Employ fluid power best-practices methods when troubleshooting and repairing fluid power systems.
- Apply National Electrical Manufacturers Association (N.E.M.A.) and International Electrotechnical Commission (I.E.C.) electrical standards and practices as they relate to electrical concepts and equipment.
- Utilize calculations as they relate to the design of efficient fluid power applications.
- Examine engineering design practices as they relate to the transmission of power.
- Develop programmable logic controller (PLC) programs using Boolean algebra methods and computer software applications.
- Integrate electrical, programmable logic controller (PLC) and electronic hardware with motion control components.
- Instrument fluid power systems.
- Utilize data acquisition methods when analyzing fluid power application efficiency.
- Produce engineering drawings and schematics using American National Standards Institute (ANSI), International Organization for Standardization (ISO) and industry symbols and standards.
- Use applied physics to investigate power transmission methods.
- Collaborate with others to create a capstone project that utilizes the engineering portfolio concept.

Career Opportunities:

Industrial Maintenance Mechanics are employed in the die casting, plastics, food processing, printing, precision metal and woodworking industries. Coursework involves a broad curricula of industrial electricity, hydraulic and pneumatics and blueprint reading. Emphasis will be hands-on training repairing and testing of hydraulic and pneumatic equipment.

Choose Total Occupational Certificate Credits 18 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

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

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.

Program Title:

Fluid Power Engineering Technology

Credits: Total Advanced Technical Certificate Credits 10

Award Type:

Advanced Technical Certificate

Award Outcomes:

- Demonstrate teamwork.
- Adhere to Occupational Safety & Health Administration (O.S.H.A.) safety guidelines and practices.
- Identify components that are utilized in the fluid power industry.
- Apply engineering concepts as they relate to fluid power applications.
- Employ fluid power best-practices methods when troubleshooting and repairing fluid power systems.
- Apply National Electrical Manufacturers Association (N.E.M.A.) and International Electrotechnical Commission (I.E.C.) electrical standards and practices as they relate to electrical concepts and equipment.
- Design fluid power systems in accordance with National Fluid Power Association (NFPA) and International Organization for Standardization (ISO) standards and practices.
- Utilize calculations as they relate to the design of efficient fluid power applications.
- Examine engineering design practices as they relate to the transmission of power.
- Develop programmable logic controller (PLC) programs using Boolean algebra methods and computer software applications.
- Integrate electrical, programmable logic controller (PLC) and electronic hardware with motion control components.
- Instrument fluid power systems.
- Utilize data acquisition methods when analyzing fluid power application efficiency.
- Produce engineering drawings and schematics using American National Standards Institute (ANSI), International Organization for Standardization (ISO) and industry symbols and standards.
- Use applied physics to investigate power transmission methods.
- Collaborate with others to create a capstone project that utilizes the engineering portfolio concept.

Career Opportunities:

Students with this certification are recognized in the industry as possessing the knowledge and skills necessary to perform as an engineering technician in the fluid power industry.

Choose Total Advanced Technical Certificate Credits 10 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Pneumatic Engineering Technician A.A.S. (BP/EP)

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.

Program Title:

Fluid Power Engineering Technology

Credits: Total Associate in Applied Science Degree Credits 72

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Demonstrate teamwork.
- Adhere to Occupational Safety & Health Administration (O.S.H.A.) safety guidelines and practices.
- Identify components that are utilized in the fluid power industry.
- Apply engineering concepts as they relate to fluid power applications.
- Employ fluid power best-practices methods when troubleshooting and repairing fluid power systems.
- Apply National Electrical Manufacturers Association (N.E.M.A.) and International Electrotechnical Commission (I.E.C.) electrical standards and practices as they relate to electrical concepts and equipment.
- Design fluid power systems in accordance with National Fluid Power Association (NFPA) and International Organization for Standardization (ISO) standards and practices.
- Utilize calculations as they relate to the design of efficient fluid power applications.
- Examine engineering design practices as they relate to the transmission of power.
- Develop programmable logic controller (PLC) programs using Boolean algebra methods and computer software applications.
- Integrate electrical, programmable logic controller (PLC) and electronic hardware with motion control components.
- Instrument fluid power systems.
- Utilize data acquisition methods when analyzing fluid power application efficiency.
- Incorporate human machine interface (HMI) technologies with fluid power applications.
- Produce engineering drawings and schematics using American National Standards Institute (ANSI), International Organization for Standardization (ISO) and industry symbols and standards.
- Use applied physics to investigate power transmission methods.
- Collaborate with others to create a capstone project that utilizes the engineering portfolio concept.

Career Opportunities:

The fluid power industry is one of the fastest growing technologies today. Pneumatic Engineering Technicians will find employment with industries in automation, material handling and processing, robotics, plant automation and fluid power distribution. These opportunities will exist in large and small companies in local as well as international markets. Jobs will include supervision, pneumatic engineering, inside and outside sales consultant and product development.

Continued on the following page

Choose Total Associate in Applied Science Degree Credits 72 credits from the following areas:

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 Pro/ENGINEER I 4
FLPW1400 Engineering Drawings and Schematics 4

Technical Studies Electives: 9 Credits

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

General Education Required: 12 Credits

ENGL2121 Writing and Research 4
or

ENGL2125 Technical Writing 3
METS1000 Computers in Manufacturing 3

Choose 6 Credits from within two of the MnTC Goal Areas 2-10 6

General Education Electives: 6 Credits

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

Pneumatic Engineering Technician Diploma (BP/EP)

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.

Program Title:

Fluid Power Engineering Technology

Credits: Total Diploma Credits 64

Award Type:

Diploma

Award Outcomes:

- Demonstrate teamwork.
- Adhere to Occupational Safety & Health Administration (O.S.H.A.) safety guidelines and practices.
- Identify components that are utilized in the fluid power industry.
- Apply engineering concepts as they relate to fluid power applications.
- Employ fluid power best-practices methods when troubleshooting and repairing fluid power systems.
- Apply National Electrical Manufacturers Association (N.E.M.A.) and International Electrotechnical Commission (I.E.C.) electrical standards and practices as they relate to electrical concepts and equipment.
- Design fluid power systems in accordance with National Fluid Power Association (NFPA) and International Organization for Standardization (ISO) standards and practices.
- Utilize calculations as they relate to the design of efficient fluid power applications.
- Examine engineering design practices as they relate to the transmission of power.
- Develop programmable logic controller (PLC) programs using Boolean algebra methods and computer software applications.
- Integrate electrical, programmable logic controller (PLC) and electronic hardware with motion control components.
- Instrument fluid power systems.
- Utilize data acquisition methods when analyzing fluid power application efficiency.
- Incorporate human machine interface (HMI) technologies with fluid power applications.
- Produce engineering drawings and schematics using American National Standards Institute (ANSI), International Organization for Standardization (ISO) and industry symbols and standards.
- Use applied physics to investigate power transmission methods.
- Collaborate with others to create a capstone project that utilizes the engineering portfolio concept.

Career Opportunities:

Pneumatic Engineering Technicians will find employment with fluid power manufacturing companies, sales organizations and distributors. Positions vary from fluid power technician, inside sales consultant, industrial maintenance technician and product testing.

Choose Total Diploma Credits 64 credits from the following areas:

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 Pro/ENGINEER I 4

FLPW1400 Engineering Drawings and Schematics 4

Technical Studies Electives: 13 Credits

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

General Education Required: 3 Credits

METS1000 Computers in Manufacturing 3

General Education Electives: 3 Credits

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

INDUSTRIAL BUILDING ENGINEERING & MAINTENANCE

Industrial Building Engineering and Maintenance Diploma (BP)

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.

Program Title:

Industrial Building Engineering and Maintenance

Credits: Total Diploma Credits 44

Award Type:

Diploma

Award Outcomes:

- Demonstrate the ability to understand and implement OSHA safety regulations.
- Demonstrate teamwork.
- Apply electrical concepts as they relate to the installation and troubleshooting analysis of N.E.M.A. and I.E.C. industrial electrical equipment.
- Develop the skills necessary to braze and solder fluid conductors.
- Develop drawings by using a personal computer and computer aided design (CAD) software.
- Interpret blueprints, drawings and schematics.
- Utilize calculations as they relate to the design of fluid power systems.
- Demonstrate the ability to interpret and troubleshoot hydraulic and pneumatic circuits.
- Complete the Environmental Protection Agency certification to handle refrigerants.
- Develop programs for programmable logic controllers that meet industry standards.
- Demonstrate carpentry finishing skills and techniques.
- Demonstrate the ability to construct floor and wall component systems.
- Operate welding tools and equipment.
- Demonstrate the ability to perform welding techniques.
- Demonstrate the ability to perform material handling techniques.

Career Opportunities:

The maintenance field is one that offers consistence and long-term employment opportunities. The maintenance of buildings and machines is a vital and ever-present task at all industrial facilities. Career opportunities exist in small and large companies and employment can be found in local as well as in the national markets. The maintenance technician will find jobs that include any or all of these duties: repair and maintenance of the inside and outside of the facility, carpentry, boiler operation, the preservation of heating and air conditioning systems, up-keep of material handling equipment and preventative maintenance and repair of manufacturing machines and related equipment.

Choose Total Diploma Credits 44 credits from the following areas:

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

Technical Studies Electives: 1 Credits

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

General Education Required: 5 Credits

MATH1000 Prealgebra 2

METS1000 Computers in Manufacturing 3

General Education Electives: 0 Credits

MACHINE TOOL TECHNOLOGY

CNC Operator Occupational Certificate (BP)

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.

Program Title:

Machine Tool Technology

Credits: Total Occupational Certificate Credits 30

Award Type:

Occupational Certificate

Award Outcomes:

- Apply precision measurement techniques
- Demonstrate sawing procedures
- Demonstrate drilling procedures
- Demonstrate grinding procedures
- Demonstrate milling procedures
- Demonstrate turning procedures
- Interpret blueprints/drawings
- Apply heat treating principles
- Machine parts with tolerance
- Apply math skills necessary for industry requirements
- Operate equipment safely
- Inspect machined parts for tolerance requirements
- Operate CNC machines efficiently
- Demonstrate teamwork
- Develop part designs within a group

Career Opportunities:

CNC operators are employed in both small and large manufacturing firms that produce durable goods. Excellent opportunities exist for personal and professional growth in this industry.

Choose Total Occupational Certificate Credits 30 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 5 Credits

MATH1000 Prealgebra 2

METS1000 Computers in Manufacturing 3

General Education Electives: 0 Credits

CNC Swiss Turning Center Technician Advanced Technical Certificate (BP)

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.

Program Title:

Machine Tool Technology

Credits: Total Advanced Technical Certificate Credits 9

Award Type:

Advanced Technical Certificate

Award Outcomes:

- Interpret blueprints/drawings
- Machine parts with tolerance
- Apply math skills necessary for industry requirements
- Operate equipment safely
- Inspect machined parts for tolerance requirements
- Operate CNC machines efficiently

Career Opportunities:

As the products we use everyday decrease in size, the parts that make up those products also get smaller. The growing medical device industry is a good example of the need for tiny sophisticated parts. Producing these parts requires special skills, knowledge and machine tools. Increased global competition in manufacturing also requires increased productivity to remain competitive in the market place. Swiss-type turning centers provide capability and the productivity to produce small high-precision parts efficiently. Demand for machinists with these specialized skills is growing and should continue to increase.

Choose Total Advanced Technical Certificate Credits 9 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

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

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.

Program Title:

Machine Tool Technology

Credits: Total Advanced Technical Certificate Credits 17

Award Type:

Advanced Technical Certificate

Award Outcomes:

- Demonstrate milling procedures
- Demonstrate turning procedures
- Interpret blueprints/drawings
- Machine parts with tolerance
- Apply math skills necessary for industry requirements
- Operate equipment safely
- Operate CNC machines efficiently
- Demonstrate teamwork
- Develop part designs within a group

Career Opportunities:

Many well-paying jobs are available in medical, aerospace, computer and recreational industries. Completion of this certificate may lead to entry-level employment as a CNC Setup Technician.

Choose Total Advanced Technical Certificate Credits 17 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Computer Numerical Control (CNC) Technician Diploma (BP)

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.

Program Title:

Machine Tool Technology

Credits: Total Diploma Credits 64

Award Type:

Diploma

Award Outcomes:

- Apply precision measurement techniques
- Demonstrate sawing procedures
- Demonstrate drilling procedures
- Demonstrate grinding procedures
- Demonstrate milling procedures
- Demonstrate turning procedures
- Interpret blueprints/drawings
- Apply heat treating principles
- Machine parts with tolerance
- Apply math skills necessary for industry requirements
- Operate equipment safely
- Inspect machined parts for tolerance requirements
- Operate CNC machines efficiently
- Demonstrate teamwork
- Develop part designs within a group

Career Opportunities:

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.

Choose Total Diploma Credits 64 credits from the following areas:

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

Technical Studies Electives: 4 Credits

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

General Education Required: 8 Credits

MATH1000 Prealgebra 2
MATH1011 Beginning Algebra 3
METS1000 Computers in Manufacturing 3

General Education Electives: 0 Credits

Computer Numerical Control (CNC) Technician A.A.S. (BP)

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.

Program Title:

Machine Tool Technology

Credits: Total Associate in Applied Science Degree Credits 72

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Apply precision measurement techniques
- Demonstrate sawing procedures
- Demonstrate drilling procedures
- Demonstrate grinding procedures
- Demonstrate milling procedures
- Demonstrate turning procedures
- Interpret blueprints/drawings
- Apply heat treating principles
- Machine parts with tolerance
- Apply math skills necessary for industry requirements
- Operate equipment safely
- Inspect machined parts for tolerance requirements
- Operate CNC machines efficiently
- Demonstrate teamwork
- Develop part designs within a group

Career Opportunities:

The successful CNC Technician may start his/her career as a CNC operator and progress to CNC setup, programmer, or inspector. Well paying jobs are available in the medical, aerospace, computer and recreational industries.

Choose Total Associate in Applied Science Degree Credits 72 credits from the following areas:

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

Technical Studies Electives: 4 Credits

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
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

General Education Required: 12 Credits

ENGL2121 Writing and Research 4

or

ENGL2125 Technical Writing 3

MATH2100 Concepts in Mathematics 3

or

MATH2200 College Algebra 4

METS1000 Computers in Manufacturing 3

PHIL2100 Critical Thinking 3

Continued on the following page

General Education Electives: 6 Credits

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

Quality Assurance Occupational Certificate (BP)

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.

Program Title:

Machine Tool Technology

Credits: Total Occupational Certificate Credits 16

Award Type:

Occupational Certificate

Award Outcomes:

- Apply precision measuring techniques
- Interpret blueprints/drawings
- Apply math skills necessary for industry requirements
- Operate equipment safely
- Inspect machined parts for tolerance requirements
- Demonstrate teamwork
-

Career Opportunities:

Today's advanced manufacturing facilities require the application of well-developed analytical skills to support the delivery of quality products and services. This program addresses Quality Assurance (QA) and will focus on the planned and systematic activities that are part of a quality system of manufacturing requirements for a product or service. In addition to the foundational principles which govern advanced manufacturing practices, this certificate includes training that allows students to achieve proficiency in Quality Assurance techniques. Precision Measurement principles are introduced and reinforced through practical, real-world examples. Students will become familiar with equipment and tools such as Coordinate Measuring Machines, utilized in state-of-the-art facilities for Quality Assurance and Quality Improvement activities. If you believe in the idea of "quality in, quality out," and you want to play a vital role in helping an organization achieve success through quality, HTC's Quality Assurance Technician program is the way to realize your goal. • Quality Assurance Specialist, Inspector, Manufacturing Supervisor, Product Design Engineering, Production Engineering.

Choose Total Occupational Certificate Credits 16 credits from the following areas:

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

Technical Studies Electives: 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.

General Education Required: 0 Credits

General Education Electives: 0 Credits

Tool and Die/Moldmaking A.A.S. (BP)

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.

Program Title:

Machine Tool Technology

Credits: Total Associate in Applied Science Degree Credits 72

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Apply precision measurement techniques
- Demonstrate sawing procedures
- Demonstrate drilling procedures
- Demonstrate grinding procedures
- Demonstrate milling procedures
- Demonstrate turning procedures
- Interpret blueprints/drawings
- Apply heat treating principles
- Machine parts with tolerance
- Apply math skills necessary for industry requirements
- Operate equipment safely
- Inspect machined parts for tolerance requirements
- Operate CNC machines efficiently
- Demonstrate teamwork
- Develop part designs within a group

Career Opportunities:

Career opportunities are available for these highly-skilled professionals. Tool and Die/Moldmakers work in both small and large companies. The Tool and Die/Moldmakers skills qualify him/her for good pay and jobs that encourage creativity and innovation. Opportunities exist to move into management positions or start a business.

Continued on the following page

Choose Total Associate in Applied Science Degree Credits 72 credits from the following areas:

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

Technical Studies Electives: 4 Credits

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

General Education Required: 12 Credits

ENGL2121 Writing and Research 4

or

ENGL2125 Technical Writing 3

MATH2100 Concepts in Mathematics 3

or

MATH2200 College Algebra 4

METS1000 Computers in Manufacturing 3

PHIL2100 Critical Thinking 3

General Education Electives: 6 Credits

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

Tool and Die/Moldmaking Diploma (BP)

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.

Program Title:

Machine Tool Technology

Credits: Total Diploma Credits 64

Award Type:

Diploma

Award Outcomes:

- Apply precision measurement techniques
- Demonstrate sawing procedures
- Demonstrate drilling procedures
- Demonstrate grinding procedures
- Demonstrate milling procedures
- Demonstrate turning procedures
- Interpret blueprints/drawings
- Apply heat treating principles
- Machine parts with tolerance
- Apply math skills necessary for industry requirements
- Operate equipment safely
- Inspect machined parts for tolerance requirements
- Operate CNC machines efficiently
- Demonstrate teamwork
- Develop part designs within a group

Career Opportunities:

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.

Continued on the following page

Choose Total Diploma Credits 64 credits from the following areas:

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

Technical Studies Electives: 4 Credits

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

General Education Required: 8 Credits

MATH1000 Prealgebra 2
MATH1011 Beginning Algebra 3
METS1000 Computers in Manufacturing 3

General Education Electives: 0 Credits

MANUFACTURING ENGINEERING TECHNOLOGY

Manufacturing Engineering Technology A.A.S. (BP/EP)

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 and electronics 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 machinery systems, electronics, fluid power, machine technology, engineering CAD, plastic 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.

Program Title:

Manufacturing Engineering Technology

Credits: Total Associate in Applied Science Degree Credits 72

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Follow safety guidelines and practices as mandated by O.S.H.A.
- Apply electrical concepts as they relate to N.E.M.A. and I.E.C. electrical standards and equipment.
- Develop PLC programs using Boolean algebra and software methods.
- Produce engineering drawings and schematics using ANSI, ISO and industry symbols and standards.
- Problem solve by analyzing data using statistical process control (SPC) and quality assurance (QA) theory and methods.
- Utilize data acquisition systems and devices that are prevalent in the manufacturing industries.
- Generate drawings with a personal computer and computer aided design (CAD) software.
- Analyze fluid power applications in accordance with NFPA and industry standards and practices.
- Comprehend terms and methods that are used to communicate between manufacturing industry disciplines.
- Examine manufacturing engineering design concepts and processes.
- Use applied physics to investigate power transmission methods.
- Investigate production models using various data methods.
- Utilize software applications commonly found in the manufacturing industry.

Career Opportunities:

This is one of the fastest growing areas of employment in manufacturing occupations. There is an extensive shortage of individuals who possess a multi-discipline skill base. Global market competition has directed manufacturing companies to seek out the multi-facet candidate. As a result of these situations, demand for the graduate is extremely high. The employment positions offer excellent opportunities for personal and professional growth. Individuals who seek a career as a manufacturing engineering technician may find jobs in a variety of diverse areas such as: assembly, automation, manufacturing, quality assurance, research and development, design, and field service. Job duties may include supervision, engineering, and product development along with customer relations and travel. Manufacturing Engineering Technicians are in high demand in small to large companies and within various government agencies. The Manufacturing Engineering Technician is well positioned for advancement opportunities as well as long-term employment.

