

2025-2026

ACADEMIC CATALOG

ST. CLOUD 
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State





A member of Minnesota State

1540 Northway Drive
St. Cloud, MN

Telephone: [\(320\) 308-5000](tel:(320)308-5000) (V)
TTY [\(320\) 308-5988](tel:(320)308-5988)

Toll Free: [\(800\) 222-1009](tel:(800)222-1009)

www.sctcc.edu

Every effort has been made to ensure the accuracy of the material contained within this catalog as of the date of publication. However, all policies, procedures, academic schedules, program information, and fees are subject to change at any time by appropriate action of the faculty, the College administration, the Minnesota State Board of Trustees or the Minnesota Legislature without prior notification. The provisions of this catalog do not constitute a contract between the student and the College. The information in this catalog is for use as an academic planning tool and is subject to change at any time.

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St. Cloud Technical & Community College is referred to as SCTCC throughout this document.

This publication is available in alternate formats upon request by calling Records and Registration at [\(320\) 308-5075](tel:(320)308-5075), [1\(800\) 222-1009](tel:(800)222-1009), or registration@sctcc.edu. TTY users please call MN Relay Service at [711](tel:711) to contact the college.

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FINDING SCTCC



Location

St. Cloud Technical & Community College (SCTCC)

1540 Northway Drive, St. Cloud, MN 56303

[\(320\) 308-5000](tel:3203085000) or [1-800-222-1009](tel:18002221009)

www.sctcc.edu.

The Admissions Office is located in the northwest section of the Northway Building. Parking is available in Lot C adjacent to Northway Drive.

Driving Directions:

- From the southeast on I-94, take the St. Augusta exit #171, travel Country Road 75 north approximately 1 mile to Clearwater Road. Turn right and follow Clearwater Road until it becomes Ninth Avenue, which will take you through the city to our campus.
- From the west on I-94, take the Highway 15 exit, then follow Highway 15 north to 12th Street. Turn right and follow 12th Street east until you reach Northway Drive. Follow Northway Drive to our campus.
- From the north on Highway 10, take the Highway 15 exit. Take the Benton Drive exit, turn left on Benton Drive through Sauk Rapids. Turn right at 2nd Street North, go across the Mississippi River bridge, continue straight ahead on Ninth Avenue to our campus.
- From south on Highway 10 or the east on Highway 23, at the cloverleaf follow Highway 23 West/Division Street to the Ninth Avenue North exit. Turn right and follow Ninth Avenue North to our campus.
- From the south on Highway 15 or southwest Highway 23, follow Highway 15 north to 12th Street. Turn right and follow 12th Street east until you reach Northway Drive. Follow Northway Drive to our campus.

GENERAL INFORMATION

College Overview

St. Cloud Technical & Community College (SCTCC) offers programs of study that lead directly to employment opportunities in the region as well as transfer options to four-year universities and colleges to pursue a bachelor's degree. SCTCC is a member of the Minnesota State Colleges and Universities system. Located in an urban area with a population of approximately 68,000, just one hour north of the Minneapolis/St. Paul metro area, SCTCC is the second largest higher education institution in the St. Cloud area.

SCTCC was founded in 1948 as a vocational-technical institute and was part of the local school district. In 1966, the College moved from the high school to its present location on Northway Drive. The North Central Association of Colleges and Schools, now the Higher Learning Commission, accredited the college in 1985. In 1995, the college became a member of the newly-formed Minnesota State Colleges and Universities system, now known as Minnesota State. In 2010, SCTCC became a comprehensive technical and community college.

SCTCC offers 50 majors with over 80 certificate, diploma or degree options that can be completed in two years or less. Nearly 5,000 students are enrolled in credit-based classes annually. More than 70% of the student population comes from the surrounding six counties, with the remaining students hailing from around the globe. In the past two years, more than 99% of the College's graduates found employment in their fields of study or successfully transferred to another college or university to continue their education.

Mission

We provide the education, training, and support necessary for equitable participation in our society, economy, and democracy.

Vision

We are a community of learners rooted in meaningful relationships where everyone belongs and thrives.

Shared Beliefs

- Education empowers individuals and transforms generations.
- Every individual has intrinsic value and every voice deserves to be heard.
- Our differences enrich our community.
- An antiracist and antidiscrimination ethos is necessary for advancing social justice and equity.
- It is our responsibility to ensure equitable outcomes for our students. Each student can succeed.
- Innovation, flexibility, and life-long learning are critical for our community to thrive.
- Mutually accountable relationships built on trust are essential for our success.
- Community partnerships strengthen and sustain us.

Desired Student Experience

SCTCC is committed to student success, equity in outcomes, and providing an empowering and transformational student experience of:

- Educational programs that prepare students for the future of work and life through innovative, flexible, and relevant learning experiences;
- Personalized and supportive services that help learners achieve their academic and career goals and meet their non-academic needs;
- A welcoming and engaging environment that fosters a sense of belonging through meaningful connections with employees and other students; and
- Clear pathways to completion, transfer, and a fulfilling career.

SCTCC will promote this experience by providing:

- A caring, inclusive, and culturally responsive community that ensures equitable outcomes for all students;
- Streamlined processes that ensure timely communications and delivery of resources and services when students need them;

- Proactive, effective, and ongoing supports that guide students in selecting and progressing through their program of study; and
- A quality and affordable education in a student-ready environment that meets students where they are and serves the whole person.

College Outcomes

- *Demonstrate Personal and Social Accountability*
Students will develop a sense of personal and professional responsibility by incorporating values into ethical decision-making.
- *Think Critically*
Through consideration of multiple perspectives, students will clarify, analyze, and develop methods that are useful for solving problems and complex issues to make valid, relevant, and informed decisions.
- *Communicate Effectively*
Students will use appropriate processes to demonstrate effective communications in a variety of contexts and formats including listening, reading, speaking, and writing.
- *Understand Social & Global Perspectives*
Students will demonstrate a global perspective and identify the key components of social responsibility in their profession, their community, and in the rapidly changing world.
- *Apply Knowledge*
Students will demonstrate knowledge and skills through interdisciplinary application of concepts and constructs. Application of knowledge takes place through student participation in experiences across all disciplines, which includes practice and demonstration to adapt intellectually and to develop workplace readiness.

Equal Opportunity:

SCTCC is committed to providing equal education and employment opportunities to all persons regardless of race, color, creed, sex, age, religion, marital status, sexual orientation, national origin, disability status, with regard to public assistance or any other group or class against which discrimination is prohibited by State or Federal law. Further, the college will not tolerate acts of sexual harassment/assault within its area of jurisdiction.

SCTCC will continue to remain in full compliance with: Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act Amendments Acts (ADAAA) of 2008, the Americans with Disabilities Act of 1990 and the 1992 Crime Bill.

Inquiries, complaints or grievances concerning the application of affirmative action or equal opportunity at SCTCC should be referred to the affirmative action officer, Kari Matson by telephone at [\(320\) 308-3227](tel:3203083227) or email kari.matson@sctcc.edu.

Faculty and Staff inquiries or complaints concerning Title IX should be referred to Kari Matson by telephone [\(320\) 308-3227](tel:3203083227) or email kari.matson@sctcc.edu. Student inquiries or complaints concerning Title IX should be referred to Andrew Pflipsen, Title IX Coordinator, located in office 1-401, Northway Building or by telephone at [\(320\) 308-5580](tel:3203085580) or email andrew.pflipsen@sctcc.edu.

Inquiries for students and public guests about services provided to maintain compliance with Section 504 of the Rehabilitation Act of 1973 or the Americans with Disabilities Act of 1990 should be referred to Accessibility Services. Inquiries can be made in person, in office, 1-448, Northway Building, by telephone [\(320\) 308-5064](tel:3203085064) or acc@sctcc.edu. TTY users please call MN Relay Service at 711 to contact the college. Employee requests for such considerations can be directed Human Resources, in office 1-402, Northway Building or telephone [\(320\) 308-3227](tel:3203083227).

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ACCREDITATIONS

St. Cloud Technical & Community College is accredited by:

The Higher Learning Commission
230 South LaSalle Street, Suite 7-500
Chicago, IL 60604
www.hlcommission.org

In addition to institutional accreditation, all programs offered at St. Cloud Technical & Community College are approved by the Minnesota State System. The following programs are accredited, licensed or approved by national, state, or program specific agencies. For the most current accreditation information and statuses, please visit [SCTCC's accreditation page](#).

Automotive Service, Auto Body Repair and Medium/Heavy Truck are accredited by the ASE Education Foundation, 1503 Edwards Ferry Rd., NE, Suite 401, Leesburg, VA 20176 [\(703\) 669-6650](tel:7036696650) aseeducationfoundation.org.

Cardiovascular Technology is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), 9355-113th St. N, #7709, Seminole, FL, 33775. Telephone: [\(727\) 210-2350](tel:7272102350) Fax: (727) 210-2354, www.caahep.org and Joint Review Committee on Education in Cardiovascular Technology (JRC-CVT), 355 Hartford Ave West Uxbridge, MA 01569. Telephone: [\(413\) 628-5228](tel:4136285228) www.jrccvt.org.

Dental Assisting is accredited by the Commission on Dental Accreditation. The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at [\(800\) 232-6108](tel:8002326108) or at 401 North Michigan Ave Suite 3300, Chicago, IL 60611. <https://coda.ada.org/>.

Dental Hygiene is accredited by the Commission on Dental Accreditation. The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at [\(800\) 232-6108](tel:8002326108) or at 401 North Michigan Ave Suite 3300, Chicago, IL 60611. <https://coda.ada.org/>.

Diagnostic Medical Sonography Generalist is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) www.caahep.org upon recommendation of the Joint Review Committee on Education in Diagnostic Medical Sonography (JRC-DMS). Commission on Accreditation of Allied Health Education Programs (CAAHEP) 9355-113th St. N, #7709, Seminole, FL, 33775. Telephone: [\(727\) 210-2350](tel:7272102350) Fax: (727) 210-2354. www.caahep.org Joint Review Committee on Education in Diagnostic Medical Sonography (JRC-DMS), 6021 University Blvd, Suite 500, Ellicott City, MD 21043. Telephone: [\(443\) 973-3251](tel:4439733251). Fax: [\(866\) 738-3444](tel:8667383444). www.jrcdms.org

Electrical Construction Technology is certified by the Minnesota Department of Labor and Industry, 443 Lafayette Road N, St Paul, MN 55155, Telephone: [\(651\) 284-5005](tel:6512845005).

Emergency Medical Services (EMS) courses are approved by the Minnesota Emergency Medical Services Regulatory Board (EMSRB) to teach Paramedic, initial and refresher, Emergency Medical Technician (EMT) initial and refresher courses and Emergency Medical Responder (EMR). The cardiopulmonary resuscitation (CPR) and first aid courses are conducted through the American Heart Association and National Safety Council standards. EMSRB, 335 Randolph Avenue St. Paul Mn 55102 <https://mn.gov/oems/>

Health Information Technology is accredited by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM), 200 East Randolph Street, Suite 5100, Chicago, IL, 60601. Telephone: [\(312\) 235-3255](tel:3122353255). www.cahiim.org.

Associate Degree Nursing (ADN) is approved by the Minnesota Board of Nursing. <http://mn.gov/health-licensing-boards/nursing>. This program is accredited by the National League for Nursing Commission for Nursing Education Accreditation (NLN CNEA), [https://cnea.nln.org](http://cnea.nln.org) 2600 Virginia Avenue, NW, Eighth Floor, Washington, DC 20037. Telephone: [\(202\) 909-2526](tel:2029092526).

Nursing Assistant is approved by the Minnesota Department of Health, <https://www.health.state.mn.us/facilities/providers/nursingassistant/index.html>, 85 East Seventh Place, Suite 300, P.O. Box 64501, St. Paul, MN. Telephone: [\(651\) 215-8705](tel:6512158705).

Paramedicine is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) www.caahep.org upon the recommendation of the Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions (CoAEMSP). Commission on Accreditation of Allied Health Education Programs (CAAHEP), 9355-113th St. N, #7709, Seminole, FL, 33775. Telephone: [\(727\) 210-2350](tel:(727)210-2350) Fax: (727) 210-2354. www.caahep.org CoAEMSP: Telephone [\(214\) 703-8445](tel:(214)703-8445). Fax [\(214\) 703-8992](tel:(214)703-8992). www.coaemsp.org.

Practical Nursing is approved by the Minnesota Board of Nursing. <http://mn.gov/health-licensing-boards/nursing>. The program is accredited by the Accreditation Commission for Education in Nursing (ACEN) <http://www.acenursing.org/> 3390 Peachtree Road NE, Suite 1400, Atlanta, GA 30326. Telephone: [\(404\) 975-5000](tel:(404)975-5000).

Surgical Technology is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) www.caahep.org upon the recommendation of the Accreditation Review Council on Education in Surgical Technology and Surgical Assisting (ARC/STSA). Commission on Accreditation of Allied Health Education Programs (CAAHEP), 9355-113th St. N, #7709, Seminole, FL, 33775. Telephone: [\(727\) 210-2350](tel:(727)210-2350) Fax: (727) 210-2354. www.caahep.org.