Continued on the following page

Choose Total Associate in Applied Science Degree Credits 72 credits from the following areas:

Technical Studies Required: 54 Credits

ARET1175 Industrial Electricity and Electronics I 3
or

ELEC1000 DC Circuits 4
or

FLPW1231 Industrial Electricity I 3
FLPW1101 Fluid Power Technology I 3
FLPW2020 Advanced Programmable Logic Controllers 3
or

ARET1190 Programmable Logic Controllers 3
MACH1056 Blueprint Reading I 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
or

ARET1125 Power Transmission and Mechanical Systems 4

Choose one of the following:

ENGC1100 AutoCAD 4
ENGC1160 Inventor 4
ENGC1250 SolidWorks I 4
ENGC2100 Pro/ENGINEER I 4

Choose one of the following specializations:

Choose Automation Robotics Engineering Technology Specialization

ARET1130 Maintenance Operations 2
ARET1155 Automation Controls 3
ARET1160 Packaging Machinery Systems 4
ARET1165 Vision Systems for QA/SPC 3
ARET1170 Troubleshooting Packaging Machinery 3
ARET1200 Introduction to Robotics 2
ARET2105 Fluid Power Motion Control 2
ARET2110 Advanced Programmable Logic Controllers 4
ARET2150 Engineering Design and Fabrication 2

Choose Electronics Specialization

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

Choose Engineering CAD Specialization

ENGC1011 Engineering Drawing I 3
ENGC1021 Engineering Drawing II 3
ENGC1041 Geometric Dimensioning & Tolerancing 3
ENGC1201 Industrial CAD Project 3

Choose at least 8 credits from the following:

ENGC1100 AutoCAD 4
ENGC1160 Inventor 4
ENGC1250 SolidWorks I 4
ENGC1255 SolidWorks II 4
ENGC2011 Special Fields of Drafting 3
ENGC2100 Pro/ENGINEER I 4
ENGC2110 Pro/ENGINEER II 4

Choose Fluid Power Specialization

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

Choose Machining Specialization

MACH1110 Turning Technology I 3
MACH1125 Milling Technology I 3
MACH2400 CNC Setup and Operation 3
MACH2406 CNC Programming 3
MACH2410 CAD/CAM 3
MACH2415 CNC Milling 3
MACH2435 CNC Turning Centers 3

Choose Plastics Manufacturing Specialization

PLST1008 Fundamentals of Plastics/Chemistry/Ingredients 4
PLST2007 Properties and Tests of Selected Plastics 4

Choose at least 12 credits from the following:

PLST2011 Extrusion Molding Processes I 3
PLST2017 Extrusion Molding Processes II 4
PLST2128 Injection Molding Process I 4
PLST2138 Injection Molding Process II 4
PLST2143 Injection Molding Process III 4
PLST2300 Plastics Engineering Technology Internship 4

Choose Welding and Metal Fabrication Specialization

WLDG1135 Gas Metal Arc Welding I 3
WLDG1181 Blueprint Reading for Welders 3
WLDG1220 Gas Tungsten Arc Welding I 3
WLDG1350 Flux Cored Arc Welding I 3

Technical Studies Electives: 0 Credits

Choose at least 8 additional WLDG credits 8

Continued on the following page

General Education Required: 12 Credits

ENGL2121 Writing and Research 4

or

ENGL2125 Technical Writing 3

MATH2100 Concepts in Mathematics 3

or

MATH2150 Introduction to Statistics 3

or

MATH2200 College Algebra 4

METS1000 Computers in Manufacturing 3

PHIL2100 Critical Thinking 3

General Education Electives: 6 Credits

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

Manufacturing Fundamentals (M-Powered) Occupational Certificate (BP/EP)

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.

Program Title:

Manufacturing Engineering Technology

Credits: Total Occupational Certificate Credits 16

Award Type:

Occupational Certificate

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.

Choose Total Occupational Certificate Credits 16 credits from the following areas:

Technical Studies Required: 11 Credits

METS1100 Manufacturing Fundamentals I 6

METS1105 Manufacturing Fundamentals II 3

METS1150 M-Powered Internship 2

Technical Studies Electives: 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.

General Education Required: 0 Credits

General Education Electives: 0 Credits

Medical Device Manufacturing Specialist Occupational Certificate (BP/EP)

The Medical Device Manufacturing Specialist certificate will prepare individuals to be productive employees in the medical device industry. Graduates will be prepared to be successful in these manufacturing positions by obtaining applied skills and knowledge of: FDA and ISO regulations, controlled environment practices, quality systems, metrology, employment communication skills and other general manufacturing techniques relevant to the medical device industry.

Program Title:

Manufacturing Engineering Technology

Credits: Total Occupational Certificate Credits 16

Award Type:

Occupational Certificate

Career Opportunities:

Graduates with the Medical Device Manufacturing Specialist certificate will have career opportunities as entry-level assemblers, quality control specialists or machine operators employed in both small and large manufacturing firms that produce durable goods. Specialists can progress to manufacturing engineering technician, production lead, R&D technician, or inspector. Well paying jobs are available in the medical device and biomanufacturing fields. Excellent opportunities exist for personal and professional growth to high-skill, high-wage positions in these industries.

Choose Total Occupational Certificate Credits 16 credits from the following areas:

Technical Studies Required: 14 Credits

METS1000 Computers in Manufacturing 3

METS1010 Metrology and Measurement Techniques 3

METS1015 Controlled Environment and Aseptic Techniques 1

METS1025 Medical Device Manufacturing Techniques 4

METS1035 Medical Device Quality Systems 3

Technical Studies Electives: 2 Credits

Recommended:

COMM1050 Communication in the Workplace 2

General Education Required: 0 Credits

General Education Electives: 0 Credits

PLASTICS ENGINEERING TECHNOLOGY

Extrusion Molding Occupational Certificate (BP)

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.

Program Title:

Plastics Engineering Technology

Credits: Total Occupational Certificate Credits 18

Award Type:

Occupational Certificate

Award Outcomes:

- Utilize safe working practices.
- Demonstrate good manufacturing practices.
- Perform quality control practices.
- Apply Principles of Plastics, Chemistry and Ingredients.
- Demonstrate procedures used for plastics Extrusion Molding processes.
- Demonstrate procedures used for plastics Extrusion Molding auxiliary equipment.
- Identify steps and procedures in the Extrusion Molding processes.

Career Opportunities:

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

Choose Total Occupational Certificate Credits 18 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Injection Molding Occupational Certificate (BP)

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.

Program Title:

Plastics Engineering Technology

Credits: Total Occupational Certificate Credits 23

Award Type:

Occupational Certificate

Award Outcomes:

- Utilize safe working practices.
- Demonstrate good manufacturing practices (GMP).
- Perform quality control practices.
- Apply principles of Plastics, Chemistry and Ingredients.
- Demonstrate procedures used for plastics Injection Molding processes.
- Demonstrate procedures used for plastics Injection Molding auxiliary equipment.
- Identify steps and procedures in the Injection Molding process.

Career Opportunities:

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

Choose Total Occupational Certificate Credits 23 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Plastics Engineering Technology Diploma (BP)

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.

Program Title:

Plastics Engineering Technology

Credits: Total Diploma Credits 36

Award Type:

Diploma

Award Outcomes:

- Utilize safe working practices.
- Identify steps and procedures in the Injection Molding processes.
- Identify steps and procedures in the Extrusion Molding processes.
- Perform quality control practices.
- Identify steps and procedures in Properties and Tests of Plastics.
- Operate various types of plastics manufacturing processes.
- Apply principles of Plastics, Chemistry and Ingredients.
- Demonstrate good manufacturing practices (GMP).
- Demonstrate procedures used for plastics manufacturing processes.
- Demonstrate procedures used for plastics manufacturing auxiliary equipment.
- Demonstrate Communication in the Workplace.
- Demonstrate use of Computers in Manufacturing.

Career Opportunities:

There is a wide range of employment as well as advancement opportunities for the individual who seeks a career in the plastics forming industry. Plastics Technicians may find jobs in a variety of diverse areas such as; research and development, manufacturing, design and service. Employment potential lies in the following: supervision, molding technician, material handling, quality control, lab technician, engineering aids and in related areas such as the sale of plastics processing equipment and materials.

Choose Total Diploma Credits 36 credits from the following areas:

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

Technical Studies Electives: 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:

PLST1900 Specialized Lab 1-4

PLST2300 Plastics Engineering Technology Internship 4

General Education Required: 5 Credits

COMM1050 Communication in the Workplace 2

METS1000 Computers in Manufacturing 3

General Education Electives: 0 Credits

Scientific Injection Molding Specialist Advanced Technical Certificate (BP)

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.

Program Title:

Plastics Engineering Technology

Credits: Total Advanced Technical Certificate Credits 12

Award Type:

Advanced Technical Certificate

Award Outcomes:

- Demonstrate good manufacturing practices (GMP).
- Apply knowledge of materials, part design, molds and machine considerations.
- Utilize skills in molding from the “Plastics Point of View”.
- Apply universal processing parameters.
- Perform Scientific/Decoupled II molding practices.
- Perform Scientific/Decoupled III molding practices.
- Operate computer data acquisition equipment.
- Apply math skills for Scientific/Decoupled molding practices.

Career Opportunities:

The new Scientific Injection Molding Certificate provides a scientific molding strategy that the custom, proprietary and medical molding industries are seeking. This certificate is specifically designed for individuals who start up new molds or individuals who must optimize existing molding cycles.

Choose Total Advanced Technical Certificate Credits 12 credits from the following areas:

Technical Studies Required: 12 Credits

PLST2240 Scientific Injection Molding I 4

PLST2245 Scientific Injection Molding II 4

PLST2250 Scientific Injection Molding III 4

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

WELDING AND METAL FABRICATION

GMAW Production Welder (MIG) Occupational Certificate (BP)

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.

Program Title:

Welding and Metal Fabrication

Credits: Total Occupational Certificate Credits 17

Award Type:

Occupational Certificate

Award Outcomes:

- Utilize safe working techniques and practices.
- Set-up welding and cutting equipment.
- Operate welding and cutting equipment.
- Produce welds with the Gas Metal Arc Welding Process in steel.
- Interpret blueprints and welding symbols.
- Perform basic lay-outs on various materials.
- Apply metallurgical principles to welding and fabrication processes.
- Determine the quality of welds.
- Identify steps and procedures in the Gas Metal Arc Welding process.

Career Opportunities:

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

Choose Total Occupational Certificate Credits 17 credits from the following areas:

Technical Studies Required: 17 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

WLDG1181 Blueprint Reading for Welders 3

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

GTAW Production Welder (TIG) Occupational Certificate (BP)

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.

Program Title:

Welding and Metal Fabrication

Credits: Total Occupational Certificate Credits 17

Award Type:

Occupational Certificate

Award Outcomes:

- Utilize safe working techniques and practices.
- Set-up welding and cutting equipment.
- Operate welding and cutting equipment.
- Produce welds with the Gas Tungsten Arc Welding process in steel, stainless steel, and aluminum.
- Interpret blueprints and welding symbols.
- Perform basic lay-outs on various materials.
- Apply metallurgical principles to welding and fabrication processes.
- Determine the quality of welds.
- Identify steps and procedures in Gas Tungsten Arc Welding process.

Career Opportunities:

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

Choose Total Occupational Certificate Credits 17 credits from the following areas:

Technical Studies Required: 17 Credits

WLDG1010 Practical Application for Estimating and Layout 2

WLDG1181 Blueprint Reading for Welders 3

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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Structural Iron Fabrication and Repair Occupational Certificate (BP)

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.

Program Title:

Welding and Metal Fabrication

Credits: Total Occupational Certificate Credits 23

Award Type:

Occupational Certificate

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.
- Preform basic lay-outs on material.
- Apply metallurgical principles to welding and fabrication processes.
- Determine the quality of welds.
- Identify steps and procedures in the Flux Cored Arc Welding process.
- Identify steps and procedures in the Shielded Metal Arc Welding process.
-

Career Opportunities:

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

Choose Total Occupational Certificate Credits 23 credits from the following areas:

Technical Studies Required: 23 Credits

WLDG1010 Practical Application for Estimating and Layout 2

WLDG1181 Blueprint Reading for Welders 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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Welding Diploma (BP)

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.

Program Title:

Welding and Metal Fabrication

Credits: Total Diploma Credits 54

Award Type:

Diploma

Award Outcomes:

- Utilize safe working techniques and practices.
- Set-up welding and cutting equipment.
- Operate welding and cutting equipment.
- Produce welds with the Gas Metal Arc Welding Process in steel.
- Produce welds with the Flux Cored Arc Welding process in steel.
- Produce welds with the Shielded Metal Arc Welding process in steel.
- Produce welds with the Gas Tungsten Arc Welding process in steel, stainless steel, and aluminum.
- Interpret blueprints and welding symbols.
- Perform basic lay-outs on various materials.
- Apply metallurgical principles to welding and fabrication processes.
- Determine the quality of welds.
- Identify steps and procedures in the Flux Cored Arc Welding process.
- Identify steps and procedures in the Shielded Metal Arc Welding process.
- Identify steps and procedures in the Gas Metal Arc Welding process.
- Identify steps and procedures in Gas Tungsten Arc Welding process.
-

Career Opportunities:

There are many employment opportunities available in the following areas: construction, transportation, manufacturing industry, sheet metal industry, custom job shops, medical/pharmaceutical industry, pipe/tubing, food industry and the aerospace industry.

Choose Total Diploma Credits 54 credits from the following areas:

Technical Studies Required: 47 Credits

WLDG1010 Practical Application for Estimating & 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
WLDG1181 Blueprint Reading for Welders 3
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

Technical Studies Electives: 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
WLDG1900 Specialized Lab 1-4

General Education Required: 0 Credits

General Education Electives: 4 Credits

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

Media Communications Careers

AUDIO PRODUCTION

Audio Production Specialist A.A.S. (EP)

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.

Program Title:

Audio Production

Credits: Total Associate in Applied Science Degree Credits 65

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Exhibit professional and ethical behavior.
- Utilize audio production software and hardware.
- Understand MIDI, virtual instruments and synchronization.
- Record music sound effects and ADR (automatic dialog replacement) for video (film).
- Produce music sound effects and ADR (automatic dialog replacement) for video (film).
- Mix music sound effects and ADR (automatic dialog replacement) for video (film).
- Understand roles and functions as a part of a production team.
- Understand acoustics and studio design.
- Record music projects for clients.
- Produce music projects for clients.
- Mix music projects for clients.
- Master music projects for clients.
- Understand location recording and sound design skills.

Career Opportunities:

Typical entry-level positions are often competitive and may involve long hours. Candidates who strive to advance beyond entry-level status must show a great degree of creativity, motivation and persistence. Well developed interpersonal skills are a must for success. Entrepreneurism is alive and well in the audio field. Many engineers have secured permanent positions as a result of competent freelance work. Others have built their freelance work into successful businesses. Jobs exist in music and voice recording, location audio for video, corporate media production and live sound reinforcement. Many musicians/engineers specialize in advertising work, composing and recording exclusively for commercials and industrial clients. Relocation may be necessary to pursue your career as an audio recording specialist!

Continued on the following page

Choose Total Associate in Applied Science Degree Credits 65 credits from the following areas:

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
- ARSP1350 Music Theory 2
- ARSP1500 Multitrack Recording Theory II 3
- ARSP1510 Multitrack Recording Lab II 3
- ARSP1541 Acoustics and Recording Studio Design 2
- ARSP2100 Multitrack Recording Theory III (Digidesign 210P) 1
- ARSP2110 Multitrack Recording Lab III 2
- ARSP2120 Digital Audio Theory (Digidesign 101) 3
- ARSP2150 Music Business 2
- ARSP2325 Digital Audio Theory II (Digidesign 201/210M) 3
- ARSP2340 Studio Maintenance and Calibration 2
- ARSP2580 Audio Recording Internship I 2
- ARSP2585 Audio Recording Internship II 2

Technical Studies Electives: 0 Credits

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 Electives: 0 Credits

Audio Production Specialist Diploma (EP)

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.

Program Title:

Audio Production

Credits: Total Diploma Credits 60

Award Type:

Diploma

Award Outcomes:

- Exhibit professional and ethical behavior.
- Utilize audio production software and hardware.
- Understand MIDI, virtual instruments and synchronization.
- Record music sound effects and ADR (automatic dialog replacement) for video (film).
- Produce music sound effects and ADR (automatic dialog replacement) for video (film).
- Mix music sound effects and ADR (automatic dialog replacement) for video (film).
- Understand roles and functions as a part of a production team.
- Understand acoustics and studio design.
- Record music projects for clients.
- Produce music projects for clients.
- Mix music projects for clients.
- Master music projects for clients.
- Understand location recording and sound design skills.
-

Career Opportunities:

Typical entry-level positions are often competitive and may involve long hours. Candidates who strive to advance beyond entry-level status must show a great degree of creativity, motivation and persistence. Well developed interpersonal skills are a must for success. Entrepreneurism is alive and well in the audio field. Many engineers have secured permanent positions as a result of competent freelance work. Others have built their freelance work into successful businesses. Jobs exist in music and voice recording, location audio for video, corporate media production and live sound reinforcement. Many musicians/engineers specialize in advertising work, composing and recording exclusively for commercials and industrial clients. Relocation may be necessary to pursue your career as an audio recording specialist!

Continued on the following page

Choose Total Diploma Credits 60 credits from the following areas:

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

ARSP1350 Music Theory 2

ARSP1500 Multitrack Recording Theory II 3

ARSP1510 Multitrack Recording Lab II 3

ARSP1541 Acoustics and Recording Studio Design 2

ARSP2100 Multitrack Recording Theory III (Digidesign 210P) 1

ARSP2110 Multitrack Recording Lab III 2

ARSP2120 Digital Audio Theory (Digidesign 101) 3

ARSP2150 Music Business 2

ARSP2325 Digital Audio Theory II (Digidesign 201/210M) 3

ARSP2340 Studio Maintenance and Calibration 2

ARSP2580 Audio Recording Internship I 2

ARSP2585 Audio Recording Internship II 2

Technical Studies Electives: 2 Credits

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

General Education Required: 2 Credits

COMM1040 Job Seeking Skills 2

General Education Electives: 4 Credits

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

GRAPHIC DESIGN

Basic Web Technologies Occupational Certificate (BP)

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.

Program Title:

Graphic Design

Credits: Total Occupational Certificate Credits 30

Award Type:

Occupational Certificate

Award Outcomes:

- Utilize the elements and principles of design
- Integrate the use of web technologies and design
- Exhibit proficient use of technology workflow
- Produce web sites that meet the industry standards for usability
- Demonstrate use of programming language(s)
- Demonstrate the roles and functions of working on a team

Career Opportunities:

Web Design and Programming is an ever-changing and evolving professional career with many occupational categories and opportunities. One might find employment in a production environment, web development, web programming, customer service, customer support, sales, creative production, consulting or training.

Choose Total Occupational Certificate Credits 30 credits from the following areas:

Technical Studies Required: 30 Credits

MGDP1205 Fundamentals of Graphic Design 3

MGDP1210 Graphic Design Essentials 3

MGDP1250 Web Design & Development I 3

MGDP1320 Dreamweaver 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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Graphic Design: Creative A.A.S. (BP)

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 Introduction to Personal Computers, CPLT1200 Introduction to Macintosh and MATH0900 Fundamentals of Mathematics.

Program Title:

Graphic Design

Credits: Total Associate in Applied Science Degree Credits 72

Award Type:

Associate in Applied Science Degree

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

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.

Choose Total Associate in Applied Science Degree Credits 72 credits from the following areas:

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

Any ARSP, CCIS, MGDG, MMVP -or- PRPO course that is not required for this award may be used as an elective.
Recommended:

MGDP2215 Graphic Design Internship 1-12

General Education Required: 12 Credits

Choose one of the following:

COMM2050 Interpersonal Communication 3

COMM2060 Small Group Communication 3

COMM2070 Computer Mediated Communication in the Digital Age 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

Continued on the following page

Technical Studies Electives: 7 Credits

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 Electives: 6 Credits

Choose 3 credits from MnTC Goal Areas 3, 4, 5 -or- 6

Choose 3 credits from MnTC Goal Areas 7, 8, 9 -or- 10

Graphic Design: Creative Diploma (BP)

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 Introduction to Personal Computers, CPLT1200 Introduction to Macintosh and MATH0900 Fundamentals of Mathematics.

Program Title:

Graphic Design

Credits: Total Diploma Credits 64

Award Type:

Diploma

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

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.

Choose Total Diploma Credits 64 credits from the following areas:

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

Technical Studies Electives: 8 Credits

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

Recommended:

MGDP2215 Graphic Design Internship 1-12

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 Computer Mediated Communication in the Digital Age 3

COMM2130 Public Speaking 3

Choose one of the following:

PHIL2100 Critical Thinking 3

PHIL2200 Ethics 3

General Education Electives: 0 Credits

Graphic Design: Production Diploma (BP)

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 Introduction to Personal Computers, CPLT1200 Introduction to Macintosh and MATH0900 Fundamentals of Mathematics.

Program Title:

Graphic Design

Credits: Total Diploma Credits 54

Award Type:

Diploma

Award Outcomes:

- Utilize the elements and principles of design
- Integrate the use of industry standard technology and design
- Exhibit use of technology workflow
- Perform troubleshooting strategies
- Produce clean proofs and prints for press-ready documents

Career Opportunities:

Graphic design is an ever-changing and evolving professional career with many occupational categories and opportunities. One might find employment in a production environment, customer service, customer support, sales, creative production, consulting or training. Occupational titles include but are not limited to creative designer, graphic designer, print production artist, web designer, web producer, web developer, production artist, advertising artist, art typographer. Common working environments might include design or production, in a corporation, agency, advertising or marketing setting, printing company, or graphics service bureau.

Choose Total Diploma Credits 54 credits from the following areas:

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

Technical Studies Electives: 1 Credits

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

Recommended:

MGDP2215 Graphic Design Internship 1-12

General Education Required: 6 Credits

Choose one of the following:

COMM2050 Interpersonal Communication 3

COMM2060 Small Group Communication 3

COMM2070 Computer Mediated Communication in the Digital Age 3

COMM2130 Public Speaking 3

Choose one of the following:

PHIL2100 Critical Thinking 3

PHIL2200 Ethics 3

General Education Electives: 0 Credits

Graphic Design: Web Design A.A.S. (BP)

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 Introduction to Personal Computers, CPLT1200 Introduction to Macintosh and MATH0900 Fundamentals of Mathematics.

Program Title:

Graphic Design

Credits: Total Associate in Applied Science Degree Credits 72

Award Type:

Associate in Applied Science Degree

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

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.

Choose Total Associate in Applied Science Degree Credits 72 credits from the following areas:

Technical Studies Required: 50 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
MGDP1320 Dreamweaver 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

Technical Studies Electives: 4 Credits

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

[MGDP2215](#) Graphic Design Internship 1-12

General Education Required: 12 Credits

Choose one of the following:

COMM2050 Interpersonal Communication 3
COMM2060 Small Group Communication 3
COMM2070 Computer Mediated Communication in the Digital Age 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 Electives: 6 Credits

Choose 3 credits from MnTC Goal Areas 3, 4, 5 -or- 6
Choose 3 credits from MnTC Goal Areas 7, 8, 9 -or- 10

Graphic Design: Web Design Diploma (BP)

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 Introduction to Personal Computers, CPLT1200 Introduction to Macintosh and MATH0900 Fundamentals of Mathematics.

Program Title:

Graphic Design

Credits: Total Diploma Credits 64

Award Type:

Diploma

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

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.

Choose Total Diploma Credits 64 credits from the following areas:

Technical Studies Required: 50 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
MGDP1320 Dreamweaver 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

Technical Studies Electives: 5 Credits

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

MGDP2215 Graphic Design Internship 1-12

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 Computer Mediated Communication in the Digital Age 3

COMM2130 Public Speaking 3

Choose one of the following:

PHIL2100 Critical Thinking 3

PHIL2200 Ethics 3

General Education Electives: 0 Credits

Production Technician for Digital Publishing Occupational Certificate (BP)

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 Introduction to Personal Computers, CPLT1200 Introduction to Macintosh and MATH0900 Fundamentals of Mathematics.

Program Title:

Graphic Design

Credits: Total Occupational Certificate Credits 29

Award Type:

Occupational Certificate

Award Outcomes:

- Utilize the elements and principles of design
- Integrate the use of industry standard technology and design
- Exhibit use of technology workflow
- Perform troubleshooting strategies
- Produce clean proofs and prints for press-ready documents

Career Opportunities:

Graphic design is an ever-changing and evolving professional career with many occupational categories and opportunities. One might find employment in a production environment, customer service, customer support, sales, creative production, consulting or training. Occupational titles include but are not limited to creative designer, graphic designer, print production artist, web designer, web producer, web developer, production artist, advertising artist, art typographer. Common working environments might include design or production, in a corporation, agency, advertising or marketing setting, printing company, or graphics service bureau.

Choose Total Occupational Certificate Credits 29 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

INTERACTIVE DESIGN AND VIDEO PRODUCTION

Animation and Motion Graphic Artist A.A.S. (BP)

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.

Program Title:

Interactive Design Video Production

Credits: Total Associate in Applied Science Degree Credits 60

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Create assets for film, video, and games
- Demonstrate the ability to generate mood, emotion, character, and story
- Demonstrate mastery of animation and motion graphics software and technology
- Create animations using both 2D and 3D techniques
- Understand workflow and production processes in animation and motion graphics
- Communicate ideas and production direction in both written and spoken forms
- Produce a professional portfolio up to industry standards

Career Opportunities:

Animators and motion graphic artists are needed to work on video games, movie and television special effects, and interactive media. They are also needed to work on 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.

Choose Total Associate in Applied Science Degree Credits 60 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 15 Credits

COMM2130 Public Speaking 3

Choose 6 credits from MnTC Goal Area 2 6

Choose 3 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 Electives: 0 Credits

Animation and Motion Graphic Artist Diploma (BP)

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.

Program Title:

Interactive Design Video Production

Credits: Total Diploma Credits 54

Award Type:

Diploma

Award Outcomes:

- Create assets for film, video, and games
- Demonstrate the ability to generate mood, emotion, character, and story
- Demonstrate mastery of animation and motion graphics software and technology
- Create animations using both 2D and 3D techniques
- Understand workflow and production processes in animation and motion graphics
- Communicate ideas and production direction in both written and spoken forms
- Produce a professional portfolio up to industry standards

Career Opportunities:

Animators and motion graphic artists are needed to work on video games, movie and television special effects, and interactive media. They are also needed to work on 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.

Choose Total Diploma Credits 54 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 9 Credits

COMM1040 Job Seeking Skills 2

COMM1050 Communication in the Workplace 2

COMM2130 Public Speaking 3

ENGL1026 Writing for Careers 3

or

MATH1000 Prealgebra 2

General Education Electives: 0 Credits

Interactive Designer A.A.S. (BP)

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.

Program Title:

Interactive Design Video Production

Credits: Total Associate in Applied Science Degree Credits 64

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Produce media solutions for clients.
- Analyze end-user needs.
- Demonstrate proficiency with industry-standard media production hardware and software.
- Demonstrate production workflows.
- Develop creative solutions with visual and audio techniques.
- Understand roles and function as a part of a production team.
- Develop positive and accurate written communications.
- Apply legal and ethical principles to personal, social, and professional behaviors.

Career Opportunities:

Interactive Designers with good artistic design skills are in high demand by media producers, film and animation companies, production houses, government agencies, printing houses, ad agencies, educational institutions and businesses who are engaged in local and global communications with outside customers or company employees.

Choose Total Associate in Applied Science Degree Credits 64 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 15 Credits

COMM2130 Public Speaking 3

Choose 6 Credits from MnTC Goal Area 2 6

Choose 3 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 Electives: 0 Credits

Interactive Designer Diploma (BP)

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.

Program Title:

Interactive Design Video Production

Credits: Total Diploma Credits 58

Award Type:

Diploma

Award Outcomes:

- Produce media solutions for clients.
- Analyze end-user needs.
- Demonstrate proficiency with industry-standard media production hardware and software.
- Demonstrate production workflows.
- Develop creative solutions with visual and audio techniques.
- Understand roles and function as a part of a production team.
- Develop positive and accurate written communications.
- Apply legal and ethical principles to personal, social, and professional behaviors.

Career Opportunities:

Interactive Designers with good artistic design skills are in high demand by media producers, film and animation companies, production houses, government agencies, printing houses, ad agencies, educational institutions and businesses who are engaged in local and global communications with outside customers or company employees.

Choose Total Diploma Credits 58 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 9 Credits

COMM1040 Job Seeking Skills 2

COMM1050 Communication in the Workplace 2

COMM2130 Public Speaking 3

ENGL1026 Writing for Careers 3

or

MATH1000 Prealgebra 2

General Education Electives: 0 Credits

Media Producer Occupational Certificate (BP)

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.

Program Title:

Interactive Design Video Production

Credits: Total Occupational Certificate Credits 25

Award Type:

Occupational Certificate

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.

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.

Choose Total Occupational Certificate Credits 25 credits from the following areas:

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

Technical Studies Electives: 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

General Education Required: 0 Credits

General Education Electives: 0 Credits

Motion Graphics Advanced Technical Certificate (BP)

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.

Program Title:

Interactive Design Video Production

Credits: Total Advanced Technical Certificate Credits 18

Award Type:

Advanced Technical Certificate

Award Outcomes:

- Create assets for film, video, and games
- Demonstrate the ability to generate mood, emotion, character, and story
- Demonstrate mastery of animation and motion graphics software and technology
- Create animations using both 2D and 3D techniques
- Understand workflow and production processes in animation and motion graphics

Career Opportunities:

Animators and motion graphic artists are needed to work on video games, movie and television special effects, and interactive media. They are also needed to work on 3D animated movies. In addition, growth will occur due to an increasing need for computer graphics in the growing number of mobile technologies. Occupational titles include animator, motion graphics artist, special effects designer, effects artists, digital artist, media designer, media artist, 3D designer, 3D artist, and 3D animator, and concept artist.

Choose Total Advanced Technical Certificate Credits 18 credits from the following areas:

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

Technical Studies Electives: 3 Credits

Any ARSP, MGDP, MMVP -or- PRPO course not required for this award can be used as an elective.

General Education Required: 0 Credits

General Education Electives: 0 Credits

Video Production Specialist Diploma (BP)

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.

Program Title:

Interactive Design Video Production

Credits: Total Diploma Credits 64

Award Type:

Diploma

Award Outcomes:

- Produce media solutions for clients.
- Analyze end-user needs.
- Demonstrate proficiency with industry-standard media production hardware and software.
- Demonstrate production workflows.
- Develop creative solutions with visual and audio techniques.
- Understand roles and function as a part of a production team.
- Develop positive and accurate written communications.
- Apply legal and ethical principles to personal, social, and professional behaviors.

Career Opportunities:

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.

Choose Total Diploma Credits 64 credits from the following areas:

Technical Studies Required: 49 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

MMVP2000 Advanced Lighting 2

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

Technical Studies Electives: 6 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

General Education Required: 9 Credits

COMM1040 Job Seeking Skills 2

COMM1050 Communication in the Workplace 2

COMM2130 Public Speaking 3

ENGL1026 Writing for Careers 3

or

MATH1000 Prealgebra 2

General Education Electives: 0 Credits

Video Production Specialist A.A.S. (BP)

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.

Program Title:

Interactive Design Video Production

Credits: Total Associate in Applied Science Degree Credits 72

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Produce media solutions for clients.
- Analyze end-user needs.
- Demonstrate proficiency with industry-standard media production hardware and software.
- Demonstrate production workflows.
- Develop creative solutions with visual and audio techniques.
- Understand roles and function as a part of a production team.
- Develop positive and accurate written communications.
- Apply legal and ethical principles to personal, social, and professional behaviors.
-

Career Opportunities:

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.

Choose Total Associate in Applied Science Degree Credits 72 credits from the following areas:

Technical Studies Required: 49 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
MMVP2000 Advanced Lighting 2
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

Choose 8 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

General Education Required: 15 Credits

COMM2130 Public Speaking 3

Choose 6 Credits from MnTC Goal Area 2 6

Choose 3 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 Electives: 0 Credits

Technical Studies Electives: 8 Credits

PROFESSIONAL PHOTOGRAPHY

Commercial Photography Diploma (EP)

The commercial photographer needs a comprehensive photographic education covering every aspect of photography. The commercial photographer must be able to `think on their feet` to solve technical photographic problems quickly and cost effectively. The commercial photographer is required to work directly with clients, art directors, studio managers, photographer assistants and acts as the pivotal point in creating exciting photography that `sells`. Commercial photography is a very broad field and may include specialization in such areas as architectural, food, fashion, model portfolios, catalogs, public relations or advertising photography to name a few. Personal qualities considered essential for this occupation are the ability to work well with others, highly self-motivated with good problem solving abilities and excellent oral and written communication skills.

Program Title:

Professional Photography

Credits: Total Diploma Credits 56

Award Type:

Diploma

Award Outcomes:

- Exhibit professional and ethical behavior.
- Produce a photographic portfolio.
- Communicate effectively with clients.
- Think critically in solving problems.
- Demonstrate technical proficiency in the use of professional photographic equipment.
- Demonstrate proficiency in the use of photographic software programs.
- Utilize photographic light modifying devices.
- Demonstrate photographic workflow proficiency.
- Create highest quality photographic images.
- Develop a personal photographic style.
- Understand role and function as part of a creative team.

Career Opportunities:

The courses of study in the Commercial Photography diploma are designed to prepare the graduate for an entry-level position as a photographer's assistant in a commercial photography studio. With increased experience an individual may become a staff photographer or build their own business as an independent commercial photography studio.

Choose Total Diploma Credits 56 credits from the following areas:

Technical Studies Required: 42 Credits

PRPO1011 Introduction to Professional Photography 2

PRPO1051 Ambient Lighting Controls 3

PRPO1071 Photographic Design 2

PRPO1170 Photographer's Assistant 3

PRPO1250 Commercial Photography I 4

PRPO1290 Location Flash Photography 3

PRPO1400 Digital Darkroom I 3

PRPO1800 Digital Darkroom II 3

PRPO2050 Commercial Photography II 4

PRPO2060 Commercial Photography III 4

PRPO2100 Digital Darkroom III 3

PRPO2410 Business of Photography 2

PRPO2580 Professional Photography Internship I 2

PRPO2821 Professional Photography Portfolio 4

Technical Studies Electives: 6 Credits

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

General Education Required: 2 Credits

MATH1000 Prealgebra 2

General Education Electives: 6 Credits

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

Portrait and Wedding Photography Diploma (EP)

The portrait and wedding photographer needs a sound photographic education with special emphasis on people skills, good personal sales ability and a strong sense of `dynamic timing` coupled with studio and location lighting skills. Portrait/wedding photographers work one-on-one with clients and often on weddings with photographer assistants. Portraiture can be general in nature or may offer a broad scope of specialization within the field. Some of the specialization could include such areas as glamour, classical, casual, romantic, fantasy, fad, illustrative or humorous styles of portraiture.

Program Title:

Professional Photography

Credits: Total Diploma Credits 58

Award Type:

Diploma

Award Outcomes:

- Exhibit professional and ethical behavior.
- Produce a photographic portfolio.
- Communicate effectively with clients.
- Think critically in solving problems.
- Demonstrate technical proficiency in the use of professional photographic equipment.
- Demonstrate proficiency in the use of photographic software programs.
- Utilize photographic light modifying devices.
- Demonstrate photographic workflow proficiency.
- Create highest quality photographic images.
- Develop a personal photographic style.
- Understand role and function as part of a creative team.

Career Opportunities:

The courses of study in the Portrait and Wedding Photography diploma are designed to prepare the graduate for many exciting career options, including working as an assistant in an established portrait and wedding photography studio, working in a large scale corporate portrait studio system or, with additional experience, setting up their own studio.

Choose Total Diploma Credits 58 credits from the following areas:

Technical Studies Required: 44 Credits

PRPO1011 Introduction to Professional Photography 2

PRPO1051 Ambient Lighting Controls 3

PRPO1071 Photographic Design 2

PRPO1170 Photographer's Assistant 3

PRPO1241 Portraiture I 4

PRPO1290 Location Flash Photography 3

PRPO1400 Digital Darkroom I 3

PRPO1800 Digital Darkroom II 3

PRPO2100 Digital Darkroom III 3

PRPO2401 Portraiture II 4

PRPO2410 Business of Photography 2

PRPO2460 Wedding Photography 3

PRPO2530 Portraiture III 3

PRPO2580 Professional Photography Internship I 2

PRPO2821 Professional Photography Portfolio 4

Technical Studies Electives: 6 Credits

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

General Education Required: 2 Credits

MATH1000 Prealgebra 2

General Education Electives: 6 Credits

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

Professional Commercial Photography A.A.S. (EP)

The Professional Commercial Photography Associate in Applied Science Degree is an in-depth Photography Program. The curriculum for the Professional Photography Technology degree is designed to develop the aspiring photographer's shooting skills, with emphasis on building technical abilities as well as the liberal education studies. Persistence and motivation are keys to securing employment and advancement.

Program Title:

Professional Photography

Credits: Total Associate in Applied Science Degree Credits 62

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Exhibit professional and ethical behavior.
- Produce a photographic portfolio.
- Communicate effectively with clients.
- Think critically in solving problems.
- Demonstrate technical proficiency in the use of professional photographic equipment.
- Demonstrate proficiency in the use of photographic software programs.
- Utilize photographic light modifying devices.
- Demonstrate photographic workflow proficiency.
- Create highest quality photographic images.
- Develop a personal photographic style.
- Understand role and function as part of a creative team.

Career Opportunities:

The courses of study in the Professional Commercial Photography degree are designed to train the graduate for an entry-level position as a well-rounded professional photographer with the ability to think through and solve the many technical and esthetic problems associated with this very conceptual and inventive career field. As a photographer's assistant or entry level photographer, job opportunities exist in large corporate and industrial settings, magazines, as well as privately owned studios.

Choose Total Associate in Applied Science Degree Credits 62 credits from the following areas:

Technical Studies Required: 44 Credits

PRPO1011 Introduction to Professional Photography 2

PRPO1051 Ambient Lighting Controls 3

PRPO1071 Photographic Design 2

PRPO1170 Photographer's Assistant 3

PRPO1250 Commercial Photography I 4

PRPO1290 Location Flash Photography 3

PRPO1400 Digital Darkroom I 3

PRPO1800 Digital Darkroom II 3

PRPO2050 Commercial Photography II 4

PRPO2060 Commercial Photography III 4

PRPO2100 Digital Darkroom III 3

PRPO2410 Business of Photography 2

PRPO2580 Professional Photography Internship I 2

PRPO2821 Professional Photography Portfolio 4

MATH1000 Prealgebra 2

Technical Studies Electives: 3 Credits

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

General Education Required: 9 Credits

COMM2050 Interpersonal Communication 3

ENGL2125 Technical Writing 3

PHIL2100 Critical Thinking 3

General Education Electives: 6 Credits

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

Professional Portrait and Wedding Photography A.A.S. (EP)

The Professional Portrait & Wedding Photography Associate in Applied Science Degree is an in-depth Photography Program. The curriculum for the Professional Portrait & Wedding Photography degree is designed to develop the aspiring photographer's shooting skills, with emphasis on building technical abilities as well as the liberal education studies. Persistence and motivation are keys to securing employment and advancement.

Program Title:

Professional Photography

Credits: Total Associate in Applied Science Degree Credits 64

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Exhibit professional and ethical behavior.
- Produce a photographic portfolio.
- Communicate effectively with clients.
- Think critically in solving problems.
- Demonstrate technical proficiency in the use of professional photographic equipment.
- Demonstrate proficiency in the use of photographic software programs.
- Utilize photographic light modifying devices.
- Demonstrate photographic workflow proficiency.
- Create highest quality photographic images.
- Develop a personal photographic style.
- Understand role and function as part of a creative team.

Career Opportunities:

The courses of study in the Professional Portrait & Wedding Photography degree are designed to train the graduate for an entry-level position as a well-rounded professional photographer with the ability to think through and solve the many technical and esthetic problems associated with this very conceptual and inventive career field. As a photographer's assistant or photographer, job opportunities exist in privately owned studios or as a self-employed small business owner.

Choose Total Associate in Applied Science Degree Credits 64 credits from the following areas:

Technical Studies Required: 46 Credits

PRPO1011 Introduction to Professional Photography 2

PRPO1051 Ambient Lighting Controls 3

PRPO1071 Photographic Design 2

PRPO1170 Photographer's Assistant 3

PRPO1241 Portraiture I 4

PRPO1290 Location Flash Photography 3

PRPO1400 Digital Darkroom I 3

PRPO1800 Digital Darkroom II 3

PRPO2100 Digital Darkroom III 3

PRPO2401 Portraiture II 4

PRPO2410 Business of Photography 2

PRPO2460 Wedding Photography 3

PRPO2530 Portraiture III 3

PRPO2580 Professional Photography Internship I 2

PRPO2821 Professional Photography Portfolio 4

MATH1000 Prealgebra 2

Technical Studies Electives: 3 Credits

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

General Education Required: 9 Credits

COMM2050 Interpersonal Communication 3

ENGL2125 Technical Writing 3

PHIL2100 Critical Thinking 3

General Education Electives: 6 Credits

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

Service Industry

CULINARY ARTS

Culinary Arts Diploma (BP/EP)

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.