Water Environmental Technologies is certified by the Minnesota Department of Health, 625 Robert Street North, St. Paul MN, 55164 Telephone: [\(651\) 201-5000](tel:(651)201-5000) and the Minnesota Pollution Control Agency, 520 Lafayette Road, St. Paul, MN Telephone: [\(651\) 296-6300](tel:(651)296-6300).

ADMISSIONS

ADMISSIONS POLICY

St. Cloud Technical & Community College (SCTCC) grants admission to all persons 16 years of age or older regardless of race, creed, color, veterans status, religion, gender, physical ability, age, national origin, marital status, sexual orientation, or public assistance status. Admission to courses is based on meeting validated course prerequisites.

Lack of English skills should not be a barrier to admission or participation. In order to eliminate barriers, each student's ability to participate and benefit is assessed through placement testing and academic advising. Based on assessment and academic advising results, students are either connected to campus resources to complete admission to the college or provided a referral to community resources for participation in college preparation programs. Students with completed college-level courses, ACT, SAT, or MCA scores may be exempt from portions of the placement testing requirement.

Applications are taken beginning the third Tuesday in September, one year prior to the start of fall semester. The college has a rolling admission policy, meaning that applications are acted upon and students are notified of admission generally within 14 days of the receipt of all application materials.

Once admitted to SCTCC, students may enroll in any course or program as long as individual course pre-requisites are met and space for effective instruction is available. The timeframe for when advising and registration will begin will be communicated to the student. The college will guide a student's enrollment based on academic skills assessments, interviews, previous achievement, and other criteria as explained in this section.

Admission to the college does not guarantee admission to college-level courses or a desired major. Students applying for programs with selective admissions criteria may be required to complete pre-requisite courses and/or take additional tests prior to admission. Students who do not meet the standards for admission into a certain program may enroll in college readiness courses designed to help them meet program qualifications.

ADMISSIONS PROCEDURES

Students pursuing a degree, diploma or certificate must complete the following admission requirements:

1. Submit an [SCTCC Application](#) available online
2. Submit Transcript(s)
Transcripts are required for individuals who have graduated from high school in the previous 10 years. Students who graduated outside the 10 year time frame, and want to access financial aid, may be required to submit their high school transcript or GED certificate to verify

proof of graduation. Students who cannot provide proof of high school graduation may be eligible for Admission, but may not receive financial aid.

Official college transcripts are required from students with previous college level course work when transferring credits. Official non-Minnesota State transcripts must be sent directly from the previous college in a sealed envelope, or via email to enroll@sctcc.edu. Minnesota State transcripts can be obtained electronically by SCTCC, but the Admissions Office must be made aware that the student has previously attended a Minnesota State institution. Transcripts mailed, emailed, or presented by the student are considered unofficial and cannot be used for transfer of credit purposes.

Students with transcripts issued from any country outside of the United States will be required to have their transcripts evaluated by organizations affiliated with National Association of Credential Evaluation Services (NACES). Information can be found at www.naces.org/members. The student will incur any costs associated with having the evaluation completed. For college transcript evaluations, it is recommended that students request a course by course evaluation.

UNPAID BALANCE AT PREVIOUS INSTITUTION

See Minnesota State Policy 3.4

Students who have an unpaid balance at another system college or university shall not be allowed to register for courses at SCTCC.

Students Suspended from Other Institutions

See Minnesota State Policy 3.4

Students on academic suspension from a Minnesota State College or University shall not be admitted to SCTCC during the term of that suspension unless they demonstrate potential for being successful in the particular program to which they apply. Any student who left their previous college on academic suspension must complete the admissions appeal process to be considered for admission.

Any student who left their previous college on academic suspension and is subsequently accepted to SCTCC will be accepted on academic warning (whether or not their suspension period has ended or an appeal has been approved). If suspension date and reinstatement dates are posted, those are the dates that will be used. For Minnesota State colleges, it will be assumed that academic suspensions will be posted. If a suspension is posted, but reinstatement date is not noted, eligibility for reinstatement will be considered to be one year.

Students who have been suspended or expelled for disciplinary reasons from any postsecondary institutional may be denied admission to a Minnesota State college or university.

Impact of Criminal Records

Students who have been arrested, charged, or convicted of any criminal offense, should investigate the impact that the arrest, charge, or conviction may have on their chances of employment in the field they intend to study or on their chances to obtain federal, state, and other higher education financial aid.

Background Check for Health Programs

State law requires that any person who intends to provide services that involve direct contact with patients and residents at a health care facility have a background check provided by the state of Minnesota.

An individual who is disqualified as a result of a background check has the right to request reconsideration of the disqualification. It is the responsibility of the student to request reconsideration by the Commissioner of Health. An applicant is considered to be disqualified during the reconsideration process. **A student who has any restriction will not be sent to a clinical site.** Please see individual program handbooks for special procedures.

International Student Admission Procedures

International student applicants must submit the following materials and information:

1. A completed online Application.
2. Read, initial, and sign International Student Agreement.
3. A completed Financial Responsibility Form
4. Current official bank statement showing sufficient funds to cover educational, living, health insurance, and transportation expenses.
5. Completed Supplemental Information Form.
6. A copy of valid, non-expired passport information page.
7. Official secondary school (high school) transcript, in English, indicating completion, graduation, or equivalent.
8. Proof of English language proficiency from one of the following:
 - TOEFL: 61 minimum is required (with not less than 15 on reading, writing and listening sub scores) using the on-line version of the test
 - IELTS (International English Language Testing System): score of 5.5 minimum
 - Duolingo English: score 90 or higher
 - Accuplacer NG Reading, ACT Reading, SAT EBRW, or certain US college credits may count towards the English requirement.
9. Transfer student only:

- International Transfer Student Form completed jointly by student and international officer or DSO from previous institution.
- Request U.S. college/university official transcripts to be sent to SCTCC for possible Accuplacer placement test exemption and transfer of credits.
- Send a copy of current visa, I-20, and I-94 arrival/ departure record.

10. Accompanied by spouse and/or child dependent(s) only:

- Complete F-2 Dependent Form so we can issue additional I-20s for each dependent.

11. Submit all required admissions items and supporting documents to internationaladmissions@sctcc.edu or by mail at 1540 Northway Drive, St Cloud, MN 5630.

12. All completed applications will be manually reviewed by a DSO and eligible applicants will then receive an I-20 and admission letter.

Admitted international student must complete the following actions prior to attendance:

1. Pay the I-901 SEVIS fee and schedule a visa appointment at their local embassy or consulate. They must attend the interview and be approved a visa prior to attending the college.
1. Students granted an F-1 visa must travel to the United States and arrive in St. Cloud prior to orientation and the start of classes, but no more than 30 days before the program start date.
1. All international students must attend International Student Orientation & Registration on given date and time.
1. MN State approved health insurance plan through UnitedHealthcare is required and must be purchased through the college upon enrollment.

VISITING AND NON-DEGREE SEEKING STUDENT ADMISSION

Persons who are interested in registering for selected courses, but are not interested in pursuing a diploma or a degree at SCTCC, are designated by the college as visiting and non-degree seeking students. These students are not required to complete the usual application or to submit high school transcripts, but must meet course placement or pre-requisite requirements. Students should consider declaring a major once they have completed 16 credits. Visiting students are responsible for knowing and adhering to all college policies and deadlines. Contact Records and Registration for additional information at [\(320\) 308-5075](tel:3203085075) or visit www.sctcc.edu/visiting-students.

DECLARATION OF A MAJOR

To assist with educational planning, it is recommended that non-admitted or visiting students declare a major upon

completion of 16 semester credits of coursework as a resident student. The student should submit the college application found at www.sctcc.edu/apply to declare a major following the Admissions Procedures outlined in this document. If admitted to the major of choice, for future course registration the student will meet with their assigned academic advisor.

PROGRAM OPEN ENROLLMENT

Programs and courses that have seats available are open for enrollment before the start of each semester. Students must meet course placement or pre-requisite requirements. Some programs require courses to be taken in sequence, and starting a program out of sequence may extend the time required to complete the degree/diploma. Not all courses are offered every semester.

HIGH SCHOOL OPTIONS

Articulated College Credit

SCTCC works with area high school teachers to align select high school courses with college courses. This alignment is evidenced by a signed articulation agreement between the institutions. Students who achieve a grade of “B” or higher in the course and are approved by the high school teacher will be issued a Record of Articulated College Credit and are required to present it to the SCTCC Registration Office for review. Students and teachers can access articulated college credit information at <http://ctecreditmn.com/>.

Acceptance of Articulation Agreements

Non-Member Districts

SCTCC will consider accepting articulated college credit from other Minnesota articulated college credit consortia. The student must submit a Record of Articulated College Credit. The Registrar will review the record to determine if the content is applicable to an SCTCC course and will then forward it to the appropriate faculty member for approval. Records and Registration will contact the student with the results of the review.

Discovery Academy

Discovery Academy, SCTCC’s concurrent enrollment program, is an opportunity for high school students to take college courses. The courses are taught in various cooperating high schools throughout the region. The courses are posted in the high school course catalog, and interested students register through their high school guidance counselor. Occasionally, a course is offered in a neighboring school district and students will need to travel to the site to participate. Most courses are taught by a high school teacher—a few courses are taught by college faculty. More information is available at www.sctcc.edu/discovery-academy.

SCTCC’s Discovery Academy is accredited by the National Alliance of Concurrent Enrollment Partnerships (NACEP).

Courses available in 2025-2026 may include:

Health:

- Nursing Assistant

Automotive:

- Automotive Suspension & Alignment
- Chassis Electrical
- Brakes
- Engine Ignition and Emission Systems

Welding:

- Thermal Welding & Cutting Processes
- Print Reading & Math Applications
- Arc Welding Processes

Electronics:

- Safety Awareness
- Maintenance Process & Production
- Quality Practice
- Maintenance Awareness

For more information about these courses, where they are offered, and how to apply, please contact Susan Jordahl, Director of K-12 Initiatives at [\(320\) 308-5908](tel:320-308-5908) or susan.jordahl@sctcc.edu.

POST SECONDARY ENROLLMENT OPTION (PSEO)

See SCTCC Policy S3.30

Students pursuing enrollment in the PSEO program must submit a completed SCTCC PSEO application for enrollment, a Notice of Student Registration (NOSR) form, and a high school transcript. Application deadlines: (Fall Semester: June 1, Spring Semester: November 1). Students are required to complete the Accuplacer testing (unless exempt) and meet with the PSEO coordinator at SCTCC at [\(320\) 308-6022](tel:320-308-6022) to discuss procedures and expectations of the program and register for courses.

Who is Eligible for PSEO?

The PSEO program is available to sophomores, juniors, and seniors who are enrolled in a Minnesota public or private high school, home school, or alternative learning center. Students must demonstrate evidence of ability to complete college level work.

Students who wish to enroll in courses at SCTCC through the PSEO program must meet the minimum score requirements indicating college readiness on Accuplacer assessment or meet the exemption qualifications found in SCTCC’s Assessment for Course Placement Policy.

Career and Technical Education

Sophomores may enroll in a career or technical education course at a Minnesota State college or university if they have attained a passing score or met the 8th grade standard on the 8th grade Minnesota Comprehensive Assessment in reading and meet other course prerequisites or course enrollment standards established by the college. These standards include but are not limited to assessment test scores, program admission, or other requirements.

If a sophomore receives a grade of “C” or better in the course, the student shall be allowed to take additional career, technical education, or liberal arts and sciences courses in subsequent terms.

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 system Assessment for Course Placement and achieve the required scores prior to enrollment.

There is a \$10 charge to retake the Accuplacer test. If testing accommodations are needed, documentation of disability is required in advance. Testing with accommodations is scheduled individually. Contact the Accessibility Services Coordinator at [320-308-5064](tel:320-308-5064) or via e-mail acc@sctcc.edu

If test scores are not achieved, college readiness courses may be required to prepare for the identified classes. The PSEO program does not cover tuition or book costs for college readiness courses. Students are required to pay tuition and book costs of college readiness courses.

To complete an application to the college, PSEO students must submit a completed SCTCC Graduation Plan. Students also complete the Minnesota Department of Education, Postsecondary Enrollment Option, NOSR form.

PSEO students are accepted to courses and majors on a space available basis. Some courses may be blocked from PSEO student enrollment. Students will need to meet each semester with their PSEO advisor to select courses and to provide a PSEO notice of student registration form.

PSEO Books

The costs of books and tuition will be covered by the PSEO program. PSEO books will be available to PSEO students prior to the start of the semester. These books are the property of the college and must be returned to the college bookstore by the last day of finals week each semester. PSEO students withdrawing from the college should return their books immediately. Students will be charged for the cost of unreturned textbooks.