Program Title:

Culinary Arts

Credits: Total Diploma Credits 38

Award Type:

Diploma

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
- Apply analysis and problem solving to food production
- Perform the duties of operational personnel in food service industry

Career Opportunities:

Employment may be found in hotels, restaurants, clubs, health care facilities, schools, resorts and many other food related operations. Depending on qualifications and experience numerous positions are available to graduates such as restaurant cooks, banquet cooks, bakers, assistant pastry chefs, pantry personnel, kitchen managers, food salespersons, personal chefs, purchasing clerks, caterers, and entry-level chef/managers 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.

Choose Total Diploma Credits 38 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 6 Credits

Choose 6 Credits from the following:
COMM1040 Job Seeking Skills 2
COMM1050 Communication in the Workplace 2
COMM2050 Interpersonal Communication 3
ECON2200 Principles of Microeconomics 3
MATH1000 Prealgebra 2
PHIL2100 Critical Thinking 3
PHIL2200 Ethics 3
SOC12100 Introduction to Sociology 3

General Education Electives: 0 Credits

Culinary Arts A.A.S. (BP/EP)

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.

Program Title:

Culinary Arts

Credits: Total Associate in Applied Science Degree Credits 64

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Prepare high quality food in a cost effective manner
- Demonstrate ability to meet Certified Culinarian requirements of the American Culinary Federation
- Perform the duties of operational personnel in food service industry
- Demonstrate the ability to plan a variety of menus
- Execute a variety of menus
- Apply mathematical skills essential to the food service industry
- Create a professional career plan
- Apply analysis and problem solving to food production
- Exhibit knowledge of the food services industry

Career Opportunities:

Employment may be found in hotels, restaurants, clubs, health care facilities, schools, resorts and many other food related operations. Depending on qualifications and experience numerous positions are available to graduates such as restaurant cooks, banquet cooks, bakers, assistant pastry chefs, pantry personnel, kitchen managers, food salespersons, personal chefs, purchasing clerks, caterers, and entry-level chef/managers 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.

Choose Total Associate in Applied Science Degree Credits 64 credits from the following areas:

Technical Studies Required: 46 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
CULA2075 Catering 2

Technical Studies Electives: 0 Credits

General Education Required: 9 Credits

COMM2050 Interpersonal Communication 3
PHIL2100 Critical Thinking 3
or

PHIL2200 Ethics 3
SOC12100 Introduction to Sociology 3
or

ECON2200 Principles of Microeconomics 3

General Education Electives: 9 Credits

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

Culinary Assistant Occupational Certificate (BP/EP)

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.

Program Title:

Culinary Arts

Credits: Total Occupational Certificate Credits 16

Award Type:

Occupational Certificate

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

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.

Choose Total Occupational Certificate Credits 16 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Culinary Gourmet Technician Advanced Technical Certificate (BP/EP)

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.

Program Title:

Culinary Arts

Credits: Total Advanced Technical Certificate Credits 16

Award Type:

Advanced Technical Certificate

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

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.

Choose Total Advanced Technical Certificate Credits 16 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Food and Beverage Specialties

Advanced Technical Certificate (BP/EP)

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

Program Title:

Culinary Arts

Credits: Total Advanced Technical Certificate Credits 16

Award Type:

Advanced Technical Certificate

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.

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.

Choose Total Advanced Technical Certificate Credits 16 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Transportation Careers

AUTO BODY COLLISION TECHNOLOGY

Auto Body Estimator Occupational Certificate (BP/EP)

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.

Program Title:

Auto Body Collision Technology

Credits: Total Occupational Certificate Credits 9

Award Type:

Occupational Certificate

Award Outcomes:

- Create damage report utilizing the procedure pages.

Career Opportunities:

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

Choose Total Occupational Certificate Credits 9 credits from the following areas:

Technical Studies Required: 9 Credits

ABCT1400 Collision Damage Analysis 3

ABCT1405 Estimating 2

ABCT1410 Customer Management 2

ABCT1415 Estimating Internship 2

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Auto Body Technician A.A.S. (BP/EP)

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.

Program Title:

Auto Body Collision Technology

Credits: Total Associate in Applied Science Degree Credits 72

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Demonstrate electrical circuit repairs.
- Perform repairs on plastics.
- Create damage report utilizing the procedure pages.
- Perform proper replacement techniques on structural parts.
- Apply straightening techniques on structural parts.
- Demonstrate stationary glass replacement.
- Solve paint application problems.
- Apply primer surfacer to paint company and industry standards.
- Perform techniques for removing and replacing bolt-on parts.
- Body fill a one hour dent to industry standards.
- Execute MIG welding metal procedures according to I-CAR standards.
- Demonstrate metal cutting using an oxy/act torch.

Career Opportunities:

Auto Body Technicians work for automotive dealerships, independent auto shops, government agencies and other organizations that maintain their own fleets of trucks and cars. There are also opportunities to be employed as an insurance adjuster, manufacturer's representative, auto service and sales person or wholesale parts and tool sales person.

Choose Total Associate in Applied Science Degree Credits 72 credits from the following areas:

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

Technical Studies Electives: 0 Credits

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 Electives: 6 Credits

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

Auto Body Technician Diploma (BP/EP)

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.

Program Title:

Auto Body Collision Technology

Credits: Total Diploma Credits 64

Award Type:

Diploma

Award Outcomes:

- Demonstrate electrical circuit repairs.
- Perform repairs on plastics.
- Create damage report utilizing the procedure pages.
- Perform proper replacement techniques on structural parts.
- Apply straightening techniques on structural parts.
- Demonstrate stationary glass replacement.
- Solve paint application problems.
- Apply primer surfacer to paint company and industry standards.
- Perform techniques for removing and replacing bolt-on parts.
- Body fill a one hour dent to industry standards.
- Execute MIG welding metal procedures according to I-CAR standards.
- Demonstrate metal cutting using an oxy/act torch.

Career Opportunities:

Auto Body Technicians work for automotive dealerships, independent auto shops, government agencies and other organizations that maintain their own fleets of trucks and cars. There are also opportunities to be employed as an insurance adjuster, manufacturer's representative, auto service and sales person or wholesale parts and tool sales person.

Choose Total Diploma Credits 64 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 2 Credits

COMM1040 Job Seeking Skills 2

General Education Electives: 4 Credits

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

Custom Fabrication and Finishing Occupational Certificate (BP/EP)

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.

Program Title:

Auto Body Collision Technology

Credits: Total Occupational Certificate Credits 19

Award Type:

Occupational Certificate

Award Outcomes:

- Perform proper replacement techniques on structural parts.
- Solve paint application problems.
- Apply primer surfacer to paint company and industry standards.
- Body fill a one hour dent to industry standards.
- Execute MIG welding metal procedures according to I-CAR standards.
- Demonstrate metal cutting using an oxy/act torch.

Career Opportunities:

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

Choose Total Occupational Certificate Credits 19 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

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

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.

Program Title:

Auto Body Collision Technology

Credits: Total Occupational Certificate Credits 16

Award Type:

Occupational Certificate

Award Outcomes:

- Demonstrate electrical circuit repairs.
- Perform repairs on plastics.
- Create damage report utilizing the procedure pages.
- Perform proper replacement techniques on structural parts.
- Apply straightening techniques on structural parts.
- Demonstrate stationary glass replacement.
- Solve paint application problems.
- Apply primer surfacer to paint company and industry standards.
- Perform techniques for removing and replacing bolt-on parts.
- Body fill a one hour dent to industry standards.
- Execute MIG welding metal procedures according to I-CAR standards.
- Demonstrate metal cutting using an oxy/act torch.

Career Opportunities:

Auto Body 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.

Choose Total Occupational Certificate Credits 16 credits from the following areas:

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

Technical Studies Electives: 3 Credits

ABCT1165 Using Body Filler II 2
ABCT2495 Auto Body Internship I 4
ABCT2600 Collision Lab 1-8

General Education Required: 0 Credits

General Education Electives: 0 Credits

Refinishing Technician Assistant Occupational Certificate (BP/EP)

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

Program Title:

Auto Body Collision Technology

Credits: Total Occupational Certificate Credits 17

Award Type:

Occupational Certificate

Award Outcomes:

- Solve paint application problems.
- Apply primer surfacer to paint company and industry standards.

Career Opportunities:

Auto Body Technicians work for automotive dealerships, independent auto shops, government agencies and other organizations that maintain their own fleets of trucks and cars. As a Refinishing Technician's Assistant the student will work with a Journeyman Painter who will direct the student in the refinish environment. There are also opportunities to be employed as an insurance adjuster, manufacturer's representative, auto service and sales person or wholesale parts and tool sales person.

Choose Total Occupational Certificate Credits 17 credits from the following areas:

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

Technical Studies Electives: 3 Credits

ABCT1235 Finish Defects 2

ABCT1250 Auto Body Painting Internship 1-4

ABCT2600 Collision Lab 1-8

General Education Required: 0 Credits

General Education Electives: 0 Credits

Structural Repair Technician Assistant Advanced Technical Certificate (BP/EP)

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.

Program Title:

Auto Body Collision Technology

Credits: Total Advanced Technical Certificate Credits 16

Award Type:

Advanced Technical Certificate

Award Outcomes:

- Demonstrate electrical circuit repairs.
- Perform proper replacement techniques on structural parts.
- Apply straightening techniques on structural parts.
- Demonstrate stationary glass replacement.
- Perform techniques for removing and replacing bolt-on parts.
- Body fill a one hour dent to industry standards.
- Execute MIG welding metal procedures according to I-CAR standards.
- Demonstrate metal cutting using an oxy/act torch.

Career Opportunities:

Auto Body Technicians work for automotive dealerships, independent auto shops, government agencies and other organizations that maintain their own fleets of trucks and cars. As a Structural Repair Technician the student will work with a Body Repair Technician who will guide the student in the repair, replacement and alignments of vehicles needing these repairs.

Choose Total Advanced Technical Certificate Credits 16 credits from the following areas:

Technical Studies Required: 12 Credits

ABCT2006 Stationary Glass Replacement 1

ABCT2015 Steering and Suspension 2

ABCT2040 Restraint Systems 1

ABCT2051 Damage Analysis and Straightening Structural Parts 4

ABCT2055 Panel Replacement and Restoring Corrosion Protection 4

Technical Studies Electives: 4 Credits

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

General Education Required: 0 Credits

General Education Electives: 0 Credits

AUTOMOTIVE TECHNOLOGY

Automotive Technician A.A.S. (BP/EP)

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.

Program Title:

Automotive Technology

Credits: Total Associate in Applied Science Degree Credits 72

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Evaluate scan tool readings.
- Evaluate vehicle suspension systems.
- Evaluate engine condition using precision instruments.
- Interpret wiring diagrams.
- Perform digital multimeter (DMM) measurements.
- Use transmission test equipment.
- Analyze heating ventilation/air conditioning systems.
- Interpret electronic service information.
- Diagnose hydraulic system components.
- Analyze driveline components.
- Determine customer vehicle repair needs.

Career Opportunities:

Due to increased vehicle ownership, longer useful life of vehicles and increased maintenance requirements of new and complicated automotive systems, the demand for trained automotive technicians is at an extremely high level and is increasing annually. A wide range of employment opportunities exist in dealerships, fleets, mass merchandisers, independent garages and service stations. The degree program also provides opportunities for advancement into shop management positions such as shop foreman, service manager and shop owner.

Choose Total Associate in Applied Science Degree Credits 72 credits from the following areas:

Technical Studies Required: 57 Credits

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
MATH1000 Prealgebra 2

Technical Studies Electives: 0 Credits

General Education Required: 12 Credits

Choose one course from MnTC Goal Area 5 3

Choose one course from MnTC Goal Area 7 3

ENGL2121 Writing and Research 4

or

ENGL2125 Technical Writing 3

PHIL2100 Critical Thinking 3

or

PHIL2200 Ethics 3

General Education Electives: 3 Credits

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

Automotive Technician Diploma (BP/EP)

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.

Program Title:

Automotive Technology

Credits: Total Diploma Credits 64

Award Type:

Diploma

Award Outcomes:

- Evaluate scan tool readings.
- Evaluate vehicle suspension systems.
- Evaluate engine condition using precision instruments.
- Interpret wiring diagrams.
- Perform digital multimeter (DMM) measurements.
- Use transmission test equipment.
- Analyze heating ventilation/air conditioning systems.
- Interpret electronic service information.
- Diagnose hydraulic system components.
- Analyze driveline components.
- Determine customer vehicle repair needs.

Career Opportunities:

Due to increased vehicle ownership, longer useful life of vehicles and increased maintenance requirements of new and complicated automotive systems, the demand for trained automotive technicians is at an extremely high level and is increasing annually. A wide range of employment opportunities exist in dealerships, fleets, mass merchandisers, independent garages and service stations.

Choose Total Diploma Credits 64 credits from the following areas:

Technical Studies Required: 57 Credits

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

Technical Studies Electives: 0

Credits

General Education Required: 4 Credits

COMM1040 Job Seeking Skills 2

MATH1000 Prealgebra 2

General Education Electives: 3 Credits

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

Hybrid Repair Specialist Occupational Certificate (BP/EP)

Automotive service technicians and mechanics must be able to work on high-voltage electrical systems. Technicians need to be familiar with other parts and systems specific to these vehicles, such as lithium-ion batteries and electric generators. Working on all-electric or hybrid-electric vehicles requires skills in addition to those needed to work on conventional vehicles. Some automotive service technicians and mechanics might also convert gasoline vehicles to electric vehicles or install systems to help improve a vehicle's fuel efficiency. The job of automotive service technicians and mechanics has evolved from simple mechanical repairs to high-level technology related work. Integrated electronic systems and computers regulate vehicles and their performance on the road. To fix problems with these systems, workers use both computerized shop equipment to work with electronic parts and traditional hand tools. Prerequisite: Completion of one year of a two-year automotive diploma or degree or relevant occupational experience is required.

Program Title:

Automotive Technology

Credits: Total Occupational Certificate Credits 19

Award Type:

Occupational Certificate

Award Outcomes:

- Evaluate hybrid technologies.
- Interpret electronic service information.
- Interpret wiring diagrams.
- Analyze hybrid batteries.
- Perform digital multimeter (DMM) measurements.
- Evaluate electric machines.

Career Opportunities:

The rising number of hybrid vehicles on the road has led to a corresponding increase in the need for automotive services for these vehicles. These services are performed at a wide range of repair facilities, including dealership service departments, independent maintenance/repair shops, and automotive repair chain service centers.

Choose Total Occupational Certificate Credits 19 credits from the following areas:

Technical Studies Required: 19 Credits

ATEC1615 Electrical Systems I 3

ATEC1620 Electrical Systems II 3

ATEC1625 Electrical Systems III 3

ATEC1820 Hybrid Electric Vehicle Systems 1

ATEC2800 Introduction to Hybrid Electric Vehicle Technology 3

ATEC2805 Hybrid Electric Vehicle Batteries 3

ATEC2810 Hybrid Electric Vehicle Machines and Controls 3

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

FORD ASSET PROGRAM

Automotive Techology – Ford ASSET A.A.S. (BP)

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.

Program Title:

Ford Automotive Student Service Educational Training Program (ASSET)

Credits: Total Associate in Applied Science Degree Credits 96

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Analyze customer concerns.
- Demonstrate safe service and repair procedures.
- Navigate electronic service information.
- Apply communication skills in the workplace.
- Demonstrate a commitment to ethical and professional responsibilities in repair.
- Utilize electronic service equipment.
- Complete current Ford STST certifications.
- Evaluate systems components using precision measuring equipment.
- Identify problem-solving techniques used in Ford service repair.
- Apply principles of mechanical concepts.

Career Opportunities:

All students who successfully complete this program will be Ford certified in all STST specialty areas. They will be employed by Ford and/or Lincoln-Mercury dealers as dealership repair technicians. A large number of jobs exist for qualified automotive technicians in the metropolitan and rural communities. The potential to advance to service writer, service manager, sales positions, company representatives or other dealership management is excellent.

Choose Total Associate in Applied Science Degree Credits 96 credits from the following areas:

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

Technical Studies Electives: 0 Credits

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 Electives: 6 Credits

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

Maintenance Light Repair Occupational Certificate (BP)

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.

Program Title:

Ford Automotive Student Service Educational Training Program (ASSET)

Credits: Total Occupational Certificate Credits 30

Award Type:

Occupational Certificate

Award Outcomes:

- Demonstrate safe service and repair procedures.
- Navigate electronic service information.
- Utilize electronic service equipment.
- Complete Ford STST certifications for the Quick Lane.
- Identify problem solving techniques used in Ford service repair.

Career Opportunities:

Maintenance and light service repair technicians will be able to perform jobs in the automotive light service industry such as Ford dealership quicklanes, independent service shops, and other franchise dealerships that perform light-duty maintenance. As a light service maintenance technician, the student will perform basic automotive maintenance and light repair such as oil changes, transmission flushes, tune-ups, and brake service. Furthermore, maintenance light repair technicians will assist journeyman in the day-to-day operations of vehicle repair.

Choose Total Occupational Certificate Credits 30 credits from the following areas:

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

Technical Studies Electives: 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

General Education Required: 0 Credits

General Education Electives: 0 Credits

MARINE, MOTORSPORT AND OUTDOOR POWER EQUIPMENT TECHNOLOGY

Marine, Motorsport and Outdoor Power Equipment Technician Diploma (EP)

Marine, Motorsport and Outdoor Power Equipment Technicians service, diagnose and repair motorcycles, snowmobiles, outboards, stern-drive boats and lawn and garden equipment.

Program Title:

Marine, Motorsport and Outdoor Power Equipment Technology

Credits: Total Diploma Credits 64

Award Type:

Diploma

Award Outcomes:

- Demonstrate ability to measure engine parts.
- Employ skills and procedures to identify parts.
- Service fuel Systems.
- Service ignition systems.
- Demonstrate troubleshooting and diagnostic skills.
- Integrate technology into work processes such as scan tools, service manuals online, etc. Employ safety standards.
- Service drive systems.
- Explain air and liquid cooling systems.
- Integrate customer service and communication skills into repair work.

Career Opportunities:

Marine, Motorsport and Outdoor Power Equipment Technicians find employment at marine, motorcycle or snowmobile dealerships, distributors and manufacturers. Technicians are also in demand at service repair shops and businesses that service and repair motorcycles, outboard and inboard boat motors and lawn and garden equipment.

Choose Total Diploma Credits 64 credits from the following areas:

Technical Studies Required: 54 Credits

MMST1100 Introduction to Marine and Motor Sports 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

Technical Studies Electives: 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
MMST2350 Internship 1-3

General Education Required: 5 Credits

COMM1040 Job Seeking Skills 2
METS1000 Computers in Manufacturing 3

General Education Electives: 2 Credits

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

Marine, Motorsport and Outdoor Power Equipment Technician A.A.S. (EP)

The Marine, Motorsport and Outdoor Power Equipment Technology degree prepares the student in all areas of the Marine, Motor Sports and Power Equipment repair and service. A marine/motor sports technician will diagnose, evaluate, estimate repair costs and repair various types of marine, motorcycle and power equipment.

Program Title:

Marine, Motorsport and Outdoor Power Equipment Technology

Credits: Total Associate in Applied Science Degree Credits
72

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Demonstrate ability to measure engine parts.
- Employ skills and procedures to identify parts.
- Service fuel Systems.
- Service ignition systems.
- Demonstrate troubleshooting and diagnostic skills.
- Integrate technology into work processes such as scan tools, service manuals online, etc. Employ safety standards.
- Service drive systems.
- Explain air and liquid cooling systems.
- Integrate customer service and communication skills into repair work.

Career Opportunities:

The Marine, Motorsport and Outdoor Power Equipment Technology Associate Associate in Applied Science degree will allow the graduate the opportunities to advance to careers in the major manufacturer's research and development departments. Service or sales representative positions would be available to a person holding an A.A.S. also. Another possible opportunity would be for a promotion to a supervisory position.

Choose Total Associate in Applied Science Degree Credits 72 credits from the following areas:

Technical Studies Required: 54 Credits

MMST1100 Introduction to Marine and Motor Sports 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

Technical Studies Electives: 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
MMST2350 Internship 1-3

General Education Required: 9 Credits

COMM2050 Interpersonal Communication 3
ENGL2121 Writing and Research 4
or

ENGL2125 Technical Writing 3
PHIL2100 Critical Thinking 3
or

PHIL2200 Ethics 3

General Education Electives: 6 Credits

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

Motorcycle Technician Occupational Certificate (EP)

Motorcycle Technicians service, diagnose and repair motorcycles.

Program Title:

Marine, Motorsport and Outdoor Power Equipment Technology

Credits: Total Occupational Certificate Credits 30

Award Type:

Occupational Certificate

Award Outcomes:

- Perform quality checks on completed work.
- Service fuel Systems.
- Service ignition systems.
- Employ safety standards.
- Service drive systems.
- Integrate customer service and communication skills into repair work.

Career Opportunities:

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

Choose Total Occupational Certificate Credits 30 credits from the following areas:

Technical Studies Required: 30 Credits

MMST1100 Introduction to Marine and Motor Sports 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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Outboard Technician Occupational Certificate (EP)

Outboard Marine Technicians service, diagnose and repair outboard motors.

Program Title:

Marine, Motorsport and Outdoor Power Equipment Technology

Credits: Total Occupational Certificate Credits 30

Award Type:

Occupational Certificate

Award Outcomes:

- Perform quality checks on completed work.
- Service fuel Systems.
- Service ignition and electrical systems.
- Employ safety standards.
- Service drive systems.
- Integrate customer service and communication skills into repair work.

Career Opportunities:

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

Choose Total Occupational Certificate Credits 30 credits from the following areas:

Technical Studies Required: 30 Credits

MMST1100 Introduction to Marine and Motor Sports 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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

Power Equipment Occupational Certificate (EP)

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.

Program Title:

Marine, Motorsport and Outdoor Power Equipment Technology

Credits: Total Occupational Certificate Credits 30

Award Type:

Occupational Certificate

Award Outcomes:

- Perform quality checks on completed work.
- Service fuel Systems.
- Service ignition and electrical systems.
- Employ safety standards.
- Service drive systems.
- Integrate customer service and communication skills into repair work.

Career Opportunities:

Employment for the power equipment graduate will have a wide range of opportunities including lawn and garden shops, rental shops, golf course maintenance facilities, farm equipment dealerships, and many other small engine repair shops.

Choose Total Occupational Certificate Credits 30 credits from the following areas:

Technical Studies Required: 30 Credits

MMST1100 Introduction to Marine and Motor Sports 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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 0 Credits

MEDIUM/HEAVY TRUCK TECHNOLOGY

Medium/Heavy Truck Drivetrain Technician Diploma (BP)

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.

Program Title:

Medium/Heavy Truck Technology

Credits: Total Diploma Credits 44

Award Type:

Diploma

Award Outcomes:

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

Career Opportunities:

Career opportunities as a skilled maintenance technician are available in truck dealerships, leasing companies, truck fleets, and independent truck repair shops. Electronic diesel engines, transmissions, and ABS brake systems have revolutionized the trucking industry creating a great demand for the skilled truck technician.

Choose Total Diploma Credits 44 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 0 Credits

General Education Electives: 4 Credits

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

Medium/Heavy Truck Maintenance Technician Diploma (BP)

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.

Program Title:

Medium/Heavy Truck Technology

Credits: Total Diploma Credits 43

Award Type:

Diploma

Award Outcomes:

- Perform vehicle inspection procedures.
- Perform preventative maintenance.
- Repair vehicle electrical systems.
- Repair truck brake systems.
- Analyze ABS brake systems.
- Repair truck steering systems.
- Repair truck suspension systems.
- Diagnose truck HVAC systems.
- Interpret diagnostic tool readings.

Career Opportunities:

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

Choose Total Diploma Credits 43 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 4 Credits

MATH1000 Prealgebra 2
COMM1050 Communication in the Workplace 2

General Education Electives: 0 Credits

Medium/Heavy Truck Technology A.A.S. (BP)

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.

Program Title:

Medium/Heavy Truck Technology

Credits: Total Associate in Applied Science Degree Credits 94

Award Type:

Associate in Applied Science Degree

Award Outcomes:

- Perform vehicle inspection procedures.
- Perform preventative maintenance.
- Repair vehicle electrical systems.
- Repair truck brake systems.
- Analyze ABS brake systems.
- Repair truck steering systems.
- Repair truck suspension systems.
- Diagnose truck HVAC systems.
- Repair driveline components.
- Overhaul truck transmissions.
- Overhaul diesel engines.
- Interpret diagnostic tool readings.

Career Opportunities:

Career opportunities as a skilled truck technician are available in truck dealerships, leasing companies, trucking fleets, and independent truck repair shops. Students may choose other options such as railroads, heavy equipment, mass transit companies, or marine applications. Electronic diesel engines, transmissions, and ABS brake systems have revolutionized the trucking industry creating a great demand for the skilled truck technician.

Choose Total Associate in Applied Science Degree Credits 94 credits from the following areas:

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

Technical Studies Electives: 0 Credits

General Education Required: 15 Credits

COMM2050 Interpersonal Communication 3
ENGL2125 Technical Writing 3
PHIL2100 Critical Thinking 3
PHIL2200 Ethics 3
SOC12100 Introduction to Sociology 3

General Education Electives: 0 Credits

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).*

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 ESOL0822) **(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 ESOL0822) **(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) 1-4 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 to 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 reffridgerants. (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) 1-8 cr**

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**

ACCT1101 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) 3 cr**

ACCT1106 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: ACCT1101 with grade of C or better) **(BP/EP) 3 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 ACCT1101 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 2010

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 GREAT PLAINS ACCOUNTING

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: ACCT1101) **(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: ACCT1101) **(BP/EP) 3 cr**

ACCT1145 BUSINESS LAW FOR ACCOUNTANTS

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 Uniform Commercial Code (UCC), commercial paper, employment law and business organizations and bailments. (Prereq: None) **(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 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 ACCT1101) **(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: ACCT1106) **(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: ACCT2200) **(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: ACCT1106) **(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: ACCT1101) **(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: ACCT1101 or ACCT1106) **(BP/EP) 4 cr**

ACCT2700 AUDITING & END-OF-YEAR PROCEDURES

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: ACCT2200 or ACCT2206) **(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) 1-10 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**

ARCH1002 INTRODUCTION TO ARCHITECTURAL TECHNOLOGY

This course will introduce the student to the basic skills needed to design and produce construction drawings. Topics covered will include architectural drawing standards, dimensioning and annotation practices, drawing set components and terminology. Using AutoCad software, students will apply this knowledge to the creation of a set of construction drawings for a single story residence. (Prereq: Qualifying score on reading assessment test OR ENGL0901) **(BP/EP) 4 cr**

ARCH1007 ARCHITECTURAL DRAFTING I

This course will continue to explore the process of designing and drafting a residential structure based on design criteria and applicable codes while reinforcing architectural drafting standards and conventions. The student will be introduced to the principles of stair design and kitchen and bath design while producing a set of construction drawings for a split-entry/split level home. (Prereq: ARCH1002 or equivalent and concurrent enrollment in ARCH1202 recommended) **(BP/EP) 4 cr**

ARCH1011 ARCHITECTURAL DRAFTING II

This course will reinforce sound drafting and design processes and increase BIM proficiency. The students will also be introduced to energy code requirements through the production of construction drawings for a residential and/or light commercial project. (Prereq: ARCH1007) **(EP) 5 cr**

ARCH1100 ARCHITECTURAL CAD: BASIC 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. Topics to be covered include CAD terminology and coordinate systems, drawing set-up, drawing and modifying commands, annotation, dimensioning, hatching and plotting. Architectural drawing projects are included in this course. (Prereq: Qualifying score on reading assessment test OR ENGL0901) **(EP) 4 cr**

ARCH1202 MATERIALS AND METHODS OF CONSTRUCTION I

This course will familiarize the student with the materials and methods that are used in wood and light-gauge steel frame construction. Topics to be covered include foundations, floor systems, wall framing, ceiling/roof framing and interior and exterior finishes. (Prereq: Qualifying score on reading assessment test OR ENGL0901) **(BP/EP) 2 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 bending, shear and deflection, and their application to the design of wood, steel and concrete structural elements. (Prereq: Qualifying score on math assessment test OR MATH1000 and Qualifying score on reading assessment test OR ENGL0901) **(EP) 3 cr**

ARCH1225 TECHNICAL DRAWING

The student will demonstrate isometric and orthographic drawings. (Prereq: None) **(EP) 1 cr**

ARCH1340 BUILDING CODES

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**

ARCH1480 ARCHITECTURAL PRACTICES AND PROCEDURES

This course is intended to increase the student's awareness of the construction industry and understanding of the different organizations and groups that are part of this industry. The course will provide an overview of the owner, developer, architect and contractor relationships and the responsibilities of each in the construction process. The student will study office organization, personnel relationships, project practices, construction phases, specifications and construction performance. (Prereq: Qualifying score on reading assessment test OR ENGL0901) **(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 AP PREPARATION

The LEED AP (Leaders in Environmental and Energy Efficient Design, Accredited Professional) course is designed to assist in preparation for the LEED AP 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 DRAFTING III

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 DRAFTING IV

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 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 through the use of work sharing and BIM techniques. (Prereq: ARCH2121) **(EP) 5 cr**

ARCH2300 SKETCHUP FOR DESIGN

This course is designed to introduce students to SketchUp imaging technology for design. SketchUp tools and methods are used to construct objects, modify objects, apply materials, apply special effects, and create 3D camera views. Students create a portfolio of design scenes and present a final design composition. (Prereq: Knowledge of computers is recommended) **(EP) 3 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**

ARCH2330 ARCHITECTURAL PRESENTATION

This course will provide an understanding of presentation techniques and how they are used as a means of communication with the client. The course will cover fundamental elements of presentation drawing, layout, scale and graphics. The student will develop artistic ability and verbal presentation skills. (Prereq: ARCH2121) **(EP) 3 cr**

ARCH2340 DESIGN DEVELOPMENT FOR ARCHITECTURAL DRAFTING

This course is intended to give the student experience in activities that lead up to the production of the working drawings. The student will engage in the design and development of a selected project with an emphasis on maximizing the sustainability of the building. Activities will include research in to the design conditions and requirements, codes, zoning and planning requirements; preparation of circulation and square footage studies; preparation of design development drawings; and development of preliminary specifications. (Prereq: ARCH1011) **(EP) 3 cr**

ARCH2370 ARCHITECTURAL CAD: REVIT ARCHITECTURE

In this course, students will learn to use Revit software to create and coordinate building information models (BIM) for construction document production. (Prereq: Current Program Major or industry experience recommended) **(BP/EP) 4 cr**

ARCH2466 MATERIALS AND METHODS OF CONSTRUCTION II

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

ARCH2561 ESTIMATING

This course is designed to introduce the student to the principles and procedures of estimating construction material quantities. Both ledger and/or computer-based systems will be utilized in arriving at an estimated cost for a building project. (Prereq: ARCH2466) **(EP) 3 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**

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) 2-4 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 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**

ARCH2935 ARCHITECTURAL CAD: ADVANCED REVIT TOOLS

This course will cover advanced topics and features that are available with the Autodesk Revit software. The tools for families, worksharing, and massing will be emphasized. (Prereq: ARCH2370 or previous Revit experience) **(EP) 1 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**

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 will introduce the student to on-the-job training in the field of Automation Robotics Engineering Technology. (Prereq: Complete a minimum of 15 credits in the technical core of the Automation Robotics Engineering Technology curriculum and instructor approval) **(EP) 1-4 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 iR-Vision 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 iR-Vision 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**

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 and Qualifying score on computer literacy assessment test OR CPLT1200) **(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 Qualifying score on computer literacy assessment test OR CPLT1200 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 Qualifying score on computer literacy assessment test OR CPLT1200 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, CPLT1200 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**

ARSP1350 MUSIC THEORY

This course covers fundamental concepts of rhythm, song structure, note values and the circle of fifths. (Prereq: None) **(EP) 2 cr**

ARSP1370 INDEPENDENT STUDY

In this course, the student will research and apply focused production techniques as identified by the student and agreed upon by the instructor. (Prereq: Instructor approval) **(EP) 1-4 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 MATH1000 and ARSP1021 or ARSP1100 or instructor approval) **(EP) 2 cr**

ARSP2100 MULTITRACK RECORDING THEORY III (DIGIDESIGN 210P)

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**

ARSP2110 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 music projects. (Prereq: ARSP2100 should be taken concurrently or instructor approval) **(EP) 2 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 (DIGIDESIGN 101)

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 (DIGIDESIGN 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 MATH1000) **(EP) 2 cr**

ARSP2370 INDEPENDENT STUDY II

In this course the student will develop an individual recording project or research topic based on student interests and needs. (Prereq: Instructor approval) **(EP) 1-4 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**

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**

ARTS2120 SURVEY OF THE 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**

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: 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: ATEC1625) **(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**

BIOL2001 BIOLOGY IN SOCIETY

MNTC: 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 MATH0900) **(BP/EP) 4 cr**

BIOL2003 NUTRITION AND HEALTH**MNTC: 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 math assessment test OR MATH0900 and Qualifying score on reading assessment test OR ENGL0921) **(BP/EP) 3 cr**

BIOL2005 GENERAL BIOLOGY I**MNTC: 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 MATH1011 and Qualifying score on reading assessment test OR ENGL0921) **(BP/EP) 4 cr**

BIOL2045 HUMAN BIOLOGY**MNTC: 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 math assessment OR MATH1000 and Qualifying score on reading assessment OR ENGL0921) **(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**

BIOL2115 HUMAN ANATOMY**MNTC: 3**

This course is the first semester of a lecture and laboratory sequence in human anatomy and physiology. The course provides a comprehensive study of human structure and function. Topics include anatomical terminology, cellular processes, tissue classification, organ system functions, and development. Clinical applications of anatomy are also introduced. The laboratory component of the course parallels and reinforces lecture concepts through the use of models, histological slides, and dissection of animal specimens. This course covers 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**

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: Qualifying score on math assessment test OR MATH1031 and BIOL2005 with a grade of "C" or better and BIOL2115 with a grade of "C" or better) **(BP/EP) 4 cr**

BIOL2235 MICROBIOLOGY**MNTC: 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 BIOL2115 with a grade of "C" or better) **(BP/EP) 4 cr**

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**

BUSN1040 COMPUTER APPLICATIONS FOR SALES

This course will focus on computer applications designed to monitor sales accounts, territories and collect data for analysis of accounts. The student will use CRM software to make informed selling decisions. (Prereq: CCIS1080 or qualifying score on Computer Literacy assessment test OR CPLT1100 or CPLT1200) **(BP) 2 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**

BUSN1070 MANAGE CUSTOMER RELATIONS

This course focuses on personality traits that influence how salespeople can improve their interaction with the customer. As the workplace becomes more diverse; more flexible interaction skills are required. By applying techniques of flexible interaction in working with different personality styles the salesperson can develop more efficient, effective and productive relationships with the customer. (Prereq: Qualifying score on writing assessment test OR ENGL0930) **(BP) 3 cr**

BUSN1080 SALES ACCOUNT ANALYSIS

It is essential that salespeople understand the basic components of financial analysis to explain and justify their recommendations to business clients. This course is designed to examine the parts of an income statement, operating ratios, ROI and how to increase the ROI. In addition, the course will focus on computation of an order, "terms of sale", trade/cash/chain discounts, inventory turn, and calculation of markups/markdowns. Inventory valuation, the calculation of inventory valuation and depreciation methods will also be covered. (Prereq: BUSN1040) **(BP) 3 cr**

BUSN1090 CONSULTATIVE SELLING

Sales people are problem-solvers and this course introduces the student to the problem-solving mindset and outlines a process for consulting with clients on issues concerning the clients' businesses. This process is based on a win-win strategy. The course focus is on clear communication techniques and business problem-solving skills that result in more productive client relationships. (Prereq: BUSN1020) **(BP) 4 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**

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**

CARP1100 INTRODUCTION TO RESIDENTIAL CONSTRUCTION

This course is designed to introduce students to terms, materials and procedures used to construct a residence. It is not intended to give a working knowledge of the trade. (Prereq: None) **(BP/EP) 1 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: None) **(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: None) **(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: None) **(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**

CARP1210 RESIDENTIAL ROOF COVERINGS

This course provides the student an opportunity to install residential roof coverings. (Prereq: None) **(BP/EP) 1 cr**

CARP1220 SIDING

This course will introduce students to various types of siding and installation of siding products. (Prereq: None) **(BP/EP) 2 cr**

CARP1230 CORNICE

This course will introduce the students to various types of cornice and provides the opportunity to install one or more types of cornice. (Prereq: None) **(BP/EP) 1 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: None) **(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: None) **(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: None) **(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: None) **(BP/EP) 1 cr**

CARP1820 RESIDENTIAL ESTIMATING

This course introduces the student to estimating materials for rough framing and interior and exterior finishing. (Prereq: None) **(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: None) **(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**

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**

CBTG1110 BASIC 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: None) **(BP/EP) 2 cr**

CBTG1120 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: None) **(BP/EP) 3 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: None) **(BP/EP) 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: CBTG1120) **(BP/EP) 4 cr**

CBTG1150 DRAFTING TECHNIQUES

This course is an application of drafting techniques as related to cabinetmaking. Drafting terms, instruments, sketches and drawings will be discussed. Various drafting illustration methods as well as pictorial views will be covered. (Prereq: CBTG1141) **(EP) 2 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: CBTG1120) **(BP/EP) 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: None) **(BP) 4 cr**

CBTG1210 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: CBTG1120 and CBTG1161) **(BP/EP) 3 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/EP) 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: CBTG1120) **(BP/EP) 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: CBTG1120) **(BP/EP) 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/EP) 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: CBTG1120, CBTG1141 and CBTG1150) **(BP/EP) 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/EP) 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/EP) 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/EP) 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/EP) 2 cr**

CBTG2420 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/EP) 3 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: CBTG2420) **(BP/EP) 4 cr**

CBTG2440 CABINET VISION

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) **(EP) 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: CBTG1120) **(BP/EP) 2 cr**

CBTG2522 CNC ROUTER 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**

CBTG2525 AUTOMATED CNC PROGRAMMING

This course will use CNC (Computer Numerical Control) machines and advanced programming techniques to incorporate software data for nesting and advanced part control to produce project work to examine proficiency and part quality. (Prereq: CBTG1170 or professional experience with this software and CBTG2522 or professional programming experience) **(BP) 2 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**

CBTG2545 MICROVELLUM

This course will use Microvellum software to create wood product designs and manufacturing processes. The Software will be used to produce product drawings for cabinetry, store fixtures and custom wood products along with parts lists production, part nesting optimization & CNC code generation. (Prereq: CBTG1170) **(BP) 3 cr**

CBTG2550 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) 2 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**

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**

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**

CCDS1505 INDIVIDUALIZED STUDIES DEGREE UPDATE WORKSHOP

This workshop is designed for students to revise outdated Individualized Studies Degree plans. Students will document changes while following requirements under the HTC Individualized Studies Degree guidelines. (Prereq: Students must have an approved Individualized Degree Plan on file with Hennepin Technical College) **(BP/EP) 0 cr**

CCDS1510 INDIVIDUALIZED STUDIES ASSESSMENT WORKSHOP

This non-credit workshop is designed for students nearing completion of an Individualized Studies degree. Students will finalize the assessment of learning acquired through their degree requirements. (Prereq: Student must have an approved Individualized Studies degree plan on file with Hennepin Technical College) **(BP/EP) 0 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**

CCIS1000 INFORMATION SYSTEMS

This is a beginning course for and will introduce the student to an overview of the IS principles which every 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**

CCIS1032 ACCESS 2010

This course covers the basic functions of a database management package as applied to business applications. The student will learn how to create and secure a database, maintain records in a table, query a database, create forms, reports, macros, and switchboards. (Prereq: Qualifying score on computer literacy assessment test OR CCIS1080 or CCIS1035 or ACCT1125) **(BP/EP) 3 cr**

CCIS1035 WORD 2010

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 CPLT1000 or CPLT1005) **(BP/EP) 3 cr**