PSEO Parking

PSEO students are responsible to pay a \$3.50 per credit fee each semester to park on campus. The parking fee can be paid at the Financial Services Office, and must be paid prior to obtaining books. PSEO students not driving or parking on campus may

have the parking fee waived by stopping at the Financial Services Office. Completely online students do not need to obtain a parking permit or fill out a parking waiver.

PSEO Academic Requirements

PSEO students must maintain a cumulative GPA of 2.0 or better (C average) and cumulative completion of 66.67% to continue enrollment in the program.

A copy of PSEO students' class schedules and grades for those classes are sent to the students' high school each semester.

Students requesting supplemental support services may access 2.5 hours a week of supportive instruction. If additional accommodations are required, the school district and the college will negotiate for the provision of services. Contact the PSEO coordinator for specific information.

For PSEO state statute, refer to MN Statute 124D.09

- Immunizations

Minnesota Law (MS 135A.14) requires that all students born after 1956 and enrolled in a public or private postsecondary school in Minnesota must provide evidence of immunization for measles, rubella, mumps, diphtheria, and tetanus. Students graduating from a Minnesota high school after 1997 are not required to provide documentation.

Forms for this purpose are available from the Admissions Office and online at www.sctcc.edu/admissions-forms. Students may also submit immunization records maintained by their high school or health care provider. Proof of immunization must be received no later than the 45th day of the term, or the student will not be allowed to register for subsequent terms.

MINNESOTA STATE RESIDENCY

See [Minnesota State Policy 2.2](#) and [M.S. 135A.031, sbd2](#).

Students may establish eligibility for in-state tuition by demonstrating domicile in Minnesota before the beginning of any term. Students must have resided in Minnesota for at least one calendar year immediately prior to applying for in-state tuition. Residence in Minnesota must not be for educational purposes. Students must provide sufficient evidence of domicile to the Admissions Office. Requests submitted without documentation will be returned to the student unprocessed. Students will receive a written response by mail within 30 days of their request.

EDUCATIONAL POLICIES

For the complete and most current listing of College Policies and Procedures visit www.sctcc.edu/policies

ABILITY TO BENEFIT POLICY (ATB)

See Minnesota State Policy 3.4

Students who do not possess a high school diploma or GED certificate will not be eligible to receive financial aid. The ATB is a standardized, federally approved test. Persons who do not have a high school diploma or GED may take the Accuplacer test at SCTCC to determine their ability to benefit from instruction. This policy does not restrict a student from enrolling in programs at SCTCC, but does apply to receiving financial aid. For more information, please contact the Admissions Office at [\(320\) 308-5089](tel:3203085089).

ACADEMIC FORGIVENESS

See [SCTCC Policy S3.5](#)

Academic Forgiveness may only be granted once and is limited to SCTCC coursework. Students who have earned a cumulative grade point average of less than 2.0 or a completion rate below 66.67% may have the grades and completion rate earned during that period of attendance forgiven. A student seeking academic forgiveness:

- May not be enrolled at SCTCC for at least three consecutive calendar years prior to re-enrollment.
- Must complete one term of full-time enrollment, or equivalent, with a grade point average of 2.0 after re-enrollment.
- Must submit form for academic forgiveness to the Records and Registration with academic advisor's signature.

If students meet the criteria listed above, Records and Registration will make the following changes to the student's academic transcript: All D or F grades earned in courses taken prior to the date of forgiveness will remain on the transcript, but will no longer calculate in the GPA. Additionally, all unearned credits will no longer calculate in the completion rate.

Academic Forgiveness does not extend to financial aid. All credits and all grades attempted will be included when determining satisfactory academic progress. Academic advising is required for students who qualify for forgiveness.

ACADEMIC INTEGRITY

See [SCTCC Policy 3.28](#)

Academic integrity is highly valued at SCTCC and throughout higher education. Maintaining academic integrity is the responsibility of every member of the college community: faculty, staff, administrators and students. The objective of this policy and procedure is to ensure that the highest level of respect for intellectual achievement is maintained at every level of college life and across all modes of learning, whether in class,

online, at home, or during collaboration with other students, faculty or staff. Respect for intellectual achievement is upheld through the principles of honesty, fairness and due process established in this policy and procedure.

Definition of Academic Integrity: The production and submission of work as the honest representation of the individual's own intellectual effort.

The following actions are considered academic integrity violations:

- **Cheating:** The use of unauthorized assistance when taking course quizzes or exams.
- **Plagiarism:** The use of another person's work through summary, paraphrase or direct quote without proper acknowledgement. The purchase or solicitation of academic work. The use of a paper you have/had written for another class without permission from your current instructor(s).
- **Fabrication:** Creating fake results in an experiment, paper or clinical report. Otherwise, "making up" something that is presented as true, factual, or real.
- **Collusion:** A formal or informal agreement by two or more individuals to commit an act of academic dishonesty.

ACADEMIC STANDING: SATISFACTORY ACADEMIC PROGRESS

See [Minnesota State Policy 2.9 and Procedure 2.9.1](#) & See [SCTCC Policy S3.3](#)

In accordance with federal and state regulations and Minnesota State Policy 2.9, SCTCC monitors all credits for all students and applies the following minimum cumulative standards of progress beginning with the student's first attempted credit. All students must:

- Meet or exceed a cumulative earned grade point average (GPA) of 2.0 (C average).
- AND**
- Meet or exceed a cumulative earned percentage of 66.67% of all attempted credits.

A student who does not meet this standard will, at the end of the term, be placed on academic and financial aid warning. A Success Plan must be completed by students on warning status and a meeting with an academic advisor is required. Students on warning who do not achieve a cumulative 2.0 GPA and 66.67% completion rate during their next term of enrollment will be suspended at the end of the term.

A student on suspension is not eligible to enroll or receive financial aid. An initial academic suspension is for a period of

one regular semester (excluding summer). Any subsequent academic suspension(s) will be for one full academic year.

Notification: Students failing to maintain the academic progress standards listed above are notified in writing of warning or suspension and the process to appeal suspension status.

Maximum time frame for financial aid recipients: Students may continue to receive financial aid through 150% of the published credit length of their declared program. Example: 150% of a 60-credit AA degree equals 90 credits. Changing a major will not extend a student's maximum time frame.

Appeals: A student may appeal suspension or maximum time frame based on unusual or extenuating circumstances, including but not limited to death of a family member or student injury or illness. Documentation must be provided to support an appeal. The student is notified of the appeal results by letter and email.

Students with an approved suspension appeal are placed on probation and must meet the cumulative satisfactory academic progress standards (cumulative GPA of 2.0 and 66.67% credit completion) or meet or exceed the term GPA of 2.5 and the term completion rate of 100%. Probationary students failing to meet one of these standards will at the end of the term be suspended. Probation students must complete a Success Plan and meet with the and academic advisor.

Reinstatement: A student on warning status is reinstated with academic good standing upon meeting or exceeding the minimum cumulative standards of academic progress. A suspended student may have eligibility to enroll and financial aid reinstated only after an appeal has been approved. Neither paying for one's own classes nor sitting out a period of time is sufficient in and of itself to reestablish eligibility for enrollment or financial aid.

COLLEGE READINESS ASSESSMENT

See [Minnesota State Policy 3.3](#) & See [SCTCC Policy S3.27](#)

SCTCC requires all applicants, unless exempted, to complete a Minnesota State approved academic assessment test before registering for classes. SCTCC uses the Accuplacer test. Students who have taken the ACT test within five years may be exempt from taking the Accuplacer test. This assessment is recommended to be completed within 30 days of application. Failure to take the assessment within this time frame may result in application cancellation. A letter and brochure about the test will be mailed at the time the student applies to the College. College readiness courses will be required of students earning scores below the minimum standards in Reading Comprehension and Math. Students may retest one or all parts of the test (a student may retest up to three times on each individual portion of the test). A fee may be assessed for each retest.

Accuplacer

Generally, students must achieve the following minimum scores on the Accuplacer to take general education/studies classes.

Reading Comprehension minimum scores are as follows:

- 250 for General Education
- 273 for General Studies

Arithmetic minimum scores are set by each major.

Quantitative Reasoning minimum vary by course.

Students applying for programs with selective admissions criteria may be required to take additional tests. College readiness courses and program prerequisites must be completed before acceptance into programs with selective criteria.

Placement Test Exemptions

Students wishing to be exempted from Accuplacer testing must meet the following conditions:

- ACT reading subject area test scores of 21 or higher and ACT mathematics subject area scores of 22 or higher will exempt students from taking related Accuplacer sections if taken within five years, inclusive of the current calendar year, for reading and mathematics. An official ACT assessment College Report is required.
- MCA reading subject area test scores of 1047 or higher and MCA mathematics subject area scores of 1150 or higher will exempt students from taking related Accuplacer sections if taken within five years, inclusive of the current calendar year. An official high school transcript with MCA assessment scores or an official MCA assessment score report is required.
- SAT reading subject area test scores of 480 or higher and SAT mathematics subject area scores of 530 or higher will exempt students from taking related Accuplacer sections if taken within five years. An official SAT assessment College Report is required.
- Students who provide college or university transcripts showing completion of six or more semester credits in reading and writing intensive courses with a grade of C or better may be exempt from taking the Reading portion of the test. Students who have earned these credits more than ten years ago are encouraged to take the placement test.
- Students who provide college or university transcripts showing completion of three or more semester credits of Intermediate Algebra or higher may be exempt from taking all or part of the Math portion of the test. Students who have earned these credits more than ten years ago are encouraged to take the placement test.
- Students who have earned 30 or more college-level technical semester credits from a regionally accredited institution with a cumulative GPA of 2.0 or better, within the last five years, are exempt from the Reading portion of the placement test.

Students with college credits as stated above should request to be exempted and include a copy of the student's college transcript(s), full name, StarID/Tech ID to enroll@sctcc.edu.

The College and specific programs may require additional tests.

Assessment Tests from other Colleges: Send an official copy of the test results to the Assessment Center at the address listed above at least five weeks prior to registration.

Testing Accommodations: Students who need accommodations to take the Accuplacer because of a qualifying disability should contact Accessibility Services at [\(320\) 308-5064](tel:3203085064) or acc@sctcc.edu. Documentation of disability will be required. Please request accommodations prior to scheduling the test.

Appeal Procedure: Students who feel their test scores do not accurately represent their readiness for college may appeal the requirement of a college readiness course. To appeal a college readiness course requirement, a student must fill out the appeal form, available in the Testing Center, and provide any supporting documentation (i.e., transcripts, letters, test scores, etc.)

The form and the documentation must be returned to the Testing Center Coordinator at testing@sctcc.edu. The college readiness appeals will be reviewed regularly by an appeal committee. The student will be notified in writing of the committee's decision.

CREDIT FOR PRIOR LEARNING

See [SCTCC Policy S3.12](#)

SCTCC recognizes that some students will have had life, occupational or vocational experiences which have given them knowledge in subject field areas sufficient to warrant college credit. Credit for prior learning shall be granted according to the standards and equivalencies of the American Council on Education (ACE) or equivalent.

Core Criteria

The following govern credit for prior learning at SCTCC:

- Credit for prior learning may only be awarded to students who are admitted and seeking a degree at SCTCC.
- External assessments, military courses, and military occupations credits do not apply towards SCTCC's graduation residency requirement.
- Internal assessment credits apply towards SCTCC's graduation residency requirement.
- Students may not repeat examinations, enroll, or receive credit in a lower sequential course.
- The grade of P shall be used for credits awarded via credit for prior learning where applicable.
- Financial Aid will not be available for prior learning credits.

SCTCC permits students to receive credit for prior learning by means of external or internal assessments. Credit awarded for prior learning may fulfill general, technical, Minnesota Transfer Curriculum (MnTC), program, and/or elective courses.

External Assessments

- **Advanced Placement (AP)** – A student who has scored 3, 4, or 5 on an Advanced Placement Program examination will receive credit for an equivalent or elective SCTCC course or for MnTC Goal Areas.
- **International Baccalaureate (IB)** – Is an internationally recognized program through which a secondary student completes a comprehensive curriculum of rigorous study and demonstrates performance on IB examinations. A student may present a full IB diploma or a certificate recognizing specific higher level or standard exam level for credit at SCTCC. Accepted scores for credit follow Minnesota State procedure.
- **College Level Examination Program (CLEP)** – A student may take a college-level examination in a specific subject area and receive credit for the equivalent or elective courses or for MnTC Goal Areas. Accepted scores for credit follow Minnesota State procedure and are based on ACE recommendations.
- **DANTES Subject Standardized Tests (DSST/DANTES)** – A student may take a college-level examination in a specific subject area and receive credit for the equivalent or elective course or for MnTC Goal Areas. Accepted scores for credit follow Minnesota State guidelines and are based on ACE recommendations.
- **World Language Seals and Certifications** – Are assessments of foreign language proficiency levels and awards granted by high schools. A student may present their seal or certification on their official high school transcript for credit equivalencies for credit at SCTCC. Course equivalencies follow Minnesota State procedure and are based on the American Council on the Teaching of Foreign Languages.
- **Industry Recognized Credentials, Licenses and Certifications, and Registered Apprenticeship Programs** – Credit may be given for industry recognized credentials, licenses and certifications, and registered apprenticeship programs that demonstrate college-level learning.
- **Customized Training** – Credit requested for the successful completion of non-credit coursework through continuing education and/or customized training programs that demonstrate college-level learning.
- **Other American Council on Education (ACE) Training** – Credit may be given for ACE approved training based on ACE recommendations and faculty approval.

Internal Assessments

- **Credit by Exam (Course Test Outs)** - Students may request to challenge a course via a test out. Credit by exam is awarded through assessment based on an examination developed by college faculty for course-specific learning equivalency.

- **Life/Work Experience Evaluation (Portfolio)** – Students may request to use prior experiential learning to earn credits. The student assembles materials demonstrating evidence of learning outcomes into a portfolio. College faculty assess the portfolio materials as evidence of learning to determine course-specific learning equivalency. The learning may result from a variety of experiences: college classroom, work experience, internships, library, and life experience.

Military Experience Credit

Credit shall be granted for veterans' military courses and occupations in compliance with Subd. 2 of Minnesota Statute 197.775 – "Higher Education Fairness" according to the standards and equivalencies of the American Council on Education. These credits awarded for prior learning may fulfill general, technical, MnTC, or elective courses.

Procedure

Students wishing to utilize the credit for prior learning options should review the full procedure found at www.setcc.edu/policies. Forms for internal assessments can be found at www.setcc.edu/records. Questions about credit for prior learning can be referred to the Office of Records and Registration registration@setcc.edu (320) 308-5075.

GRADING SYSTEM

See [SCTCC Policy S3.21](#)

The achievement of students is recorded using the grades listed here:

- "A"
- "B"
- "C"
- "D" = Passing (except specified majors)
- "F" = Failing
- "I" = Incomplete
- "IP" = In progress
- "NA"/"FN" = Non-Attendance
- "NC" = No credit
- "P" = Pass (indicates a "C" or better)
- "UW"/"FW" = Unofficial Withdrawal
- "W" = Withdrawal
- "AU" = Audit

Grade Changes

Grade changes on all courses must be approved by the instructor.

GRADE POINT AVERAGE (GPA)

See [SCTCC Policy S3.21](#)

GPA is determined by adding all grade points earned and dividing by the sum of all credits attempted in courses where letter grades of A, B, C, D, or F were received. A=4.00, B=3.00, C=2.00, D=1.00, F=0.00. GPA is computed on a semester and cumulative basis. A semester example is shown below.

Example Semester

Class	Credits	Points (Grade)	GPA Points
Class One	3 cr.	4.00 (A)	12
Class Two	3 cr.	3.00 (B)	9
Class Three	4 cr.	2.00 (C)	8
Class Four	3 cr.	1.00 (D)	3
Class Five	1 cr.	0.00 (F)	0
Semester Total	14		32

Calculate your GPA: 32 total GPA points divided by 14 total credits. GPA is 2.28

GRADUATION REQUIREMENTS

See [Minnesota State Policy 3.36](#) & See [SCTCC Policy S3.2](#)

The College Graduation Requirements Policy governs the awarding of certificates, diplomas and degrees. Students seeking to graduate from SCTCC must:

- Satisfactorily complete the required curriculum.
- Earn at least 15 or 1/3 of the technical credits (whichever is less) at SCTCC for a diploma or certificate.
- Earn 15+ program credits at SCTCC for and AAS degree.
- Earn 15+ credits at SCTCC for an AA or AS degree.
- Maintain a minimum cumulative grade point average of 2.0.
- Satisfy all general and specific requirements of the College including fulfillment of all financial obligations.
- [Submit an Application for Graduation Form](#) at least one (1) term prior to the anticipated date of graduation.
- Petition any exceptions to program graduation requirements by requesting course substitution using a Student Petition form. Forms are available at Financial Services.
- Participate in exit counseling if a student loan recipient.

INCOMPLETE

See [SCTCC Policy S3.21](#)

Students who are doing satisfactory work in a course, but cannot complete all requirements, may receive an incomplete "I." An incomplete is given for reasons such as serious illness or family illness. Documentation may be required. Incomplete grades are assigned at the discretion of the course instructor only after the midpoint of the course. The course instructor and the student will develop a contract outlining the remaining work to be done. A signed copy of this contract will be kept on file in the academic division. Students must complete the course requirements within one semester. Incomplete spring semester coursework must be completed by the end of the following fall semester. Incomplete grades that are not changed by the end of the following semester will be changed to "F" for failure.

PROGRAM COMPLETION OPTIONS

See [Minnesota State Policy 3.36](#)

It is the student's choice to earn a Certificate, Diploma, Associate of Applied Science (AAS) degree, Associate of Arts (AA), Associate of Fine Arts (AFA), or Associate of Science (AS) degree. Selecting the right option before registering will save time and money. The following options apply:

Certificate

A Certificate is the basic program option and requires successful completion of the fewest number of credits. It will allow students to gain a skill that may lead to employment.

Diploma

A Diploma is a comprehensive program with extensive technical coursework to help develop job skills that will lead directly to employment. Students will choose a specific area of study and will complete their education in one or two years. The curriculum may also include general studies or general education courses. Before making a choice, students should be aware that general studies courses do not meet the Minnesota Transfer requirements. At the discretion of the receiving institution, these courses may be accepted as electives. Applicants are encouraged to check in advance if they intend to transfer to a four-year college or university.

Associate of Applied Science Degree (AAS)

An Associate of Applied Science degree allows students to take not only program specific courses, but their degree will also include at least 15 credits of transferable general education courses selected from at least three of the ten goal areas of the Minnesota Transfer Curriculum. The general education credits may transfer to a four-year college or university. SCTCC has articulation agreements with a variety of colleges and universities that will improve transferability upon completion of the degree. All AAS degrees will take at least two years to complete.

Associate of Science (AS)

This degree option combines technical education with at least 30 general education credits. An Associate of Science degree is awarded upon completion of a 60 - 64 credit academic program in scientific, technological, or other professional fields. The Associate of Science degree requires a minimum of 30 general education credits selected from at least six of the ten goal areas of the Minnesota Transfer Curriculum. An Associate of Science degree is designed to transfer in its entirety to a related Baccalaureate program by way of a transfer agreement or as a Transfer Pathway.

Associate of Arts (AA)

An Associate of Arts degree is awarded upon completion of a 60-credit academic program in the liberal arts and sciences. This includes completion of the 40-credit Minnesota Transfer Curriculum and may include a wellness requirement and elective credits. It is designed for transfer to baccalaureate degree-granting institutions.

General Education Course Transfer

The Minnesota Transfer Curriculum (MnTC) is the means by which students transfer their completed lower division general education work at one public college or university to meet lower division general/liberal education requirements at any public college or university in Minnesota. For more information about the Minnesota Transfer Curriculum, goal areas, and content visit [the Minnesota State Transfer Information page](#).

REPETITION OF COURSES

See [SCTCC Policy S3.4](#)

A student may repeat courses in an effort to improve their grades. The highest grade earned will be used in calculating the student's GPA. Repeating a course more than once will result in the removal of only one previous grade from the GPA calculation. Regardless of the grade earned, students may only repeat a course two times. All course attempts will remain on the student's permanent academic record and may affect satisfactory academic progress.

NOTE: Some majors may have more restrictive policies for repetition of courses. Students may repeat courses at their own discretion. However, financial aid or veteran's assistance funding may not be available if the repeated course has already been completed satisfactorily.

STUDENT SERVICES

ACCESSIBILITY SERVICES

See Minnesota State Policy 1B.4

Accessibility Services, in collaboration with the college community, is committed to ensuring equal access and opportunity to all qualified students. Access means that a qualified individual with a disability will not be excluded from participation in, or be denied the benefits of the services, programs, or activities, nor will the individual be subjected to discrimination.

SCTCC will provide reasonable and appropriate accommodations to qualified students with disabilities, assist students with disabilities in self-advocacy, educate campus stakeholders regarding best practices for creating accessible services, work to identify and remove barriers and ensure legal compliance with state and federal disability law as well as Minnesota State policy 1B.4. Accessibility Services will strive to provide safe, confidential support services to students with disabilities; actively work to reduce barriers by determining appropriate accommodations that address each student's individualized needs; and encourage autonomy, self-efficacy, self-advocacy, and belonging for students with disabilities. Per the Minnesota RISE Act, students that have a disability are encouraged to connect with Accessibility Services as soon as possible. Students may be referred to Accessibility Services if they disclose they have a disability, received accommodation services while in secondary school, or are currently receiving accommodations or services through local or county agencies.

Appropriate and reasonable academic accommodations are determined on an individual basis. Accommodations must be specific to the disability-related barrier(s) encountered. A reasonable amount of advance notice is required by qualified students when requesting accommodations. Some accommodations may require up to a 6-week notice to arrange. In accordance with the Americans with Disabilities Act and the Amendments Act of 2008 (ADAAA), accommodations will not be provided 1) for personal daily living devices or services even though the individual may be a qualified individual with a disability, or 2) that result in a fundamental alternation in a service, program or activity - or - undue financial or administrative burdens. Denial of requested accommodations or services can be appealed by contacting the Office of the Vice President of Student Affairs at SCTCC.

For Further Information Please Refer to:

- Minnesota State Policy 1B.4
- SCTCC Student Handbook
- www.sctcc.edu/accessibility-services

Or Contact:

Avery Cook, Accessibility Services Coordinator
Email: acc@sctcc.edu Phone: (320) 308-5064

ACADEMIC ADVISING

Academic Advising is an integral part of a student's educational experience. It is an ongoing and collaborative process between the student and advisor each semester to assist in the development of an educational plan that is compatible with the student's interests, abilities, and career goals.

Some students will be assigned to a faculty advisor from their major and other students will be assigned an advisor from the Academic Advising Center. The Academic Advising Center can work in partnership with faculty advisors to provide information to all students.

Faculty advisors provide students with program-specific course selection, industry and career information, course content information, and internship and clinical guidance.

The Academic Advising Center is available to assist students in goal setting and academic planning for transferring or graduation. This includes assessment guidance and course selection. The Academic Advising Center provides professional academic advising services for students in Associate of Arts degree, Minnesota Transfer Curriculum, Environmental Science, Green Energy Certificate, Transfer Pathway programs and Pre-Health/Nursing majors.

To schedule an appointment email advising@sctcc.edu or call (320) 308-5741. The office is located in the Northway Building, room 1-401. Additional information is available at www.sctcc.edu/advising

CAREER SERVICES

SCTCC provides free career advising and job search assistance to all students and graduates. While the primary responsibility of employment rests with the individual, the Career Center provides active support in helping both students and graduates initiate their careers. The Career Center, located in Northway Building room 1-406, provides a variety of reference materials, career and employer information, career exploration tools, and computers with internet access for students and graduates to use. Additionally, we have a Career Closet for students if they need interview attire.

The professionally staffed office provides student support by:

1. Assisting students with part-time, full-time, work study, and internship employment opportunities.
2. Assisting with career-related needs including resumes, cover letters, job search, interview prep, internship searches and finding jobs after graduation.
3. Employer development to maximize employment opportunities for students.
4. One-to-one career advising assistance in choosing a career field.

5. Planning and facilitating events that enhance career opportunities for students, such as on-campus interviews, employer visits, and job fairs for SCTCC students and graduates.

For additional information call [\(320\) 308-5926](tel:3203085926) or go to: <https://www.sctcc.edu/career-services>.

THE MARY STANGLER CENTER FOR ACADEMIC SUCCESS (CAS)

The Mary Stangler Center for Academic Success (CAS) offers learner-centered tutoring services to all students enrolled at SCTCC. The CAS is located in Northway Building room 1-112 and is open from 7:30 am–5:00 pm Monday–Thursday and from 7:30 am–3:00 pm Fridays during the academic year (summer hours vary).

The CAS's goal is to provide academic assistance in a supportive setting so students may make their studies more efficient and successful. Professional staff and peer tutors support students in both technical and general courses through one-on-one and small group contact. Students may drop in, schedule an appointment for both face to face and online tutoring, or be referred by faculty and student service staff.

Services provided are free to all students enrolled at SCTCC. Tutors help by clarifying textbook assignments, discussing ideas, and reviewing practice problems. Tutors explain and model but do not complete assignments or proofread/edit papers. Tutors for math, writing, ESOL, and science are always on staff, while schedules for the following additional subjects are posted inside the CAS:

- accounting
- logic
- computer programming
- basic computer courses
- physics
- ethics
- critical thinking
- Spanish

Along with these core courses, students may request assistance in nearly any other course in which they are enrolled. For students' convenience, the tutoring services of the CAS are delivered mainly on a drop-in basis; however, individual tutorials may be scheduled for certain courses. Synchronous and asynchronous online tutoring is also available for math, science, and writing assignments.