CCIS1042 POWERPOINT 2010

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 computer literacy assessment test OR CCIS1000 or CCIS1080 or CCIS1032 or CCIS1035 or CCIS1101 or ACCT1125 or CPLT1100 or CPLT1200) **(BP) 3 cr**

CCIS1080 MICROSOFT OFFICE 2010

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 CCIS1000 or CCIS1032 or CCIS1035 or CCIS1042 or CCIS1101 or ACCT1125 or CPLT1100 or CPLT1200) **(BP/EP) 3 cr**

CCIS1101 WINDOWS 8

This course provides the fundamentals of the Windows operating system. Topics covered will include hardware, software, manipulating Windows, using Help, launching applications, managing files and folders with Windows Explorer, Control Panel, Printing and Fonts, Windows Search, organizing and customizing a computer system, maintaining files, and connectivity. (Prereq: Qualifying score on computer literacy assessment test OR CCIS1000 or CCIS1032 or CCIS1035 or CCIS1042 or CCIS1080 or ACCT1125 or CPLT1100 or CPLT1200) **(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, with emphasis on the TCP/IP protocol suite; physical and logical topologies; transmission media; network hardware; IP addressing and subnetting; routing; and introduction to Linux and Windows server administration using the Graphical User Interface (GUI) and Command Line Interface (CLI); and introduction to network security, risk assessment, and troubleshooting techniques. (Prereq: CCIS1101 (with a minimum grade of C) or instructor's consent) **(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**

CCIS1301 HTML

This course will introduce students to the basics of HTML (the web markup language) and prepare them for more advanced studies. Students will learn HTML with a strong basis in Web Standards. The instruction will stress designs for backward and forward compatibility, usability, and accessibility. Students will develop Web pages that include HTML techniques while using tables, forms, and styles. (Prereq: CCIS1000 and CCIS1101) **(BP/EP) 3 cr**

CCIS1310 PUBLISHER 2010

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 CCIS1000 or CCIS1032 or CCIS1035 or CCIS1042 or CCIS1080 or CCIS1101 or ACCT1125 or CPLT1100 or CPLT1200) **(BP) 3 cr**

CCIS1330 EXPRESSION WEB

This course serves as an introduction to creating websites using Expression Web as a replacement for FrontPage. Students will learn to plan, create, develop, publish and maintain a web site that includes designing pages with layers, form

components, search components, and interactive sites that utilize Cascading Style Sheets and databases. (Prereq: Qualifying score on computer literacy assessment test OR CCIS1000 or CCIS1032 or CCIS1035 or CCIS1042 or CCIS1080 or CCIS1101 or ACCT1125 or CPLT1100 or CPLT1200) **(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, and LAN design. (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, virtual LANs, and Wireless LANs. (Prereq: CCIS1421) **(BP/EP) 4 cr**

CCIS1442 CCNA-4: WANS, ACLS, AND VPNS

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 theory and design, WAN technology (PPP, Frame Relay, ISDN), NAT, DDR, DHCP, network troubleshooting and emerging technologies. (Prereq: CCIS1431) **(BP/EP) 3 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**

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 procedure-oriented and object-oriented programming languages. Structured programs will be written with a computer programming language with an emphasis on procedure-oriented programming. Topics will include objects, classes, methods, properties, flowcharting, pseudocode, top down design, logic structures, data structures and types, decisions, subroutines, looping, sequential file processing, arrays and building graphical user interfaces. (Prereq: Qualifying score on math assessment test OR MATH1000 and Microsoft Windows experience) **(BP/EP) 4 cr**

CCIS1515 WEB PROGRAMMING OVERVIEW

This course is for a student planning to study networking, database or other IT discipline. This course is not intended for students planning to pursue computer programming. The course content will introduce the student to both procedure-oriented and object-oriented programming languages. Structured programs will be written with a computer programming language with an emphasis on procedure-oriented programming. Topics will include objects, classes, methods, properties, flowcharting, pseudocode, top down design, logic structures, data structures and types, decisions, subroutines, looping, sequential file processing, and arrays. (Prereq: Qualifying score on math assessment test OR MATH1000 and 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 CCIS1000 or CCIS1032 or CCIS1035 or CCIS1042 or CCIS1101 or CCIS1080 or ACCT1125) **(BP/EP) 3 cr**

CCIS2065 HELP DESK/USER SUPPORT

This course is designed to introduce students to the concepts and practices required of an entry-level technology professional in an effort to prepare and provide them with the knowledge, skills, and attitudes required to become technical service providers. (Prereq: CCIS1000 and CCIS1101 or CCIS1080) **(BP) 3 cr**

CCIS2090 OFFICE 2010 INTEGRATION

This course introduces students to the data and information sharing properties of the Microsoft Office suite. Students will learn how to integrate Word, Excel, Access, PowerPoint and Publisher. This course will prepare students to become more capable software users by requiring them to use critical thinking and problem-solving skills to create real-life documents giving them skills to use in both their personal and professional lives. (Prereq: Two of the following courses: ACCT1125 or CCIS1032 or CCIS1035 or CCIS1042 OR CCIS1310 OR CCIS1080) **(BP) 3 cr**

CCIS2095 OUTLOOK 2010

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: ACCT1125 or CCIS1032 or CCIS1035 or CCIS1042 OR CCIS1310 OR CCIS1080) **(BP) 2 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 an understanding of Linux services that support entire systems. At the end of this class, students will be able to understand the role Linux has as part of an enterprise solution. (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 e-mail, web, ftp, and other 'Internet services' using Microsoft's Internet Information Server and Exchange Server. In addition, students will install Windows Small Business Server and use virtualization software to simulate groups of networked computers. (Prereq: CCIS2150) **(BP/EP) 4 cr**

CCIS2311 WEB PROGRAMMER 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) 2-8 cr**

CCIS2320 HELP DESK 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) 6 cr**

CCIS2340 COMPUTER PROGRAMMER 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) **(EP) 2-8 cr**

CCIS2360 DESKTOP SUPPORT 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) 2-8 cr**

CCIS2380 NETWORK SUPPORT 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) 2-8 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**

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 a continuation of .NET Programming I courses. It will also be using the Microsoft .NET framework and the Visual Basic and C# programming languages. Emphasis in this course will be on using advanced Windows forms controls, ASP.NET, and ADO.NET. Other topics include Crystal Reports, Windows Installer, XML and INI file processing, processing MS-SQL databases, WEB services and calling Windows processes. Upon completion of this course, the student will be able to program complete Windows-based and web-based applications using a variety of advanced techniques. (Prereq: CCIS2575 and CCIS2701) **(BP/EP) 4 cr**

CCIS2591 JAVASCRIPT

This course is an introduction to scripting Web pages in JavaScript with emphasis on good coding practices. Topics include: core JavaScript (syntax, basics, variables, functions), DOM (Document Object Model), object hierarchy, events, regular expressions, strings, cookies, windows, forms, and related objects. (Prereq: CCIS1351 or concurrent and 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 person. It assumes some knowledge of web pages in HTML and JavaScript. (Prereq: CCIS2591) **(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: CCIS2550) **(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: CCIS1031 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: CCIS1031) **(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 the Systems Development Life Cycle, covering the planning, analysis design, implementation, and support phases. 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**

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: Qualifying score on reading assessment test OR ENGL0921) **(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. (Prereq: Qualifying score on writing assessment test OR ENGL1021 or ENGL1026) **(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 or group of children. (Prereq: Qualifying score on writing assessment test OR ENGL1021 or ENGL1026 and CDEV1500) **(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) **(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 ENGL1021) **(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) **(BP/EP) 3 cr**

CDEV2125 INFANT/TODDLER DEVELOPMENT AND LEARNING

The student will examine infant and toddler development as it applies to an early childhood 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: CDEV1125 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**

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: CDEV1500 and ENGL2121) **(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: CDEV1500 and ENGL2121) **(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**

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: MATH1011) **(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 MATH1011 and BIOL2005) **(EP) 5 cr**

COMM1005 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**

COMM1010 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, successful completion of COMM1040 strongly recommended) **(BP/EP) 1 cr**

COMM1040 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**

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**

COMM1131 CUSTOMER SERVICE IN THE WORKPLACE

There is a growing need for the development of customer service skills. This is an college level introductory course in customer service practices. 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. (Prereq: Qualifying score on writing assessment test OR ENGL0930) **(BP/EP) 2 cr**

COMM2020 INTERCULTURAL COMMUNICATION**MNTC: 7 & 8**

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 behavior, perception, values, and beliefs; factors that facilitate or inhibit intercultural communication; and examination of American culture in comparison to other cultures. This course offers the opportunity for students to interact with diverse populations in several service-learning experiences both on and off-campus. (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 COMPUTER MEDIATED COMMUNICATION IN THE DIGITAL AGE**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**

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 SKILL BUILDING AND DOCUMENT PROCESSING

Students will improve keyboarding technique and skill. This course will emphasize using the touch method to build speed and accuracy and will also cover business reports, interoffice memorandums and business letters with envelopes. It may 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 keyboarding assessment test by touch method typing OR CPLT1000) **(BP/EP) 3 cr**

CPLT1010 KEYBOARD SKILL BUILDING

This course involves the improvement of keyboarding technique, accuracy and speed. Emphasis will be on speed building while maintaining good accuracy. The keyboarding goal will be to consistently improve keyboarding speed while making not more than one error per minute. (Prereq: CPLT1005) **(BP/EP) 2 cr**

CPLT1100 ESSENTIAL COMPUTER APPLICATIONS

This course introduces the student to Word, Excel, Access and PowerPoint. The operating system, computer terminology, email and Internet use and other essential features will be presented. 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 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 Apple's iLife application. 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 such as iPhoto, iMovie, GarageBand, iWeb, and iDVD will also be covered in this introductory course. (Prereq: Qualifying score of computer literacy assessment test OR CPLT0900 or CPLT1000) **(BP/EP) 3 cr**

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 OR MATH0900) **(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**

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**

CULA2000 AMERICAN CULINARY FEDERATION CERTIFICATION

Practical test for American Culinary Federation (ACF) Certification. (Prereq: Knowledge of the American Culinary Federation (AFC) standards) **(BP/EP) 0 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, CULA1525, 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) 1-4 cr**

DNTL1000 DENTAL TEAM/PRACTICE MANAGEMENT

This course is designed to give the student a fundamental understanding of the characteristics of dentistry. It will include dental terminology, 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**

DNTL1120 DENTAL SCIENCE

This course is designed to provide information on 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) 3 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**

ECON2200 PRINCIPLES OF MICROECONOMICS

MNTC: 5

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**

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**

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 COMPUTER CIRCUITS AND APPLICATIONS 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 COMPUTER CIRCUITS AND APPLICATIONS 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) 1.4 cr**

EMGT1100 ORIENTATION TO EMERGENCY MANAGEMENT

This course will provide students with an introduction to the comprehensive emergency management programs administered by the Minnesota Division of Emergency Management and the Federal Emergency Management Agency. Students will formulate the elements of an integrated teamwork system and devise specific actions for improving their own contributions to local emergency management teams. (Prereq: None) **(EP) 3 cr**

EMGT1105 INTRODUCTION TO PLANNING AND MITIGATION

This course will provide students with the planning and mitigation skills required to prepare an integrated Emergency Management plan. Maintaining continuity of governmental services during an actual emergency and an introduction to hazardous materials in the community will also be covered. (Prereq: EMGT1100) **(EP) 3 cr**

EMGT1110 EMERGENCY MANAGEMENT COMMAND AND CONTROL

This course will provide students with the skills necessary to function within the framework of the Minnesota Incident Management system and knowledge of how the system interacts with the Minnesota Emergency Operations Center. Planning for and responding to emergencies or disasters with large numbers of casualties or fatalities will also be covered. (Prereq: EMGT1100) **(EP) 4 cr**

EMGT1115 COMMUNITY DISASTER EXERCISES

This course will provide students with the necessary skills to plan, design, conduct and evaluate a community's emergency plan. The content illustrates the eight basic steps in exercise design and emphasizes the use of a design team. The students will participate in actual exercises developed by the class. (Prereq: EMGT1100) **(EP) 4 cr**

EMGT1120 EMERGENCY MANAGEMENT LEADERSHIP AND COMMUNICATIONS

This course is designed to increase the student's skills in the areas of leadership, conflict management and the use of influence and power during emergency planning and operations. One-to-one and small group communications, public speaking and information dissemination will be discussed, along with planning, response and recovery operations involving debris management and environmental impact. (Prereq: EMGT1100) **(EP) 3 cr**

EMGT1125 EMERGENCY MANAGEMENT RESOURCE MANAGEMENT

This course is designed to provide the students with the skills necessary to develop and manage a wide variety of volunteer resources and disaster relief services. The students will have an opportunity to practice decision-making skills and make emergency-related decisions during various exercises. Planning and managing volunteer donations will also be covered. (Prereq: EMGT1100) **(EP) 3 cr**

EMGT2000 FLOOD PLANNING AND OPERATION

This course will look at how Emergency Managers plan for flooding in the community, and how operations are executed during a flood. Key issues on flood fighting operations will also be covered. (Prereq: EMGT1100) **(EP) 3 cr**

EMGT2005 EMERGENCY MANAGEMENT DECISION MAKING

This course will develop the skills necessary for making sound decisions during all phases of the emergency management cycle including Planning, Response, Mitigation and Recovery. There will be a focus on individual as well as team response to a variety of emergency in the class will be a combination of lecture, research projects combined with individual and class presentations designed to accomplish this goal. (Prereq: EMGT1100) **(EP) 3 cr**

EMGT2010 EMERGENCY OPERATIONS MANAGEMENT

This course will look at the Emergency Managers role during Emergency Operations. Key issues which affect emergency response will be addressed. Also, the course will identify the Emergency Operations Center (EOC) role during an emergency. (Prereq: EMGT1100) **(EP) 3 cr**

EMGT2015 MITIGATION AND RECOVERY

This course will provide the student with the required skills to plan and implement mitigation solutions for their local community or business. The course will also cover recovery planning operations after a disaster. (Prereq: EMGT1100) **(EP) 3 cr**

EMGT2020 GRANT WRITING

This course will look at grants and public assistance available to communities. The basic concepts of grant and public assistance will be identified as well as the paperwork which is required for submission. (Prereq: EMGT1100) **(EP) 1 cr**

EMGT2025 TERRORISM AND EMERGENCY MANAGEMENT

This course is an introduction to political terrorism, ranging from low-level acts of threats and acts of violence that may represent significant risk to human life and property to large-scale acts of violence using "weapons of mass destruction" that may have devastating, long-term effects. (Prereq: EMGT1100) **(EP) 3 cr**

EMGT2030 BUSINESS AND INDUSTRY CRISIS MANAGEMENT

This course will look at how Business and Industry prepare for, respond to and recover from crisis situations. (Prereq: EMGT1100) **(EP) 3 cr**

EMGT2035 HAZARDS RISK MANAGEMENT

The goal of this course is to contribute to the reduction of the growing toll (deaths and injuries, property loss, environmental degradation, etc.) of disasters in the United States by providing an understanding of the hazards risk management process that provides a framework that may be applied at all levels of communities and governments, to identify, analyze, consider, implement and monitor a wide range of measures that can contribute to their well being. (Prereq: EMGT1100) **(EP) 3 cr**

EMGT2040 INTRODUCTION TO WEAPONS OF MASS DESTRUCTION

This course is an introduction to the basic concepts of Weapons of Mass Destruction (WMD). This course includes a historical look at the use of WMD, the different forms (chemical, radiological, biological, explosive, etc.). Emerging threats ranging from low-level to large scale acts as well as the devastating long-term effects to prevent the use of WMD weapons. Proper response procedures and how to mitigate the loss of life and property are also covered in this course. (Prereq: None) **(EP) 3 cr**

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**

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 State Certified EMT-B) **(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**

EMSV1135 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) **(EP) 1 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: Certified EMT) **(EP) 3 cr**

EMSV1175 EMT BRIDGE COURSE

This course is designed for current Minnesota EMSRB Certified First Responders who wish to become EMT-B without taking the full EMT-B class. All subject areas from the EMT-B curriculum will be covered. EMT clinical observations are included. Upon successful completion of this course and NREMT practical skills exam (additional \$80.00 fee required), you are eligible to take the NREMT written exam (additional \$70.00 fee required). State and National certifications will be issued upon passing these tests. (Prereq: Current Minnesota First Responder Certificate. Qualifying score on reading assessment test or ENGL0921, current CPR Health Care Provider certification (offered 1st week of class), 18 years old, required vaccinations, and background studies will be required) **(BP/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**

EMSV1185 CRITICAL CARE SIMULATION SCENARIOS

This class will discuss and use High Fidelity Simulation in the medical field. Purpose of this class is to use a team approach to demonstrate communication, critical thinking skills, leadership, and medical skills in a realistic environment using high fidelity manikins and computer based scenarios. Medical patients will be emphasized. (Prereq: Current EMT, RN, MD or completion of 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)

This is a course designed for the prehospital provider which covers advanced cardiac assessment and skills. The student will use different assessment algorithms, and learn how to assess, treat and package the patient. We will be following the ACLS standards and upon successful completion of this course the student will receive certification as an ACLS provider. (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**

EMSV2000 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) 2 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 EMSV2000) **(BP/EP) 2 cr**

EMSV2010 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 EMSV2005) **(BP/EP) 3 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 EMSV2010) **(BP/EP) 5 cr**

ENGC1011 ENGINEERING DRAWING I

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: MACH1056 and one of the following: ENGC1100, ENGC1160, ENGC1250, or ENGC2100) **(BP/EP) 3 cr**

ENGC1021 ENGINEERING DRAWING II

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. The student will also be introduced to fastening techniques and industrial materials. (Prereq: MACH1056 and 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 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**

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 the disk operating system is 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 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**

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: ENGC1011) **(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 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: Approved three-dimensional CAD application) **(BP/EP) 3 cr**

ENGC2100 PRO/ENGINEER I

This course is designed to give students hands-on experience using Parametric Technology's fully associative mechanical design automation software 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 PRO/ENGINEER II

This course is designed to increase the productivity of the novice Pro/ENGINEER user. This project based course covers advanced geometry creation topics of 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. 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. Before registering, the student should check with instructors on availability of a suitable host-business. (Prereq: Prior completion of 50 percent of the Engineering CAD Technology program) **(BP/EP) 3-4 cr**

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 ESOL0832. 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 a grade of C or better in ENGL0901 or ESOL0832. 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 provide basic writing skills for all students. Students in this course will learn to write coherent, grammatically-correct sentences and use those skills to write different types of paragraphs. (Prereq: Qualifying score on writing assessment test OR ENGL0926 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**

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**

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) 1-4 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 ENGL1026. Basic computer literacy skills required) **(BP/EP) 2 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. 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 ENGL1026. 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. 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 a writing assessment test OR ENGL1021 or ENGL1026. 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 the writing assessment test OR ENGL1021) **(BP/EP) 3 cr**

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**

ESOL0821 GRAMMAR/WRITING II

This course focuses on basic writing skills. Students work on grammar, writing fluency, editing skills, and short paragraphs. Beginning computer skills will be covered to assist writing and editing. (Prereq: Qualifying score on ESL reading assessment test) **(BP/EP) 5 cr**

ESOL0822 READING II

This course focuses on increasing students' ability to comprehend a variety of written material, skim for main ideas, and scan for specific information. Context clues and dictionary skills will also be covered to increase student vocabulary. (Prereq: Qualifying score on ESL reading assessment test) **(BP/EP) 4 cr**

ESOL0823 LISTENING/SPEAKING II

This course focuses on students' self-expression and listening abilities in English. Through real-life speaking situations, students focus on improving speech clarity and develop learning strategies. Class activities may include video/audio examples, lectures, demonstrations, dictations, interviews, group work, and oral presentations. (Prereq: Qualifying score on ESL reading assessment test) **(BP/EP) 3 cr**

ESOL0831 GRAMMAR/WRITING III

This course focuses on practicing and developing basic writing skills by applying them to a variety of situations. Students work to improve grammar, writing fluency, self-editing skills, and short essays. Students use the computer to draft, edit and revise their writing. (Prereq: Qualifying score on ESL reading assessment test OR ESOL0821 with a grade of C or better) **(BP/EP) 5 cr**

ESOL0832 READING III

This course continues the introduction of skills and strategies necessary to understand a variety of written materials. Students practice identifying the main idea and supporting details in non-fiction, work to increase reading rate and comprehension, build a broader vocabulary and analyze features of fiction. Resources available in the college library will also be introduced. (Prereq: Qualifying score on ESL reading assessment test OR ESOL0822 with a grade of C or better) **(BP/EP) 4 cr**