Students also have access to additional online tutoring through [tutor.com](https://www.tutor.com). Each SCTCC student gets 15 hours of online assistance each year. These services are available at a variety of hours to help fit student's needs when they may be studying at home or later at night. Some of the most popular subject areas include writing and math. To access Tutor.com, students will

log into D2L, go to their course shell, click on the "Resources" tab, and then click on Tutor.com. Once logged into D2L there is direct access to Tutor.com.

The CAS also offers individual coaching on common academic skills that students may need to develop. Students work one-on-one with an academic coach to help them sharpen their skills for success. Examples of areas that are included are:

- motivation toward academic goals
- performance on exams/test anxiety
- time management/organization
- general academic performance
- note taking skills
- reduction in anxiety
- reading comprehension
- memory techniques

Please visit the CAS website at <https://www.sctcc.edu/cas> for more information about our services and recommended tutoring and learning resources.

CHILD CARE

On-campus child care is available for students. Parents must enroll their children before they are allowed to attend the child care center. Enrollment and fee structure information may be obtained by calling the Campus Playhouse at [\(320\) 534-0174](tel:3205340174). The center operates from 6:00 am to 6:00 pm. The center has a 4 star Parent Aware rating, the highest rating possible. Child care grants may be available through at Financial Services. The Campus Playhouse is located across the parking lot from the Northway Building.

CYCLONES CUPBOARD

Cyclones Cupboard provides FREE nutritious, non-perishable food options and personal hygiene products to students to help support their health, learning, and success. All SCTCC students are welcome and have access to the Cyclones Cupboard.

The Cyclones Cupboard is available through both pre-packaged orders for students as a contactless pickup, or by drop-in service in our Cyclones Cupboard space: Room 1-450 in the Northway Building near Career Services and Door 4. Contact information is foodpantry@sctcc.edu. The meal request form and additional information can be found here: <https://sctcc.edu/cyclones-cupboard>

ESOL SERVICES

In addition to offering ESOL courses, SCTCC employs advisors to offer advising and registration support to ESOL students. Our staff support ESOL students by offering extended advising sessions and assistance through the admissions and registration process. Students also have access to tutoring in the Center for Academic Success while enrolled in their courses. More information on ESOL services call [\(320\) 308-5741](tel:3203085741).

HOUSING

The Admissions Office provides information regarding housing options on the web at <https://www.sctcc.edu/housing>. Additionally, St. Cloud State University and SCTCC have a cooperative agreement to provide residence hall space for SCTCC students. For SCSU housing, please inquire with St. Cloud State Residential Life for more information [\(320\) 308-2166](tel:3203082166) or email reslife@stcloudstate.edu.

LIBRARY

The Library is the college's center for information and research. We are located on the main level of the Heartland Building. We serve the entire community with books, digital resources, and other materials. We have paper materials to support all of our academic programs, and we have over 700,000 digital items in our collection. Need a book or article that we don't have? We may be able to borrow it from another library for you.

Print and non-print collections are accessible through ExLibris Primo, an integrated library system that allows users to discover many types of library resources in a single search interface called OneSearch. Interlibrary loan services are available for borrowing materials located at other libraries. Access and delivery of materials is provided free to library users.

Academic Year Hours:

- Monday – Thursday: 8:00 am to 6:00 pm
- Friday: 8:00 am to 4:30 pm

Summer Hours:

- Monday – Thursday: 8:00 am to 4:00 pm
- Friday: Closed

Closed Saturday, Sunday, and Holidays

Library tours, classroom presentations, and individual research assistance are available. Contact the Librarian to set up any of these, or other, individual services. To access the library website go to <https://www.sctcc.edu/library>

MULTICULTURAL CENTER

The Multicultural Center aligns with the college's mission to provide the education, training, and support necessary for equitable participation in our society, economy, and democracy. The Center serves as a venue and gathering place for students, employees, and community members to meet, study, engage in meaningful discussions, and take part in a variety of activities and community events. The mission of the Center is to promote social equity through:

- Programming and experiences that recognize cultural knowledge
- Increasing multicultural and intercultural communication skills
- Providing social justice and global education

- Fostering local and global leadership opportunities
- Establishing interventions for faculty, staff, and students as they navigate predominantly white academic spaces
- Advocating to transform academic environments to honor all the contributions, narratives, and stories our communities hold

The Multicultural Center is open Monday - Friday 8:30 am - 4:30 pm. The office is located in the Northway Building, room 1-313. Contact Director Njeri Clement at njeri.clement@sctcc.edu or call [\(320\) 308-5121](tel:3203085121) for inquiries.

Additional information is available at www.sctcc.edu/multicultural-center

SECURITY AND CRIME REPORTING

Campus security and safety is a high priority at SCTCC. Providing students with a safe environment in which to learn and keeping students, parents and employees well informed about campus security is important to the College. SCTCC complies with the collection and reporting of all campus crime as per the requirements of the Crime Awareness and Campus Security Act of 1990 (Clery Act). Copies of this report are available through the Safety and Security Office or via the college's website at <https://sctcc.edu/crime-log>.

SERVICE LEARNING

Service Learning is a type of learning that engages students in service within the community as an integrated part of a course. Effective service learning involves students in course-relevant activities in partnership with a community organization. It also provides structured opportunities for students to reflect on their service experience, gain a better understanding of course content, and understand community issues and responsibilities.

STUDENT IDENTIFICATION CARD

The SCTCC Cyclone Card Office located in the main Computer Lab, room 1-405, dispenses student IDs/Cyclone Card. The official student ID card has privileges of providing access to Library material, using printers at the college, riding MTC buses (for active current students only), and discounts offered by some business organization or institutions including but not limited to off-campus recreational facilities and a variety of other products as well as services.

Student printing is covered by the tech fee paid each semester. Students are limited to printing 25 pages at a time.

STUDENT LIFE/SPORTS/RECREATION

The Student Senate and the Director of Campus Life are located in the lower level of the Heartland Building. Information about recreational and extra-curricular activities is available there. Intercollegiate athletics available to students include: women's volleyball, women's basketball, men's basketball, men's baseball, and women's softball.

Additional information on student life can be found in the Student Handbook. www.sctcc.edu/student-resources

STUDENT RIGHTS, RESPONSIBILITIES, AND CONDUCT

See SCTCC Policy S3.26

SCTCC is committed to the creation and maintenance of an academic community which fosters the intellectual, personal, social, and ethical development of its students. The College expects that each student will obey the laws enacted by federal, state and local government. In addition, there are certain rules and regulations governing student conduct which have been established by SCTCC and the Minnesota State Colleges and Universities Board of Trustees (Minnesota State).

A number of offenses are defined by the SCTCC Student Code of Conduct as disciplinary by the College. They include violations that range from academic violations to disruptive conduct. The College reserves the right to review student behavior that occurs off campus if the behavior violates College policy and is of principle interest regarding the College.

The College is committed to a thorough investigation of conduct violation complaints. Where students are found to be responsible for code violations, a variety of sanctions may be applied by the conduct officer. Sanctions may include anything from warning up to and including suspension from the College.

The entire Student Code of Conduct is included in the Student Handbook, and on-line at www.sctcc.edu/student-handbook. It is important for students to familiarize themselves with it.

TRIO - STUDENT SUPPORT SERVICES

TRIO-SSS is a federally funded student support program that offers a variety of free academic services for:

- Income eligible students,
- Students with documented disabilities,
- First generation college students whose parents do not have a baccalaureate degree.

TRIO staff help students graduate successfully by:

- Developing academic and career plans,
- Providing academic advising,
- Preparing new students for a successful college experience through the Summer Institute, and arranging peer and group tutoring/mentoring for students' academic success.

The TRIO office is located in the Northway Building 1-131A

See the Student Handbook for a complete listing of TRIO programs and supplemental support services for students with disabilities.

VETERANS RESOURCE CENTER

The Veterans Resource Center is a place where students can come with questions about a variety of subjects pertaining to benefits as a veteran or dependent of a veteran. It is located in Northway Building room 1-328. The Veterans Resource Center is typically staffed by the MDVA Central Regional Coordinator two days a week. There is usually a student worker available in the Veterans Resource Center. In order to respond to our veterans and military personnel needs, appointments are available to meet with the MDVA Central Regional Coordinator.

Regional Coordinator MDVA Higher Education Veterans Program staff contact and additional information can be found at <https://www.sctcc.edu/veterans-services>.

The staff in this office can help students understand their education benefits, including:

- Federal Tuition Assistance
- GI Bill® Kicker
- MN GI Bill®
- Montgomery GI Bill®
- Chapter 33, Post 9/11
- Scholarships and Grants
- State Tuition Reimbursement
- Student Loan Repayment Program
- Survivor Education Benefits
- VA Education Programs

GI Bill® is a registered trademark of the U.S. Department of Veterans Affairs (VA). More information about education benefits offered by VA is available at the official U.S. government Web site at <http://www.benefits.va.gov/gibill>.

Students may also receive help with other VA programs, Tri-Care Insurance, military and retirement pay, family assistance, personal finance and budgeting, and veteran employment. Many resources are available. These resources are not directly available at the college, but the Regional Coordinator can help students locate these resources.

The Veterans Resource Center partners with many agencies, including:

- The Department of Defense
- The Veterans Administration
- MN Family Programs
- The American Legion/S.A.L./Veterans of Foreign Wars, D.A.V.
- Goodwill/Easter Seals

Lori Lemm, VA Certifying Official

Phone: [\(320\)308-5936](tel:3203085936) Email: lori.lemm@sctcc.edu

WELLNESS RESOURCE SERVICES

Wellness Resource Services provides non-academic support and short-term mental health services to help students navigate challenges, improve personal well-being, and stay on track academically. Through direct services, referrals, and coordination with both on-campus and off-campus resources, we connect students with the tools, information, and assistance they need while promoting autonomy and empowerment.

For more information, visit the Wellness Resource Services website: www.sctcc.edu/wellness, or email us at wellness@sctcc.edu.

NON-ACADEMIC STUDENT SUPPORT SERVICES

Balancing college and personal responsibilities can be challenging. We provide support and guidance to help students navigate non-academic concerns that may impact their ability to succeed. Our goal is to connect students with both on campus and community resources to address potential barriers to their success.

We can assist with:

- Food Resources & SNAP Support
- Housing & Emergency Shelter
- Transportation Assistance
- Pregnancy, Parenting & Childcare Support
- Financial Resources & Emergency Assistance
- Personal Safety, Legal, or Advocacy Needs
- General Well-Being & Success Support

Need support? **Book an appointment today:** sctcc.edu/cyclones-support

MENTAL HEALTH SERVICES

Students can access mental health counseling services to help with a range of life challenges. There is no additional cost for students to meet with our mental health professional. Services are confidential and voluntary.

- Short-term Counseling
- Consultation

- Referrals for Community Services
- Crisis Intervention

Appointments are available in-person at SCTCC or telehealth (video or phone). Visit sctcc.edu/mental-health-services to make an appointment and access resources.

Additional Mental Health Support Through Mantra Health
School-sponsored mental health care with Mantra Health includes:

- Telehealth Therapy
- Peer-to-peer Support
- ConnectNow (on demand support via video call is available 11am-11pm CST 7 days a week, excluding major holidays)
- Crisis Support [1-888-407-3499](tel:18884073499) (24/7, 365)
- Emotional Wellness Coaching
- Self-care Self-guided Courses

Access these free services at mantrahealth.com/sctcc and login with your school email address. Find more information at sctcc.edu/mantrahealth.

FINANCIAL SERVICES

FINANCIAL AID

The student's family has the primary responsibility to pay for an education. Financial Aid is intended to supplement the difference between the cost of education and the expected family contributions. Several financial aid programs are available to help students meet their educational expenses. The Financial Services Office can help determine the financial aid programs for which students are eligible. The Financial Services Office is located in the Northway Building just inside door 1.

The Financial Services Office determines a student's eligibility by applying federal and state guidelines. To be eligible for financial aid, students must meet the requirements detailed on the Free Application for Federal Student Aid (FAFSA), enroll as a student working toward a degree or certificate in an eligible program, and maintain satisfactory academic progress. The Academic Standing and Financial Aid Satisfactory Academic Progress Policy can be found at www.sctcc.edu/academic-standing.

STEPS TO RECEIVE FINANCIAL AID

Financial aid is awarded by academic year. The academic year for SCTCC starts with the Fall Semester, followed by the Spring Semester and Summer terms. Summer is awarded separately from the Fall and Spring semesters.

Apply for admission to an eligible program at St. Cloud Technical & Community College. Only students accepted into an eligible program are eligible for financial aid.

- Students will need a Studentaid.gov Account (also called and FSAID) to electronically complete their federal financial aid application. To apply for a FSAID, go to <https://studentaid.gov>. Contributors (parents or spouse) will also need a FSAID.
- Complete the Free Application for Federal Student Aid (FAFSA). Students can complete the FAFSA on-line at <https://studentaid.gov/fafsa>. The college code for SCTCC is 005534. It usually takes approximately one week for SCTCC to receive FAFSA data when the online application is used and four weeks if the paper version is used.
- After all documentation is received by SCTCC, students will be sent an email letting them know their award notification is ready to view in eServices. A student's notification will include the grants and federal student loan eligibility for which they qualify.
- Separate applications are required to accept student loans, work study, and the child care grant program. A student's award notification will direct them when and where to apply for these funds.