ESOL0833 LISTENING/SPEAKING III

This course provides an introduction to the basics of speech sound production for American English. Through classroom and computer-based activities, students practice producing more precise consonants, consonant clusters, and vowels. Intonation and stress patterns of American English will also be introduced. Students work with the IPA (International Phonetic Alphabet) to better understand the differences between written and spoken language. Students will engage in short lectures, conversations, directions, and media segments in order to improve understanding of oral American English. (Prereq: Qualifying score on ESL reading assessment test OR ESOL0823 with a grade of C or better) **(BP/EP) 3 cr**

ESOL0841 GRAMMAR/WRITING IV

This course introduces higher level writing skills for a variety of situations. Students work on grammar, writing fluency, self and peer editing skills, and their ability to write essays of varying lengths and styles. Students practice writing skills through extensive writing and word processing and through following a writing process to edit and revise their essays. (Prereq: Qualifying score on ESL reading assessment test OR ESOL0831 with a grade of C or better) **(BP/EP) 5 cr**

ESOL0842 READING IV

This course builds upon the students' abilities to understand a variety of written materials. Students will practice identifying main ideas and supporting details in non-fiction, work to increase their reading rate and comprehension, and analyze features of fiction. Building vocabulary, summary writing and use of library resources are also included. (Prereq: Qualifying score on ESL reading assessment test OR ESOL0832 with a grade of C or better) **(BP/EP) 4 cr**

ESOL0843 LISTENING/SPEAKING IV

This course provides the knowledge and practice necessary to further improve listening, speaking, and pronunciation skills in American English that are critical for future success in academic courses. Students work on these skills through activities such as listening to lectures, podcasts, and videos, taking notes in American English, doing dictations, participating in discussions, doing interviews, giving presentations, and doing computer exercises. (Prereq: Qualifying score on ESL reading assessment test OR ESOL0833 with a grade of C or better) **(BP/EP) 3 cr**

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**

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: Qualifying score on math assessment test OR MATH0900) **(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**

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) 1-4 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**

FLWR1000 FLORAL DESIGN FOR YOUR HOME

This course is designed to introduce a student to floral design. A few basic design styles will be made in class. The material learned in class will prepare a student to make floral arrangements for their own use. The information covered is geared toward the hobbyist or those that want to try it out before pursuing a career as a Professional Floral Designer. (Prereq: None) **(BP) 1 cr**

FLWR1100 FRESH CUT FLOWER/FOILAGE CARE, HANDLING AND IDENTIFICATION

This course is designed to introduce the student to fresh cut flower and fresh cut foliage care, handling, identification and their individual characteristics. The student will apply this knowledge to floral materials as purchased from floral wholesalers. This application will prepare the flowers and foliages for use either boxed or arranged. The student will also have an in-depth understanding of how to prolong the life of fresh cut materials in the flower shop as well as in the consumer's home. (Prereq: Qualifying score on reading assessment test OR ENGL0901) **(BP) 2 cr**

FLWR1112 FOLIAGE AND FLOWERING PLANT CARE, HANDLING AND IDENTIFICATION

This course is designed to introduce the student to foliage and flowering plant care and identification of common plants. The students will apply their knowledge and skills to actual plants and gardens. (Prereq: None) **(BP) 1 cr**

FLWR1201 FRESH FLOWER DESIGN

This course is prepared to give the student a thorough understanding of basic floral design mechanics, terms and construction techniques. The student will apply their knowledge and skills of fresh floral materials to fresh flower arrangements. (Prereq: FLWR1100) **(BP) 3 cr**

FLWR1220 CONTEMPORARY FRESH FLOWER DESIGN

This course is structured for the experienced designer. Contemporary terms and styles will be discussed, demonstrated and researched. The student will apply their knowledge and skills to fresh flower arrangements. (Prereq: FLWR1201) **(BP) 2 cr**

FLWR1231 PARTY DESIGN

This course is created for the experienced designer to become familiar with flowers for special events and party work. The student will apply their knowledge and skills to fresh floral arrangements, accessories and party planning and setups. (Prereq: FLWR1201 and FLWR1220) **(BP) 1 cr**

FLWR1301 PERMANENT FLOWER AND FOLIAGE DESIGN

This course is prepared to give the student the experience in applying their knowledge and skills of floral design mechanics, elements and principles to permanent floral materials. All elements and principles of design are applied the same as they are with fresh products and are not introduced in this course. The student will learn to apply these skills to arrangements for use in homes, offices and commercial building applications. (Prereq: FLWR1201) **(BP) 3 cr**

FLWR1400 VISUAL MERCHANDISING IN THE FLORAL INDUSTRY

This course introduces the concepts involved with display work in a retail setting. Ideas and techniques used in Mass Markets, Retail Flower Shops and Wholesale houses will be explored. The student will apply knowledge gained while organizing fresh and permanent materials for sale. (Prereq: None) **(BP) 2 cr**

FLWR1421 INTERNSHIP

This will be a cooperative training program between Hennepin Technical College and a retail florist which allows the student to apply competencies learned in the program to an employment-like work experience. The student will also experience the daily pressures associated with holidays and other stressful job related activities. Internships are served at retail shops, mass markets and wholesale suppliers. (Prereq: Instructor approval) **(BP) 3 cr**

FLWR1430 ENTREPRENEURSHIP IN THE FLORAL INDUSTRY

This course will introduce various business aspects of the retail floral business. Guest lecturers and independent research by the student will be used to write a floral shop business plan. The student may also have some limited hands-on experience with business machines, floral software, shop layouts, displays and retail pricing procedures. (Prereq: None) **(BP) 2 cr**

FLWR1440 CUSTOMER SERVICE IN THE FLORAL INDUSTRY

This course is an introduction to daily activities dealing with customers in a retail setting. Basic order taking, phone skills and customer service will be explored. The student will apply the knowledge gained thorough group activities and individual assessments. (Prereq: None) **(BP) 1 cr**

FLWR1500 SYMPATHY DESIGN

This course is prepared to give the student a fundamental understanding of basic funeral design, customer needs and funeral home expectations and requirements. The process of selling to a grieving customer will be explored. The students will apply their knowledge and skills to actual funeral style arrangements. (Prereq: FLWR1201) **(BP) 2 cr**

FLWR1600 PERSONAL FLOWERS TO WEAR

This course is prepared to give the student a fundamental understanding of styles, mechanics and terms in corsages, boutonnieres and hairpieces. The student will apply their knowledge and skills to actual corsages, boutonnieres and hairpieces. (Prereq: FLWR1100) **(BP) 2 cr**

FLWR1610 WEDDING DESIGN

This course is prepared to give the student a fundamental understanding of wedding flowers, bouquet styles, mechanics and techniques. The process of selling and retail pricing of weddings will be discussed, demonstrated and researched. The students will apply their knowledge and skills to actual floral bouquets and projects. (Prereq: FLWR1600) **(BP) 3 cr**

FLWR1650 ADVANCED FLORAL DESIGN

This course is structured for the experienced designer. Contemporary and advanced terms and styles will be discussed, demonstrated and researched. The students will apply their knowledge and skills to floral compositions and other projects. This will include wedding and funeral pieces along with other floral arrangements. At the conclusion of this course students will have created a portfolio of their work. (Prereq: FLWR1220, FLWR1500, FLWR1600 and FLWR1610) **(BP) 2 cr**

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: None) **(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: None) **(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: None) **(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: None) **(BP) 3 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: FRPT1100) **(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: FRPT1100) **(BP/EP) 2 cr**

FRPT1115 COMPANY FUNCTIONS

This course is designed to meet the needs of fire officers and crew leaders with responsibilities to manage the operations of one or more companies in structural firefighting operations. (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: FRPT1100) **(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: FRPT1161) **(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: FRPT1161) **(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**

FRPT1145 CANDIDATE PHYSICAL ABILITY TEST

This course is designed to teach the student about the joint Wellness-Fitness Initiative established by the International Association of Firefighters and the International Association of Fire Chiefs and the CPAT test. This initiative led to the development of an evaluation tool called the Candidate Physical Ability Test (CPAT). Upon successful completion of the eight-event program, the student will receive a one year certificate of CPAT completion. (Prereq: None) **(BP/EP) 1 cr**

FRPT1150 INCIDENT MANAGEMENT

This course is designed to enhance the student's incident management skills. Areas to be covered are emergency fireground management, management of natural and technological disasters and an introduction to emerging management principles. The student will learn concepts of incident command, pre-planning, communications and safety, along with the Minnesota Incident Management System. (Prereq: FRPT1115 and FRPT2110) **(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**

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**

FRPT1180 HAZARDOUS MATERIALS TECHNICIAN

This course is designed to teach the necessary skills to protect yourself, your fellow responder and the public from exposure in a hazardous materials incident. The course meets the requirements of the OSHA 1910.120 for the level of Technician. The student will learn how to identify the presence of hazardous materials, the proper protective clothing to use, how to decontaminate properly, how to establish an Incident Command System and the proper standard operating procedures to maintain safety at the incident scene. The student will also learn physical mitigation activities. The course follows the NFPA Standard 472 requirements for Technician. (Prereq: FRPT1176) **(BP/EP) 3 cr**

FRPT1200 VEHICLE AND MACHINERY EXTRICATION

This course will teach the student the proper techniques to size up an incident, to stabilize a vehicle and machinery during a rescue incident, and to disentangle the victim. (Prereq: None) **(EP) 1 cr**

FRPT1205 CONFINED SPACE OPERATIONS

The student will learn how to recognize confined space hazards, preplan the incident and to render the scene safe around the incident. (Prereq: FRPT1176 and training to at least the NFPA 472, Standard for Professional Competence of Responders to Hazardous Materials) **(EP) 1 cr**

FRPT1210 CONFINED SPACE TECHNICIAN

This course will teach the student the proper techniques to prepare for entry into the confined space, enter a confined space, monitor the atmosphere, assess a victim, package the victim based on space restrictions, and safely remove the victim. (Prereq: FRPT1205 and training to at least the NFPA 472, Standard for Professional Competence of Responders to Hazardous Materials) **(EP) 1 cr**

FRPT1215 STRUCTURAL COLLAPSE AWARENESS

This course will teach the student the proper techniques to conduct a size-up of a collapsed structure, recognize hazards and warning signs, identify building construction, determine the type of collapse, establish a perimeter, and call for appropriate assistance. Students will also be able to identify different types of shoring. (Prereq: None) **(EP) 1 cr**

FRPT1220 TRENCH RESCUE OPERATIONS

This course will teach the student to learn proper techniques to make open trench excavations safe for victim access and removal. (Prereq: None) **(EP) 1 cr**

FRPT1225 INTRODUCTION TO RESCUE TECHNICIAN

This course will teach the student to evaluate a rescue incident; manage the resources needed to conduct rescues; perform basic patient care and transfer; and lower and raise victims using basic rope rescue. (Prereq: FRPT1176) **(BP/EP) 3 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 FIRE GROUND CONTROL

This course is designed to teach the student the components of the Fire Ground 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: FRPT1115) **(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**

FRPT2135 FIRE OFFICER IV

This course is designed to teach the student planning and management techniques used by a fire department administrator. The student will learn about budgeting, personnel and communication procedures, and planning and decision making techniques. (Prereq: FRPT2130 or instructor approval) **(EP) 3 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**

FRPT2200 HAZARDOUS MATERIALS SPECIALTY SAFETY OFFICER

This course is designed to teach the necessary skills to protect yourself, other responders and the public from exposure in a hazardous materials incident. The course meets the requirements of the OSHA 1910.120 for the level of Specialist. It follows the requirements set out in NFPA Standard 472. (Prereq: FRPT1180 or instructor approval) **(EP) 1 cr**

FRPT2205 HAZARDOUS MATERIALS SPECIALTY BRANCH DIRECTOR

This course is designed to teach the necessary skills to protect yourself, other responders and the public from exposure in a hazardous materials incident. The course meets the requirements of the OSHA 1910.120 for the level of Specialist. It follows the requirements set out in NFPA Standard 472. The student will learn how to decontaminate properly, how to establish an Incident Command System and the proper standard operating procedures to use. (Prereq: FRPT1180 or instructor approval) **(EP) 1 cr**

FRPT2210 SPECIALIZED MONITORING

This course is designed to give the student the knowledge to perform monitoring activities at a hazardous material incident. The emphasis is on the direct read instruments. This course consists of instructor-directed study and problem solving using simulation. (Prereq: FRPT1180 or instructor approval) **(EP) 1 cr**

FRPT2215 HAZARDOUS MATERIALS SPECIALTY CONTAINERS

This course is designed to give the student the knowledge to perform container analysis activities at a hazardous material incident. The course covers both fixed and mobile containers. This course consists of instructor-directed study and problem solving using simulation. (Prereq: FRPT1180 or instructor approval) **(EP) 1 cr**

FRPT2220 HAZARDOUS MATERIALS SPECIALTY FLAMMABLES - SOLIDS, LIQUIDS, GASES

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 level of Specialist. The course follows the NFPA Standard 472. The student will learn how to identify the presence of hazardous materials, in the form of solids, liquids and gases. (Prereq: FRPT1180 or instructor approval) **(EP) 1 cr**

FRPT2225 HAZARDOUS MATERIALS SPECIALTY CORROSIVE AND TOXIC

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 level of Specialist. The course follows the NFPA Standard 472. The student will learn how to identify corrosive and toxic hazardous materials. (Prereq: FRPT1180 or instructor approval) **(EP) 1 cr**

FRPT2230 HAZARDOUS MATERIALS SPECIALTY POISONS, RADIOACTIVES AND EXPLOSIVES

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 level of Specialist. The course follows the NFPA Standard 472. The student will learn how to identify poisons, explosives and radioactive materials. (Prereq: FRPT1180 or instructor approval) **(EP) 1 cr**

FRPT2235 SPECIALTY MITIGATION I

This course is designed to give the student the knowledge to perform mitigation activities at a hazardous material incident. The emphasis is on following safe work practices. This course consists of instructor-directed study and problem solving using simulation. (Prereq: FRPT1180 or instructor approval) **(EP) 1 cr**

FRPT2240 SPECIALTY MITIGATION II

This course is designed to give the student the knowledge to perform mitigation activities at a hazardous material incident (spill) scene in order to control the flow or movement of the hazardous material. The emphasis is on following safe work practices. This course consists of instructor-directed study and problem solving using simulation. (Prereq: FRPT1180 or instructor approval) **(EP) 1 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 writing assessment tests OR ENGL1021. High School diploma or GED or concurrently enrolled under the PSEOP) **(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 to health promotion and cultural, ethnic and religious diversity will be discussed. (Prereq: Qualifying score on reading assessment test OR ENGL0921) **(BP/EP) 2 cr**

HLUC1001 HEALTH UNIT COORDINATOR FUNDAMENTALS

This course will introduce the student 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 also be covered. (Prereq: Qualifying score on reading assessment test OR ENGL0921) **(BP/EP) 3 cr**

HLUC1010 ESSENTIALS OF HEALTH CARE FACILITIES

This course is an introduction to the health care environment. In this course the student will become familiar with ethical and legal standards, infection control and safety procedures relative to health care. Students will be introduced to physician specialties, hospital departments and various types of health care facilities. Employment seeking strategies will also be included. (Prereq: Qualifying score on reading assessment test OR ENGL0921) **(BP/EP) 1 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 or concurrent enrollment in HLUC1001, HLUC1010, 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 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 or concurrent enrollment in HLUC1001, HLUC1010, 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 or concurrent enrollment in the Health Unit Coordinator courses and instructor approval) **(BP) 3 cr**

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. (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**

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**

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**

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**

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) 1-4 cr**

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**

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**

LAWE2240 PATROL OPERATIONS

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, pedestrian checks, officer safety issues, and other duties as they relate to the basic patrol function. (Prereq: Admission into the Law Enforcement Program) **(BP) 3 cr**

LAWE2299 LAW ENFORCEMENT INTEGRATED PRACTICUM

The Law Enforcement Integrated Practicum, LAWE 2299, is the final course in the Professional Licensing Program at the Law Enforcement & Criminal Justice Education Center (LECJEC). Commonly referred to as "Skills," this course is designed to give the student an understanding of the knowledge and skills required to perform the duties of a police officer. The primary goal of this course, along with the previously completed prerequisite and theory courses, is to prepare students to successfully complete the Minnesota Board of Peace Officer Standards and Training peace officer licensing examination. In this course students will participate in lectures and demonstrations and then practice what they have learned at the target range, in the gym, the simulation lab, and at the St. Cloud driving range. Scenarios will require the application of material presented during the entire program and are designed to engage creative problem solving abilities. (Prereq: Admission into the Law Enforcement Program) **(BP) 9 cr**

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**

LNDC1135 ARBORICULTURE II

This course is a continuation of Arboriculture I and is designed to give students a fundamental knowledge of the care and recognition of problems facing woody plants in the landscape. Topics covered include: spring digging, care, and planting of bare root stock; ANSI & MnDOT industry standards; fine tree pruning to 12' height; storms & damage; hazard trees; soil remediation; plant appraisal and valuation; trees and the law; commercial use of pesticide injections and air spade; nutrient management; and special management situations for trees & landscapes. (Prereq: LNDC1131) **(BP) 2 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**

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 OPERATION AND MANAGEMENT

This course is designed to give the student an understanding of the greenhouse industry, greenhouse structures, controlled environments, alternative growing systems, and application of specialized equipment. (Prereq: None) **(BP) 2 cr**

LNDC1166 GREENHOUSE CROP PRODUCTION - FALL

This course is designed to give the student an understanding of commercial greenhouse crop production. Crops to be grown are chrysanthemums, poinsettias, and other minor crops. Marketing will be included, with an emphasis on selling the poinsettia crop. (Prereq: None) **(BP) 3 cr**

LNDC1176 GREENHOUSE CROP PRODUCTION - WINTER

This course is designed to give the student an understanding of the production, culture and marketing of winter floriculture crops. Special emphasis will be given to Easter lilies, geraniums, and other minor crops. (Prereq: None) **(BP) 3 cr**

LNDC1187 GREENHOUSE CROP PRODUCTION - SUMMER

This course is designed to give the student an understanding of the production, culture and marketing of summer floriculture crops. Special emphasis will be given to summer floriculture crops; organic cropping; community gardening; herb and vegetable hydroculture; and outdoor cutflower 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 insect and disease problems that affect greenhouse crops, nursery crops and woody plants in the landscape. Management of environments, cultural practices and use of chemicals will be covered. This is a preparatory study for taking the Minnesota Department of Agriculture Pesticide applicators license test for categories A/E. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal. (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 trips 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. The plant list will cover non-native, invasive woody and herbaceous plants that are currently endangering native habitats in Minnesota and the surrounding region. 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**

LNDC1305 HAZARD TREE IDENTIFICATION AND RISK MANAGEMENT

This course is a study of defects within trees in which structural integrity may be compromised. Students will learn to recognize and identify 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: None) **(BP) 2 cr**

LNDC1311 GROUND WORKER OPERATIONS

This course covers the role the ground worker plays in tree work operations: providing support to climbers aloft, roping and rigging skills, material handling, equipment operation, chainsaw safety and customer service relations. (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. Also the student will come away with knowledge of the impact humans have on those plants and 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**

LNDC2150 INTRODUCTION TO BASIC TREE CLIMBING

This course is a continuation of Arboriculture I with emphasis on tree care via rope and saddle climbing. 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. Arboriculture I & II can prepare students for the International Society of Arboriculture (ISA) Tree Worker Certification, administered by the MN Society of Arboriculture (MSA). Other advanced arboriculture topics included. (Prereq: LNDC1131) **(BP) 2 cr**

LNDC2155 TREE CLIMBING II - ADVANCED CLIMBING TECHNIQUES AND METHODS

This course is a continuation of Into to Basic Tree Climbing with emphasis on tree care via rope and saddle climbing. Specialized topics and practices to include: An overview of Into to 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**

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 INTERIOR FOLIAGE PLANTS

This course is designed as a plant study in interior landscape/foilage plants. An overview of the interior landscape contracting industry and interior landscape design will be included. (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 containers and small gardens. Some of the skills taught include site preparation, plant selection, pest/weed identification, pruning, tool identification, and field propagation, and business techniques. (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: CPLT1000) **(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) 1-4 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) 1-4 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) 1-4 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) 1-4 cr**

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**

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: MATH1011 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) 1-4 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**

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: 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**

MAST2020 LAB II

This course is designed to build upon the skills acquired in Lab I. Students will learn how to perform venipuncture, capillary puncture and 12-lead Electrocardiogram (ECG). This course covers immunology, hematology, clinical chemistry, and microbiology. In alignment with American Association of Medical Assistants (AAMA) Safety and Scope of Practice are thoroughly discussed. The students will perform waived testing according to the Clinical Laboratories Improvements Amendment guidelines. (Prereq: MAST1020, concurrent enrollment in MAST2030 and must be taken semester before MAST2040) **(EP) 5 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: MAST2035 and MAST2020. 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**

MATH0900 FUNDAMENTALS OF MATHEMATICS

This course applies basic arithmetic skills of whole numbers, fractions, decimals, ratios, proportion and percents, with applied problems. (Prereq: None) **(BP/EP) 2 cr**

MATH1000 PREALGEBRA

This course includes practical applications of the basic mathematical operations including: fractions, decimals, percents, ratio, proportion, measurement, perimeter, area, volume, descriptive statistics and introductory algebra. (Prereq: Qualifying score on math assessment test OR Grade of `C` or better in MATH0900) **(BP/EP) 2 cr**

MATH1006 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 will 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 OR MATH0900 with a grade of C or better) **(BP/EP) 3 cr**

MATH1011 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 MATH1000) **(BP/EP) 3 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: MATH1011 or equivalent) **(BP/EP) 2 cr**

MATH1031 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 MATH1011) **(BP/EP) 3 cr**

MATH2100 CONCEPTS IN MATHEMATICS**MNTC: 4**

This course uses the skills necessary to apply the mathematical tools of algebra, geometry, trigonometry, probability and statistics to solve problems and defend solutions and decisions. (Prereq: Qualifying score on math assessment test OR MATH1031) **(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 MATH1031) **(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 MATH1031) **(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**

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**

METS1010 METROLOGY AND MEASUREMENT TECHNIQUES

This course prepares the student to inspect components and/or assemblies to determine acceptance status. Topics covered include reading and interpreting engineering and assembly drawings; application and use of basic inspection and measurement tools such as micrometers, calipers, ring gauges, and scales; and proper documentation of non-conformances. (Prereq: None) **(BP/EP) 3 cr**

METS1015 CONTROLLED ENVIRONMENT AND ASEPTIC TECHNIQUES

This course introduces the student to controlled environment and aseptic work areas. Procedures for human, product, and equipment entry and exit from controlled environments are introduced and practiced. Basic requirements for working with blood borne pathogens and pyrogens, creating sterile fields, and biohazard handling are reviewed. Students will gain an understanding of the ISO 14644 and Federal 209-E standards. (Prereq: None) **(EP) 1 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**

METS1025 MEDICAL DEVICE MANUFACTURING TECHNIQUES

This course introduces the student to manufacturing in the medical device industry. Topics covered include the roles of regulation, documentation, identification and traceability, procedures and process control, and product acceptance in the device industry. Common device materials, joining methods, catheter assembly, basic test methods, packaging, and sterilization are discussed. Basic skills in microscope use, ergonomics, wire preparation and termination; soldering and rework; ESD management; adhesive preparation, application, and curing; and trouble-shooting are developed. (Prereq: METS1015 and METS1035 or instructor approval) **(BP/EP) 4 cr**

METS1035 MEDICAL DEVICE QUALITY SYSTEMS

This course introduces the student to aspects of medical device manufacturing quality systems that fall under federal and international regulation. The student will gain knowledge of US regulations including: Quality Systems Requirements (QSR), current Good Manufacturing Practice (cGMP), and Quality Systems Inspection Techniques (QSIT). International regulations such as ISO 13485 will also be covered. Emphasis will be placed on understanding how domestic and international regulations affect design, development, documentation, production, corrective and preventive action, and site inspection in manufacturing facilities. Students will practice proper documentation techniques and participate in mock audits. (Prereq: None) **(BP) 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: MATH1000 and METS1000 or instructor approval) **(BP/EP) 3 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**

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: MATH1000 to be taken concurrently) **(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) 1-16 cr**

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**

MGDP1320 DREAMWEAVER

One of the top industry web design and development tools is Adobe Dreamweaver. Learning to use this software will enable the student design, manage and upload web sites to Internet servers. The learner will become proficient at putting all the elements of web design together. This will enable them to continually modify the sites they design and interact easily with the servers they employ. (Prereq: MGDP1265 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: MGD1230, MGD1235, MGD1240, MGD1310, and MGD2010 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: MGD1230, 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: MGD1240, 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 CPL1200) **(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: MGD1230 and MGD1265) **(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: MGD1265 and MGD1320) **(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: MGD1010, MGD1205, or MGD1240, 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: MGD1330, MGD1340, MGD1350, 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: MGD1330 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: MGDP1205) **(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: MGDP1360, MGDP1365, MGDP1370, MMVP1500, or instructor approval) **(BP) 3 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) 1-12 cr**

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, Qualifying score on math assessment test OR MATH0900, 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, Qualifying score on math assessment test OR MATH0900, 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, Qualifying score on math assessment test OR MATH0900, 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, Qualifying score on math assessment test OR MATH0900, 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 MHTT1511) **(BP) 9 cr**

MMST1100 INTRODUCTION TO MARINE AND MOTOR SPORTS 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 math assessment test OR MATH0900) **(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 math assessment test OR MATH0900) **(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 math assessment test OR MATH0900) **(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 math assessment test OR MATH0900) **(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 math assessment test OR MATH0900) **(EP) 3 cr**

MMST1145 TRAILER MAINTENANCE

This course will cover the maintenance and proper use of trailers. Areas covered will include wheel bearing maintenance, proper tie-down use, boat launching and maneuvering techniques. Legal requirements will be discussed including lights, brakes and weight restrictions. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal. (Prereq: MMST1110, MMST1115 and MMST1120) **(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: Qualifying score on math assessment test OR MATH0900) **(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: Qualifying score on math assessment test OR MATH0900) **(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: Qualifying score on math assessment test OR MATH0900 and 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) 1-3 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: Qualifying score on reading assessment test OR ENGL0901 and MMST1105) **(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) 1-3 cr**

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: Qualifying score on writing assessment test OR ENGL0926) **(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**

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**

MMVP2000 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) 2 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 MGDP1250, 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 ACTIONSRIPT

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) 1-8 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) 1-8 cr**

NURS0110 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**

NURS0115 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**

NURS0120 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**

NURS0125 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**

NURS0130 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**

NURS0140 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**

NURS1001 NURSING ASSISTANT

This course introduces concepts of basic human needs, infection control 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 patients in a long term care setting. The role of the nursing assistant in a long term care facility as well as working with various populations is discussed. Upon successful completion of this course the candidate is eligible to take the Minnesota Competency Evaluation for Nursing Assistants. Individuals successfully completing this examination are placed on the Minnesota Nursing Assistant Registry. This course will cover the characteristics of hazardous wastes and it's safe handling, storage and disposal. (Prereq: Qualifying score on reading OR ENGL0901 and Qualifying score on listening assessment test OR ESOL0823. The ability to lift and move a minimum of 25 pounds. Full-time attendance is required at all sessions) **(BP/EP) 4 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: NURS1001 or currently on the nursing assistant registry AND proof of completing a 75 hour nursing assistant 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 90% or better. 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**

NURS1191 ADULT NURSING I

This course explores the following areas of study as they relate to health and disease: hematology, immunology, oncology, endocrinology, and the respiratory, cardiovascular, and musculoskeletal system. Disease processes and related symptoms are analyzed. Emphasis is on the practical nurse's role in diagnostic testing, interventions, treatments and related pharmacology. (Prereq: Admission into the practical nursing program) **(BP/EP) 4 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. 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**

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**

NURS2550 CAPSTONE

The focus of this course is the role of the practical nurse across the wellness-illness continuum. Current legal responsibilities and accountability of the Licensed Practical Nurse in the state of Minnesota based on the Minnesota Nurse Practice Act and the Minnesota Board of Nursing Rules Related to the Nurse Practice Act will be reviewed. 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, priority-setting, and professional behavior. (Prereq: NURS1222, NURS1261. NURS1242 prerequisite or concurrent, NURS2110 prerequisite or concurrent.

Successful completion of pre-clinical medication math test with a score of 90% or higher. Ability to lift and move a minimum of 25 pounds. 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**

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**

OFCR1316 MEDICAL OFFICE PROCEDURES

This is an introductory course to medical office procedures. It will include telephone etiquette, customer service, appointment scheduling, and medical records management and written communication. (Prereq: OFCR1301 and CCIS1035 and CCIS1080) **(BP/EP) 3 cr**

OFCR1331 MEDICAL TRANSCRIPTION

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 CPT-4 and HCPCS procedure coding as well as ICD-9-CM diagnostic coding. This course will cover the principles of complete and accurate coding for both statistical reporting and insurance billing. 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, OFCR1316 and OFCR1335) **(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: 2 & 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: 2 & 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**

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 reading assessment test OR ENGL0921) **(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 reading assessment test OR ENGL0921) **(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: CHEM2000) **(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: CHEM2000, HLTH1010, and PHRM1000. 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: CPLT1100, HLTH1010, and PHRM1000) **(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**

PHYS2001 INTRODUCTORY PHYSICS

MNTC: 3

Physics is the study of matter, energy, force and motion and the interrelationships among them. Fundamental principles of physics provide the basis upon which much of modern technology operates. This is a one semester course that covers the basic principles of physics with an emphasis on conceptual understanding and application. Students will gain an understanding of natural processes and their applications. Topics include the structure of matter, mechanics, heat, light, electricity, magnetism, and sound. (Prereq: Qualifying score on math assessment test OR MATH1000 or MATH1006) **(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 MATH1011 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 MATH1011 with a grade of C or better and PHYS2005 with a grade of C or better) **(BP/EP) 4 cr**

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**

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 stream equipment, and plastics molding materials in an effort to produce a quality product. (Prereq: PLST2011) **(BP) 4 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: MATH1000 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**

PRPO1011 INTRODUCTION TO PROFESSIONAL PHOTOGRAPHY

This course will focus on basic camera handling techniques of DSLR (digital single lens reflex) cameras. The course will introduce the student to features, advantages and disadvantages of the single lens reflex camera as well as meter usage and exposure control, lens selection and composition. This course will also introduce professional opportunities in photography. (Prereq: Qualifying score on reading assessment test OR ENGL0921) **(EP) 2 cr**

PRPO1030 BLACK AND WHITE PHOTOGRAPHY

This course will introduce the student to both the theory and practical application of black and white processing and printing as well as the photo chemical process. Course emphasis is on the fundamentals of black and white film and paper processing, proof printing, projection printing, print finishing and presentation techniques. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal. (Prereq: None) **(EP) 3 cr**

PRPO1051 AMBIENT LIGHTING CONTROLS

This course will introduce the student to both the practical and theoretical application of controlling the photographer's most important tool, light. The course will deal with using light modifying devices and hand held meters. Controlling the direction, quantity, quality, ratio and color of light for both outdoor (natural) and indoor (existing) light are the main focus of this class. (Prereq: Qualifying score on reading assessment test OR ENGL0921) **(EP) 3 cr**

PRPO1071 PHOTOGRAPHIC DESIGN

This course will introduce the student to the theory as well as the practical applications of controlling the aesthetics of a photographer's final product, the photograph! Emphasis will be placed on developing the compositional elements in the camera's viewfinder prior to shooting and developing the ability to `see` photographically. (Prereq: Qualifying score on reading assessment test OR ENGL0921) **(EP) 2 cr**

PRPO1170 PHOTOGRAPHER'S ASSISTANT

This course will introduce the student to the practical duties and responsibilities of a professional photographer's assistant. Emphasis will be placed on the actual performance of photo shoots both in the studio and on location. Students will get hands on experience with many different lighting systems and camera systems that reflect a professional photographers set-up. (Prereq: Qualifying score on reading assessment test OR ENGL0921) **(EP) 3 cr**

PRPO1241 PORTRAITURE I

This course is designed to introduce the student to the basic techniques of portrait photography. Emphasis is placed on lighting and posing individuals and couples as well as corrective portrait techniques. (Prereq: PRPO1011, PRPO1051 and PRPO1170) **(EP) 4 cr**

PRPO1250 COMMERCIAL PHOTOGRAPHY I

This course will introduce the student to the use of studio tungsten and studio strobe lighting equipment. The student will address issues dealing with the controlled studio environment as well as the application of basic lighting principles to a variety of subject matter. The emphasis will be on furthering the student's understanding and control of the photographer's most important tool, light! (Prereq: PRPO1011, PRPO1051, and PRPO1170 or instructor approval) **(EP) 4 cr**

PRPO1290 LOCATION FLASH PHOTOGRAPHY

This course will introduce the student to different types of portable lighting devices and controls. Emphasis will be placed on using dedicated, through the lens (TTL) metering flash devices on and off camera. Students will be exposed to radio controls, high speed flash and multiple off camera ratio lighting. The course will replicate real world scenarios encountered by professional photographers. The power and versatility of the latest TTL dedicated flash units give the photographer an indispensable tool for lighting. (Prereq: PRPO1011, PRPO1051 and PRPO1170) **(EP) 3 cr**

PRPO1400 DIGITAL DARKROOM I

This class will instruct the student in the use of Adobe Photoshop as it applies to the everyday needs of the photographer working in a digital studio. Students will learn retouching techniques, color correction, compositing and color management as they apply to both portrait and commercial studios. Students will learn professional techniques in scanning, printing and non-destructive imaging techniques. (Prereq: Qualifying score on reading assessment test OR ENGL0921) **(EP) 3 cr**

PRPO1800 DIGITAL DARKROOM II

This course will reinforce and expand knowledge gained in Digital Darkroom I. Emphases in Photoshop techniques used by working photographers. Images will be provided but students are encouraged to use their own. Every stage of the digital workflow that ensures the highest quality photographic product will be covered. Students will expand their digital problem solving skills and review Adobe certifications. (Prereq: PRPO1400) **(EP) 3 cr**

PRPO2050 COMMERCIAL PHOTOGRAPHY II

This course is designed specifically for the advertising industry. Skill emphasis will be on meeting the criterion of an `Art Director`, shooting to ad layout requirements. Topics include tethered capture, illustrative lighting techniques, proficiency in studio processes and post production. Assignments will involve a catalog shoot; surface lighting, propping, backgrounds and technical lighting requirements for publication. This course includes a unit on the unique problems associated with shooting food and working with a food stylist. (Prereq: PRPO1250 or instructor approval) **(EP) 4 cr**

PRPO2060 COMMERCIAL PHOTOGRAPHY III

This is the most advanced level course offered in the commercial photography track and designed to introduce the student into one of the highest skilled, most demanding and thus one of the highest paid areas of photography. Working with lighting concepts and creative problem solving is the main focus of this class. Students will experiment with light and work on creating their own photographic style. The final portion of the course is devoted to the procurement, directing and shooting of models in the studio and on location. (Prereq: PRPO2050 or instructor approval) **(EP) 4 cr**

PRPO2100 DIGITAL DARKROOM III

This course is designed to improve the student's skills in the digital lab. Students will deal with various digital capture devices, importing and manipulation in the computer, profiling devices, naming conventions, helper programs and determining what method of output is best for their images. Emphasis will be on creative problem solving, digital workflow and advanced imaging styles. (Prereq: PRPO1400) **(EP) 3 cr**

PRPO2401 PORTRAITURE II

This course is designed to further the student's development of a personal style of portrait photography. Course emphasis will be placed on refining the student's technique in all areas of portraiture, as well as business practices. (Prereq: PRPO1241) **(EP) 4 cr**

PRPO2410 BUSINESS OF PHOTOGRAPHY

This course is designed to assist the student in the understanding of the business practices of professional photography. Course content includes estimating, pricing, negotiating, copyright and marketing strategies. (Prereq: Minimum of 12 credits earned in the program) **(EP) 2 cr**

PRPO2460 WEDDING PHOTOGRAPHY

This is an advanced level course designed to introduce the student to professional wedding photography. The course covers the basics of the wedding business from sales and promotion to delivery of the wedding albums. Course emphasis is on a `mock` wedding to allow student photographer to practice developing skills in shooting a wedding and producing a quality sample wedding album. (Prereq: Minimum of 30 credits earned in the program or instructor approval) **(EP) 3 cr**

PRPO2530 PORTRAITURE III

This course is designed to further the students knowledge of portrait photography. The emphasis will be placed on location and environment portraiture as well as a continued refinement of posing and lighting techniques. The course will also cover the basics of the business aspects of portrait photography. (Prereq: PRPO2401) **(EP) 3 cr**

PRPO2570 PHOTOGRAPHIC INDEPENDENT STUDY

This is a `student-centered` course designed around meeting the student's specific career exploratory efforts. Emphasis is on the student and the instructor jointly designing a specific course core intended competencies to be accomplished. This course is offered to meet highly unique, research or creative areas of photography not covered in any other program course content.

Viable `products` must be accomplished at the conclusion of the course that meet or exceed course objectives. This course may not be audited. (Prereq: Instructor approval) **(EP) 1-3 cr**

PRPO2580 PROFESSIONAL PHOTOGRAPHY INTERNSHIP I

This internship is available to students in either the third or fourth semester status of his/her program. Students may elect to make `internship` a full-time semester but does NOT replace diploma requirements. Course emphasis is on selecting an internship site within a very narrow career focus in order to gain maximum exposure to his/her career interest. (Prereq: Minimum of 24 credits earned in the program or instructor approval) **(EP) 2 cr**

PRPO2590 PROFESSIONAL PHOTOGRAPHY INTERNSHIP II

This internship is available to students in either the third or fourth semester status of his/her program. Students may elect to make `internship` a full-time semester but does NOT replace diploma requirements. The course has a variable credit option to permit internship study opportunities from as little as three hours per week to as many as forty hours per week at the internship site. Course emphasis is on selecting an internship site within a very narrow career focus in order to gain maximum exposure to his/her career interest. (Prereq: Minimum of 24 credits earned in the program or instructor approval) **(EP) 1-8 cr**

PRPO2821 PROFESSIONAL PHOTOGRAPHY PORTFOLIO

This is the keystone course in the Professional Photography Program. All other courses in the program have been developing competencies to make this course successful. Here the student `puts it all together` to produce a highly effective and professional quality portfolio that helps the student gain employment in their chosen career area. The final portion of the course is devoted to the portfolio exhibits and a comprehensive exam covering the graduate's gained knowledge over the course of the program. (Prereq: A minimum of 30 credits earned in the program or instructor approval) **(EP) 4 cr**

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**

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 stroke cycle and four stroke cycle engines. They will use tools and measuring equipment to evaluate these engines. Students will learn the proper names and uses of tools used in the industry. The student will diagnose engine problem, disassemble various engines, inspect engine internal and external components, make repairs as needed, reassemble and test run to manufacturer's specifications. The student will also learn how to do simple maintenance on common outdoor power equipment used in public maintenance. (Prereq: Current enrollment in or completion of PWRK1001 or PWRK1005) **(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 math assessment test OR MATH0900, and PWRK1001, and PWRK1005) **(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**

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: PWRK1001 and PWRK1005) **(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**

PWRK1061 PUBLIC WORKS SKILLS

This program will familiarize students with various pieces of mechanized equipment found in public works agencies. Students will identify and demonstrate safe operating practices while working in trenching, excavating, confined space and other environments typical of public works employment. (Prereq: PWRK1001, PWRK1005, and PWRK1055) **(BP/EP) 4 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: PWRK1001 and PWRK1005) **(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: PWRK1000, PWRK1005, PWRK1020, and PWRK1055) **(BP/EP) 3 cr**

RRBD1000 COMPUTERS IN CONSTRUCTION

This course is for those currently working or studying to work in the building, remodeling or design industry that need to learn basic computer skills and is an introduction into software packages that are used in the building industry. Topics include, basic computer hardware, operating systems, internet research, word-processing, spreadsheets, and visual presentations, Auto CAD, Revit, and/or Chief Architect. (Prereq: None) **(BP/EP) 2 cr**

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 ENGL0930. 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 ENGL0930. 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 ENGL0930. 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 ENGL0930. Basic computer skills recommended) **(BP/EP) 3 cr**

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**

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**

WLDG1181 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 fit-up and weld an assembly or weldment given a bill of materials and a drawing. This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal. (Prereq: None) **(BP) 3 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**

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) 1-4 cr**

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ASE L-1 & L-2 Certifications

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