DISBURSEMENT

Financial aid, including scholarships, grants, and loans, disburse two weeks after the start of each semester for students who have at least one course start at the beginning of the semester. Students whose coursework starts after the beginning of the semester, cannot receive financial aid for that semester until ten days prior to the start of their first course. Financial aid first pays towards tuition and fees the student owes the college; then, if there are funds left over, any excess aid is available for the student. Excess aid is paid to the student via direct deposit or check. Most financial aid awards are paid in the semester listed on the award notification, except work-study earnings, which are paid to the student worker **every two weeks**. The amount of financial aid is based on Enrollment Status.

Financial Aid is paid for courses a student actually attended. If a student registers for a course, then drops the course during the college add/drop period or before the course obligation date, financial aid must be returned for that dropped course. If a student drops/withdraws/stops attending any course(s) during the term, the college may be required to reduce the financial aid awarded for the term.

FEDERAL AID ENROLLMENT INTENSITY

Enrollment Category	Enrolled Credits	Federal Pell Enrollment Intensity
Full Time	12+	100%
Three-Quarter Time	11	92%
	10	83%
	9	75%
Half Time	8	67%
	7	58%
	6	50%
Less than Half Time	5	42%
	4	33%
	3	25%
	2	17%
	1	8%

The Minnesota State Grant requires 15 credits to be a full-time student; 12 credits is full-time for all other types of aid. Enrollment is determined at the end of the add/drop period. Federal Pell Grant will be paid based on the Federal Pell Grant enrollment intensity.

TYPES OF FINANCIAL AID

Grants

Grants are gift aid which students do not have to pay back.

Examples of the Grants available include:

- Federal Pell Grant
- Iraq Afghanistan Service Grant
- Federal Supplemental Educational Opportunity Grant
- MN State Grant
- MN Northstar Promise
- MN Dream Act
- MN Child Care Grant
- American Indian Scholars Program

This list is not intended to list all available grants, but it is intended to give an idea of the types of funding that may be available.

Miscellaneous Scholarships

A scholarship is money that does not need to be repaid. Scholarships are made possible through the generosity of private parties. A list of various scholarship resources can be found at www.sctcc.edu/scholarships.

LOANS

Loans are financial aid that must be paid back with interest. There are both annual and cumulative limits to the amount a student can borrow.

- **William D. Ford Federal Direct Loan Programs:**
Subsidized: A federally subsidized, low-interest student loan, funded by the federal government and awarded on the basis of financial need. The federal government pays the interest on subsidized loans, while borrowers are enrolled at an eligible school at least half-time, during the six-month grace period, or during authorized periods of deferment.
- **William D. Ford Federal Direct Loan Programs:**
Unsubsidized: A low-interest loan for students who do not meet the financial-need criteria for a subsidized loan. The borrower is responsible for all interest charges on the loan, which is funded by the federal government. Interest charges begin when the first loan distribution is processed.
- **William D. Ford Federal Direct Loan Programs: PLUS:**
An education loan which parents can borrow on behalf of their dependent children.

WORK-STUDY

Work study is employment for students either on or off campus. Pay is determined in accordance with the minimum wage laws. These programs provide for up to 20 hours of employment per week. Total work-study earnings are limited and based on need as determined by the FAFSA application.

To secure a work-study position, a student must:

- Visit the Financial Services near the main entrance to review available jobs.
- Identify a job they are interested in and verify they have the required qualifications for the job.
- In most cases, students will apply for the position and interview with the sponsoring department supervisor.
- Once awarded the position, the student and the supervisor will create an agreed-upon work schedule.

VETERANS ASSISTANCE

Funding may be available if a student is a member of the National Guard or Reserves, if a student is a veteran of the U.S. Armed services, or a dependent or spouse of a disabled or deceased veteran. Students will need to provide a copy of their schedule to the Financial Services Office each semester to receive funding. Please see the staff in the Veteran's Resource Center for questions related to eligibility.

For additional information, contact the Financial Services Office by phone at [\(320\) 308-5961](tel:3203085961) or by email at financialaid@sctcc.edu. You may also contact the Central Regional Coordinator for Veterans benefits at [\(320\) 493-8153](tel:3204938153). Information is also available at <https://www.sctcc.edu/financial-aid>.

POLICY FOR COMPLETE WITHDRAWAL

Students who withdraw from ALL classes during a semester or term are subject to the federal regulations requiring repayment of federal aid based on a pro-ration of days of attendance. The regulations will financially impact any aid recipient if the student withdraws from college prior to the 60% point in a semester. A student who withdraws during the first 60% of a semester will owe tuition and fees according to the institutional policy for the days attended, and the student may have to repay a portion of the federal aid they received. The chart found at <https://www.sctcc.edu/repay-aid> outlines the effect of these regulations. You may review the policy (S3.29) at <https://sctcc.edu/policies>.

SCC will automatically return both the institutional and student un-earned portion of grant funds, then bill the student.

If, according to the refund policy of the school, the student is due a refund of tuition and fees because of an enrollment status change or the student withdraws, all or a portion of that student's refund may be due to one of the state financial aid programs. The refund remaining after the institution's share of any required refunds to Title IV programs has been fully refunded is distributed on a proportional basis to non-Title IV aid programs requiring refunds, not to exceed the actual amount the student received from each program.

TUITION, FEES, AND PAYMENTS

PARKING FEE

Students must pay a per credit parking access fee. The parking access fee is determined annually and is subject to change. Information is posted at <https://www.sctcc.edu/tuition>. Students must register vehicles online before obtaining a permit. Go to <https://sctcc.edu/parking> to register. Permits are available at the library.

Parking access fees will be charged to SCTCC students. The purpose of such fees is for the development and upkeep of the college's parking lots, access road, parking security, associated lighting and sidewalks to the campus, administrative costs associated to access/parking and is used solely for that purpose. All students, regardless of whether their education includes actually parking in the lots, benefit from the establishment and maintenance of the lots. It is an embedded service that allows service providers, students, faculty, staff and administration, security, delivery vehicles, etc., access to our buildings necessary to complete the mission of the college. Students electing not to park on campus may request a parking waiver by completing the Parking Waiver Form available at Financial Services.

Visitor parking is designated for guests only. Visitor permits are available at the Admissions desk inside Door 1.

Students fully enrolled in online courses will not be charged.

A parking permit refund may be obtained from the Business Office on the same prorated basis used to refund tuition upon withdrawal from the College.

For an additional fee:

- Daily parking permits - \$2
- Replacement of lost or stolen permits - \$10
- Additional permits - \$10

Motorcycle permits will be issued at no extra charge provided a vehicle permit is purchased. Motorcycles are parked in areas designated as "Motorcycle Parking" (located by Door 10).

Everyone using SCTCC parking lots between 7:00 am and 10:00 pm is required to display a current parking permit. No overnight parking is permitted unless approval has been obtained from the Director of Safety & Security when the student is attending College functions that require College transportation. Vehicles without a properly displayed permit may receive a ticket.

The purchase of a permit does not guarantee the availability of a parking space. Parking is not available in Lot B. Any vehicle parked on the campus is parked at the risk of the owner. The college assumes no responsibility for care or protection of any vehicle or its contents. Unpaid parking tickets will be recorded and may prohibit a student from registering for classes and obtaining transcripts.

PSEO Student Parking

PSEO students are personally responsible to pay the per credit fee to park on campus. The parking fee is due by the beginning of each semester and can be paid at Financial Services. A parking permit will be issued at the time of payment. PSEO students electing not to park on campus may request a parking waiver by completing the Parking Waiver Form. The form is available at Financial Services. Failure to pay the parking fee by the beginning of the semester may result in the assessment of a late fee.

Parking Violations

A complete list of parking violations that will result in a parking citation and their associated fees can be found at <https://sctcc.edu/parking>. Students are responsible for paying their tickets upon receipt.

Circumstances under which vehicles will be ticketed and may be auto clamped (there is a fee for auto clamp removal) are:

- A vehicle displays a permit that has been reported as being lost or stolen or has been altered or forged.
- A vehicle has been issued three or more unpaid parking citations in the current academic year.

Circumstances under which vehicles will be ticketed and may be towed include (but are not limited to) the following:

- Security and parking operations receives a complaint that a vehicle is illegally parked, obstructing traffic, impeding emergency responses and/or college operations, blocking pedestrian traffic, etc.
- Vehicles parked in such a way to constitute a hazard, impede vehicular and pedestrian traffic, emergency responses and repair, or grounds operations.
- Vehicles that have been autoclamped for 24 hours may be towed.
- A vehicle that has been issued three or more citations (paid or unpaid) in the current academic year.
- Vehicles that have been left in the lot for ten consecutive days with no prior authorization.

Appeals Procedure for a SCTCC Parking Ticket

- Ticket must be appealed within five (5) business days from the ticket's date of issuance. Access to the form is located at: <https://www.sctcc.edu/parking-appeals>.
- The parking appeals committee will meet bi-weekly basis during the academic year to hear appeals.
- Individuals may exercise the option to be present for their appeal by indicating this option on the appeal form.

HEALTH SERVICE FEE

All students must pay a per credit health service fee. The fee is determined annually and posted at www.sctcc.edu/tuition.

These funds purchase an accident insurance policy, \$5,000 limit, no deductible, which covers students on campus and at all off campus college sponsored events including internships and supervised occupational experiences. Since it is a secondary policy, students covered by another policy, will pay for the deductible on their primary policy. Claim forms and a reference copy of the policy are available in the Business Office.

LEADMN FEE

The LeadMN is the recognized student association for Minnesota technical and community college students. A per credit fee is charged to each student and credited to the association for state-wide representation. The fee is determined annually and posted at www.sctcc.edu/tuition.

REFUNDS, DROPS, WITHDRAWALS, & WAIVERS, MINNESOTA STATE POLICY 5.12

Students are financially obligated for every class in which they have registered. Students that register for, but do not attend classes at SCTCC and fail to formally withdraw, or drop classes within the free drop deadline, will still be responsible for the full tuition amount due. After the free drop deadline, students must withdraw from ALL courses to receive a pro-rated refund based on the date of total withdrawal. It is the student's responsibility to check their balance due online.

DROP/WITHDRAW

Students must drop courses by using the WEB registration system through the fifth day of the semester or the first business day after the course begins, whichever is later. Courses withdrawn from after the drop period will receive a grade of "W." Students can initiate a course withdraw through 80% of the instructional days for a course.

No tuition refunds will be processed by the Business Office for courses withdrawn from after the drop period. (Students withdrawing from the college, see below)

Students wishing to completely withdraw from the college should obtain a "Withdrawal Worksheet" from the Admissions Office. Students should complete and sign the top portion of the form and return it immediately to the Admissions Office. The date of withdrawal will be the date the completed form is received by the Admissions Office. Student initiated withdrawals are allowed until 80% of the instructional days in the academic semester have elapsed. The Business Office will determine if a refund is appropriate and to whom the refund should be distributed. Questions about refunds should be directed to the Business Office.

Withdrawing from a Course

Students withdrawing from a single course (after the drop period listed above) are not eligible for a refund and will receive a grade of "W." Students can initiate a course withdraw through 80% of the instructional days for a course. Students may withdraw online or a course withdrawal form can be completed in Records and Registration.

Refunds for Total Withdrawal from College

Students who officially and totally withdraw from the College may be eligible for a refund as defined below. A student who withdraws simply by non-attendance will not be eligible for a refund. When students do not officially withdraw, they will receive the earned grade in each course for which they are registered and will be liable for all tuition and fees for those courses.

Total Withdrawal from College Refund Period

Fall and Spring terms:

1st through 5th business day of the term	100%
6th through 10th business day of the term	75%
11th through 15th business day of the term	50%
16th through 20th business day of the term	25%
after 20th business day of the term	0%

Summer term:

1st through 5th business day of the term	100%
6th through 10th business day of the term	50%
after 11th business day of the term	0%

Waivers

The College President may waive amounts due to SCTCC for the following reasons:

- Employee Benefit Provided by a Bargaining Agreement
- Death of a Student
- Medical Reasons
- College Error or Unsatisfactory Service
- Employment Related Conditions
- Significant Personal Circumstances
- Student Leader Stipends
- Course Conditions: A course condition exists when the location or timing of the course results in the student not being able to use the services intended by a fee. Students will be required to provide documentation with their request.

SENIOR CITIZEN FEE

Residents 62 years or older may register tuition-free for any hour-based courses except for courses designed and offered specifically and exclusively for senior citizens (prerequisites must be met). Senior citizens registering for credit-based courses are required to pay \$20 per credit administrative fee (waived if class is audited), in addition, health, MSCSA, technology, and access fees will be charged. Senior citizens are responsible for all materials, personal property, service charges for the course, parking fee, and LeadMN fee. Exceptions may apply. State law states that a senior citizen may take a course "when space is available after all tuition-paying students have been accommodated." This means senior citizens may have to wait until the first class meeting to register.

STUDENT ACTIVITY FEE

All students (except senior citizens) must pay a per credit student activity fee. The Student Senate uses these funds to

sponsor special events for students. A complete budget may be requested from a Student Senate representative. The fee is determined annually and posted at www.sctcc.edu/tuition.

TECHNOLOGY FEE

The purpose of the technology fee is to increase service, quality and/or access to high-end technology. The technology fee will be charged to all students. The fee is determined annually and posted at www.sctcc.edu/tuition.

TRANSCRIPT FEE

Students may obtain an official transcript of their grades by completing a request for transcripts and paying \$10 for each transcript requested.

TUITION AND FEE POLICY

Tuition rates per credit and fees are subject to change according to Minnesota State and/or college policies. Current tuition and fee rates are posted at www.sctcc.edu/tuition.

TUITION DEFERMENT

SCTCC offers a service for those students who must defer tuition and other college costs, and who do not qualify or are not eligible for agency funding, loans or grants. The College contracts with Nelnet Business Solutions (NBS), a tuition management company that provides a low cost option for budgeting students' college costs. SCTCC/NBS has established several payment schedules requiring various down payment amounts and number of payment dates. Students register online with NBS via the SCTCC web site, www.sctcc.edu.

- Select eServices (under Current Students)
- Log in with StarID and password
- Click on Bills & Payments
- Enroll in New Payment Plan

Students will not be allowed to register for a new term if deferred payments from a previous term are not current. Payments may be deferred for only the current semester and the entire balance must be paid in full by the end of that semester. A \$30 processing fee will be charged for each deferment agreement. Deferred payment plans cannot be established or extended for past debt or for students not currently enrolled. Additional information on NBS payment options is available from the Business Office at [\(320\) 308-5572](tel:3203085572) or [\(320\) 308-5512](tel:3203085512).

TUITION PAYMENT

Per Minnesota State Policy 5.12, payment of tuition and fees will be due on the established due date posted on www.sctcc.edu homepage. Students whose tuition is unpaid, or do not have other approved financial arrangements in place by this deadline will have their registration cancelled and be denied entrance to class. To avoid registration cancellation, one of the following approved financial arrangements must be in place:

- Tuition/fees paid in full
- Down Payment of 15% of tuition/fees or \$300 through the NBS tuition payment plan
- Financial Aid in place, meaning the FAFSA is complete and the College has an ISIR on file
- Scholarship or other agency/third party support in place of at least 15% of tuition/fees or \$300 through the NBS tuition payment plan
- A completed PSEO student enrollment agreement on file
- Active I-20 or DS2019 in place for an international student

Students are financially obligated for every class in which they are registered. Students that register for, but do not attend classes at SCTCC and fail to formally withdraw, or drop classes within the free drop deadline, will still be responsible for the full tuition amount due. After the free drop deadline, students must withdraw from ALL courses to receive a pro-rated refund based on the date of total withdrawal. It is the student's responsibility to check their balance due online.

No invoices or tuition statements are mailed. Accounts must be accessed and paid online at: www.sctcc.edu.

- Click on eServices (under Quick Links)
- Log in with StarID and password
- Click on Bills & Payments

Follow the directions provided to pay with Visa, e-checks, Mastercard or Discover credit cards. International students not meeting the payment criteria outlined above will have their registration cancelled after the fifth day of the term.

Students are responsible to ensure that financial aid documents (Institutional Student Information Record (ISIR) with the Financial Services Office) and agency awards (documents with the Business Office) are complete and on file prior to the deadline date. Course registration add and drop dates can be found on the course schedule in eServices. Courses added or deleted may affect the balance that a student owes. Students are encouraged to check their account online after any course changes. Course changes may also affect the amount of financial aid that a student is eligible for. Changes may cause payment plan to change.

If a student's account is not paid in full, a hold will be placed on the student's account and a \$50 late fee may be applied. The student will be unable to register for future classes or receive an official transcript until full payment is made. If student's account remains unpaid, the account will be turned over to the Minnesota Department of Revenue to collect. Individuals that submit Non Sufficient Fund (NSF) checks will be subject to a \$35 charge and be asked to make restitution by cash, money order or cashier's check. A registration hold will be placed on the student's account. The policy on NSF checks and the fine are subject to change without notice.

RECORDS AND REGISTRATION

REGISTRATION & STUDENT RECORDS

The Office of Records and Registration maintains academic records and provides services according to Minnesota State and SCTCC policies and AACRAO standards (American Association of Collegiate Registrars and Admissions Officers). This office is additionally responsible for the release of transcripts, the awarding of degrees, diplomas, and certificates, and transfer of credit. Any questions regarding adding and dropping classes, transfer of credit and graduation, should be directed to Records and Registration. The web site, www.sctcc.edu/records provides important registration information. Records and Registration is located in the Northway Building inside door 1.

REGISTRATION SESSIONS

All accepted students are required to attend an Advising and Registration session where they will be advised on course selection before enrolling in college courses. To register for courses, students must have completed a course placement test or been informed they are exempt from testing. Any student who has had their admissions status closed will need to submit a new application to the college and plan to attend an Advising and Registration session. SCTCC will provide directions and deadlines for completing the Advising and Registration session.

Registration Process for Continuing Students

Degree seeking students who are currently enrolled at the College will be eligible for priority registration for the following semester.

Students are encouraged to review course information at www.sctcc.edu prior to the meeting with their advisor. The advisor will review the program planner with the student to ensure registration for appropriate courses and to be sure that prerequisites and other educational requirements have been met.

Students should also be sure that there are no registration holds on their account which would prevent registration. Hold information is found in student eServices.

Returning Students

Students who have voluntarily “stopped out” (not attended classes) for one semester must meet with their academic advisor prior to registration.

TRANSFER OF CREDIT POLICY

See Minnesota State Policy 3.21 and see SCTCC Policy S3.8

Credits for transfer from Minnesota State institutions shall follow the Minnesota State Undergraduate Transfer policy 3.21. Transfer evaluations are completed in the Office of Records and Registration once the student has been accepted into a major. Students must provide an official transcript from all previously attended colleges. Students may also be asked to provide additional documentation of courses taken (course descriptions, course outlines or syllabi). Students will be notified, and can

view courses transferred on their Degree Audit Report once the transfer evaluation is complete. Students may petition the decision of the transfer credit evaluation as outlined in the Minnesota State Undergraduate Transfer Policy beginning with the petition procedure listed below.

Accreditation: SCTCC will consider for transfer those credit courses taken from colleges and universities that are accredited by an agency recognized by the Council of Higher Education Accreditation (CHEA). Courses completed without accreditation may be considered under SCTCC Policy S3.12 Credit for Prior Learning (CPL).

Age of Credits: Transfer of technical courses shall be allowed for courses that have been completed within the last five years. Older courses may be considered if an academic award was earned and the student is working in the field. Math and science courses may have a 10-year age limit. Other general studies and general education courses have no age limit.

Course Content: Courses approved for transfer must match at least 75% of the learning outcomes of the course outline for which the student is seeking transfer. The outcomes from several courses can be combined to reach the 75% match. Courses that do not have a direct equivalent may be evaluated to meet MnTC Goal Area requirements. In such cases, the course must meet at least 51% of the Goal Area competencies.

Grade Point Average: Grades earned at other institutions shall not be used in computing the official GPA on the SCTCC transcript.

Grade Requirements: All college level courses in which a student has received a grade of A, B, C, or P/S will be considered for transfer evaluation. No D or D- grade courses will be considered unless they are MnTC courses from a Minnesota State college/university. Please note that while D grades may transfer, some programs require a grade of C or higher for all courses to fulfill requirements.

Number of Credits: The number of credits granted shall not exceed the number of credits awarded by the sending institution.

Semester Conversion: The following formula is used to calculate the conversion: 3 quarter hours become 2 semester hours and 4 quarter hours become 2.67 semester hours ($4 \times .667 = 2.668$).

Residency Requirements: See SCTCC Graduation Requirements policy S3.2.

Transfer Appeal Process

Students have the right to appeal transfer credit evaluation decisions. Before you appeal: Work with your advisor to review

your Degree Audit Report (DARS) and to discuss appealing transfer credit decisions before submitting an appeal.

To file an appeal: Log in to eServices and, under “Academic Records,” click “Transfer Review” and follow instructions.

DATA PRACTICES POLICY

See SCTCC Policy S3.7

Minnesota State complies with the Family Education Rights and Privacy Act (FERPA), 20 U.S.C. §1232g, 34 CFR 99; the Minnesota Government Data Practices Act, (MGDPA) Minn. Stat. Ch 13, Minn. Rules CH 1205; and other applicable laws and regulations concerning the handling of education records. Accordingly, the College adopts the following policy:

Student means an individual currently or formerly enrolled or registered, applicants for enrollment registration at a public education agency or institution or individuals who receive shared time education services from a public agency or institution. All students at a post-secondary school have the same rights regarding their educational data regardless of age.

Educational data or education records means data in any form directly relating to an individual student maintained by a public education agency or institution or by a person acting for the agency or institution.

Educational records do not include:

- Financial records of the student’s parents or guardian;
- Confidential letters or statements of recommendation placed in education records before January 1, 1975, or after January 1, 1975, if the student waived right of access;
- Records of instructional personnel that are kept in the sole possession of the maker and are not accessible or revealed to any other individual except a temporary substitute for the maker and are destroyed at the end of the school year;
- Records of law enforcement units (if law enforcement unit is a separate entity and the records are maintained exclusively by and for law enforcement purposes);
- Employment records related exclusively to a student’s employment capacity (not employment related to status as a student, such as work study) and not available for use for any other purpose;
- Medical and psychological treatment records that are maintained solely by the treating professional for treatment purposes;
- Records that only contain information about a student after that individual is no longer a student at the institution (alumni data).

Consent for Release Generally Required

The College will not permit access to or the release of personally identifiable information contained in student education records without the written consent of the student to any third party, except as authorized by the MGDPA and FERPA or other applicable law.

Release without Consent

As allowed by the MGDPA and FERPA, the College will release student records without consent as follows:

- To appropriate school officials who require access to educational records in order to perform their legitimate educational duties (see explanation below);
- To federal, state, or local officials or agencies authorized by law;
- In connection with a student’s application for, or receipt of, financial aid;
- To accrediting organizations or organizations conducting educational studies, provided that these organizations do not release personally identifiable data and destroy such data when it is no longer needed for the purpose it was obtained;
- In compliance with a judicial order or subpoena, provided a reasonable effort is made to notify the student in advance unless such subpoena specifically directs the institution not to disclose the existence of a subpoena;
- To appropriate persons in an emergency situation if the information is necessary to protect the health or safety of the students or other persons; or
- To an alleged victim of a crime of violence (as defined in 18 U.S.C. Sect 16) or non-forcible sex offense, the final results of the alleged student perpetrator’s disciplinary proceeding may be released;
- To another educational agency or institution, if requested by the agency or institution, where a student is enrolled or receives services while the student is also in attendance at the college or university, provided that the student is notified where applicable; receives a copy of the record, if requested; and has an opportunity for a hearing to amend the record, as required by law.

“School Officials” with a “legitimate educational interest”

The College will release information in student education records to appropriate school officials as indicated in (1) above when there is a legitimate educational interest. A school official is a person employed by the College in an administrative, supervisory, academic or research, or support staff position (including law enforcement unit personnel and health staff); a person or company with whom the University has contracted (such as an attorney, auditor, or collection agent); a person serving on the Board of Trustees; or a student serving on an official committee, or assisting another school official in performing his or her tasks. A school official has a legitimate education interest if the official needs to review an education record in order to fulfill his or her professional responsibility.

Public Directory Information

The following information on students at College is designated as public Directory Information:

- Student’s name
- Hometown
- Participation in officially recognized activities and sports

- Dates of attendance (semester beginning and end dates)
- Classification (freshmen, sophomore)
- Degrees, honors and awards received
- Date of graduation
- Physical factors (height and weight) of athletes
- Enrollment status (e.g., undergraduate, graduate, full-time, or part-time)

Limited Directory Information

The College defines the following Data as Limited Directory Data. Limited Directory Data shall only be disclosed to the following persons for the following reasons:

- Student's college email addresses and Star ID numbers are defined as Limited Directory Data for enterprise technology related purposes internal to the Minnesota State Colleges and Universities system that are approved by System Office IT, including, but not limited to, inclusion of email addresses and Star ID numbers in a directory accessible to Minnesota State students and employees.
- The following information is defined as Limited Directory Data for purposes of sharing with current, official Minnesota State College student association so the association can communicate with their members: Student name, college e-mail address, and Student Change Code (NEW/RTN/DROP).

Notice to students about Directory Information

Students may direct that all of the above-listed Directory Information be withheld from public disclosure by notifying the Records and Registration Office in writing.

Access to Educational Records by Student

Upon (written) request, the College shall provide a student with access to their educational records. There is no charge for viewing the records even if the College is required to make a copy of the data in order to provide access. Responses to requests by students to review their educational records shall be within ten business days.

Upon request, the meaning of education data shall be explained to the student by college personnel assigned to, and designated by, the appropriate office.

Students have the right to review only their own records. When a record contains private information about other student(s), disclosure cannot include information regarding the other student(s).

Challenge to Record

Students may challenge the accuracy or completeness of their educational records. NOTE: the right to challenge a grade does not apply under this policy unless the grade assigned was allegedly inaccurately recorded.

Copies

Students may have copies of their educational records and this policy. The copies of records will be made at the student's

expense at rates stated in the College copy charge policy. The official transcript fee is \$10.00.

Official copies of academic records or transcripts will not be released for students who have a delinquent financial obligation or financial "hold" at the College, unless otherwise required by law.

AUDITING CLASSES

See SCTCC Policy S3.7

Students who wish to attend the class sessions of a course, but do not wish to receive credit, must register for audit. The same registration procedure is followed and the same tuition and fees are charged. Students are expected to attend classes, but the taking of tests is optional. Audited courses do not affect the grade point average. Financial aid and veterans' benefits will not pay for audited courses.

Course Audit requests can be obtained from Records and Registration and must be returned during the open enrollment period. Students are responsible for obtaining the required signatures. Students will not receive credit for a course which was audited unless the course is retaken for credit.

COURSE BY ARRANGEMENT

In extreme cases of schedule conflicts or unusual course demands, students with the approval of the academic deans may take courses by arrangement. Further information can be obtained at the Office of Records and Registration.

CREDIT LOAD AND CLASSIFICATION

Students registered for at least 12 credits are considered full-time students. Students registered for 9-11 credits are considered three-quarter time students. Students registered for 6-8 credits are considered half-time students. The maximum allowable load without special permission is 20 credits during fall and spring semesters and 13 credits during summer semester.

Students who wish to enroll for more than the established maximum must secure permission from their academic advisor. Students wishing to enroll in more than 25 credits must get a Dean's permission.

Students are classified according to course credits earned: freshmen = 0 to 30, sophomore = 31 and more earned credits.

INTERNSHIPS, PRACTICUMS, CLINICALS

Many majors include the opportunity for students to participate in off-campus practical work experiences. In many cases these work experiences are required. The College may assist the student in finding an initial placement site. The College is not responsible for finding alternative off-campus work experience placement following a student's termination from the initial placement site.

Work experience includes the following: internships, practicums, supervised occupational experience, clinicals, training associations, and other off-site work experiences.

GENERAL STUDIES & DEVELOPMENTAL COURSES

cr.=credit **PLEASE NOTE:** All program plans are preliminary and curriculum may change without notice.

General Studies Courses

BUSM 1267	Introduction to Business	2 cr.
BUSM 2275	Legal Environment of Business.....	3 cr.
CPTR 1210	Introduction to Computers.....	3 cr.
EMSC 1420	AHA Heartsaver CPR and First Aid	1 cr.
GBUS 1320	Professional Development I.....	1 cr.
GBUS 1324	Professional Development II	1 cr.
GTEC 1304	The Automobile in America.....	3 cr.
INTS 1165	Student Success Seminar	2 cr.
SAMG 1211	Professional Sales Fundamentals.....	3 cr.
SAMG 2285	Entrepreneurship.....	3 cr.
TECH 1530	Computer Applications	2 cr.
TECH 1550	Basic CADD	2 cr.
WELD 1502	Welding for Work and Leisure.....	2 cr.

Developmental Courses

ENGL 0900	Writing Fundamentals.....	3 cr.
ESOL 0710	Foundations for Grammar and Writing.....	4 cr.
ESOL 0720	Foundations of Reading and Vocabulary	4 cr.
ESOL 0730	Foundations of Speaking and Listening	4 cr.
ESOL 0810	Writing for Academic Purposes.....	4 cr.
ESOL 0820	Reading for Academic Purposes.....	3 cr.
ESOL 0830	Speaking and Listening for Academic Purposes	3 cr.
MATH 0720	Math Literacy.....	6 cr.
MATH 0831	Bridge to Quantitative Reasoning.....	3 cr.
MATH 0840	Pathway to College Mathematics	4 cr.
MATH 0860	Beginning Algebra for STEM Students.....	4 cr.
MATH 0941	Bridge to Elements of Math I	3 cr.
MATH 0945	Bridge to Elements of Math II	3 cr.
MATH 0951	Bridge to Statistics.....	3 cr.
MATH 0960	Int. Algebra for College Algebra Students.....	3 cr.
MATH 0975	Intermediate Algebra for STEM Students	4 cr.
READ 0900	Reading Fundamentals.....	3 cr.

MINNESOTA TRANSFER CURRICULUM (MNTC) COURSES

cr.=credit **PLEASE NOTE:** All program plans are preliminary and curriculum may change without notice.

MnTC Goal Area 1 - Communications

Communications - Oral

CMST 1320	Introduction to Communication Studies.....	3 cr.
CMST 2300	Introduction to Public Speaking.....	3 cr.
CMST 2302	Small Group Communication.....	3 cr.
CMST 2310	Interpersonal Communication.....	3 cr.
CMST 2315	Persuasion and the Media.....	3 cr.
ESOL 1330	Speaking and Listening for College.....	3 cr.

Communications - Written

ENGL 1303	Technical Writing.....	3 cr.
ENGL 1308	Stretch Analytical Writing I.....	3 cr.
ENGL 1309	Stretch Analytical Writing II.....	3 cr.
ENGL 1312	Analytical Writing.....	4 cr.
ENGL 1350	Introduction to Creative Writing.....	3 cr.
ESOL 1310	Writing for College.....	3 cr.

MnTC Goal Area 2 - Critical Thinking

CRTK 1300	Introduction to Critical Thinking.....	3 cr.
PHIL 1340	Introduction to Logic.....	3 cr.
READ 1308	Critical Reading.....	3 cr.
WMST 1300	Introduction to Women's Studies.....	3 cr.

MnTC Goal Area 3 - Natural Sciences

ASTR 1300	Astronomy (not a lab class).....	3 cr.
ASTR 1301	Astronomy Lab (lab).....	1 cr.
ASTR 1305	Introduction to Astronomy (lab).....	4 cr.
BLGY 1321	Human Biology (lab).....	4 cr.
BLGY 1325	Nutrition (not a lab class).....	3 cr.
BLGY 1351	General Biology I (lab).....	4 cr.
BLGY 1355	General Biology II (lab).....	4 cr.
BLGY 2310	Human Anatomy/Physiology I (lab).....	4 cr.
BLGY 2320	Human Anatomy/Physiology II (lab).....	4 cr.
BLGY 2330	Microbiology (lab).....	4 cr.
BLGY 2340	Genetics (lab).....	4 cr.
BLGY 2350	Cellular Biology (lab).....	4 cr.
BLGY 2360	Ecology (lab).....	4 cr.
CHEM 1305	Chemistry for the Non-Scientist (lab).....	4 cr.
CHEM 1345	General, Organic and Biological Chemistry Foundations (lab).....	4 cr.
CHEM 1350	General Chemistry I (lab).....	4 cr.
CHEM 1355	General Chemistry II (lab).....	4 cr.
EASC 1310	Meteorology (lab).....	4 cr.
ENVR 1305	Environmental Science (lab).....	4 cr.
ENVR 1310	Environmental Issues (not a lab course).....	3 cr.
ENVR 1315	Natural Resource Conserv. (not a lab course).....	3 cr.
ENVR 2350	Environmental Chemistry (lab).....	4 cr.
GEOG 1300	Geology (lab).....	4 cr.
PHYS 1305	Conceptual Physics (lab).....	4 cr.
PHYS 2300	General Physics (lab).....	4 cr.
PHYS 2305	General Physics II (lab).....	4 cr.
PHYS 2310	Engineering Physics I (lab).....	5 cr.
PHYS 2320	Engineering Physics II (lab).....	5 cr.

MnTC Goal Area 4 - Mathematical/Logical Reasoning

MATH 1331	Quantitative Reasoning.....	3 cr.
MATH 1341	Elements of Math I.....	4 cr.
MATH 1345	Elements of Math II.....	4 cr.
MATH 1351	Statistics.....	4 cr.
MATH 1360	College Algebra.....	3 cr.
MATH 1370	College Trigonometry.....	3 cr.
MATH 1380	Precalculus.....	5 cr.
MATH 2311	Calculus I.....	5 cr.
MATH 2321	Calculus II.....	5 cr.
MATH 2330	Calculus III: Multivariable Calculus.....	5 cr.
MATH 2350	Differential Equations with Linear Algebra.....	4 cr.
PHIL 1340	Introduction to Logic.....	3 cr.

MnTC Goal Area 5 - History and the Social and Behavioral Sciences

ANTH 1300	Introduction to Cultural Anthropology.....	3 cr.
ART 1351	Foundation Art History 2: Renaissance to Contemporary.....	3 cr.
DVRS 1304	Diversity and Social Justice.....	3 cr.
ECON 2320	Introduction to Macroeconomics.....	3 cr.
ECON 2330	Introduction to Microeconomics.....	3 cr.
GEOG 1300	World Regional Geography.....	3 cr.
GERO 1300	Introduction to Gerontology.....	3 cr.
HIST 1310	American History Until 1877.....	3 cr.
HIST 1311	The United States Since 1877.....	3 cr.
HIST 1320	World History to 1500.....	3 cr.
HIST 1321	World History since 1500.....	3 cr.
HIST 1330	World War II.....	3 cr.
HUMN 1305	Introduction to Latin American Studies.....	3 cr.
POLS 1304	Introduction to American Politics.....	3 cr.
POLS 1320	Public Issues.....	3 cr.
PSYC 1300	Introduction to Psychology.....	3 cr.
PSYC 1304	Lifespan Developmental Psychology.....	3 cr.
PSYC 1310	Psychology of Women and Gender.....	3 cr.
PSYC 1320	Psychology of Trauma.....	3 cr.
PSYC 1350	Positive Psychology.....	3 cr.
PSYC 2310	Psychopathology: The Science of Mental Health.....	3 cr.
PSYC 2320	Social Psychology.....	3 cr.
PSYC 2330	Statistics for Psychology/Behav Sciences.....	4 cr.
PSYC 2350	Human Sexuality.....	3 cr.
SOCI 1310	Introduction to Sociology.....	3 cr.
SOCI 1320	Social Problems.....	3 cr.
SOCI 1350	Sociology of Marriage and Family.....	3 cr.
SOCI 1360	The Politics of Food.....	3 cr.
SOCI 2305	Environmental Sociology.....	3 cr.
SPAN 1305	Introduction to Latin American Studies.....	3 cr.
SSCI 1300	Introduction to the Social Sciences.....	3 cr.

MnTC Goal Area 6 - The Humanities and Fine Arts

ART 1300	Art Appreciation.....	3 cr.
ART 1301	Introduction to Studio Art	3 cr.
ART 1310	Foundation of 2D Design and Materials	4 cr.
ART 1321	Foundation Drawing I	4 cr.
ART 1330	Introduction to Painting.....	4 cr.
ART 1340	Foundation Digital Photography	4 cr.
ART 1350	Foundation Art History 1: Ancient to Pre-Renaissance	3 cr.
ART 1351	Foundation Art History 2: Renaissance to Contemporary	3 cr.
ART 1370	Introduction to Printmaking	4 cr.
ART 1380	Foundation 3D Design and Sculpture	4 cr.
ENGL 1321	Introduction to Modern Fiction	3 cr.
ENGL 1322	Introduction to Literature	3 cr.
ENGL 1340	Introduction to Multicultural Literature	3 cr.
ENGL 1341	Introduction to Women's Literature	3 cr.
ENGL 1342	Middle Eastern Literature.....	3 cr.
ENGL 1345	Gender in Literature	3 cr.
ENGL 1350	Introduction to Creative Writing	3 cr.
ENGL 2315	Literature from our Latinx Communities	3 cr.
HUMN 1320	Holocaust and Genocide Studies.....	3 cr.
HUMN 1340	Middle Eastern Cultures.....	3 cr.
HUMN 2350	Film and United States Culture	3 cr.
HUMN 2352	Holocaust Field Studies.....	1 cr.
MUSC 1320	Music in World Culture	3 cr.
MUSC 1340	History of Rock and Roll	3 cr.
MUSC 1350	Experiencing Live Music	3 cr.
MUSC 1360	Class Voice	3 cr.
MUSC 1370	History of Musical Theatre.....	3 cr.
PHIL 1310	Introduction to Philosophy	3 cr.
PHIL 1320	Ethics.....	3 cr.
PHIL 1360	Comparative World Religions	3 cr.
SPAN 2315	Literature from our Latinx Communities	3 cr.
SPAN 2320	Intermediate Spanish II	4 cr.
THTR 1315	Acting for Everyone	3 cr.
THTR 1330	Introduction to Theatre.....	3 cr.
THTR 1345	Active Collaboration	3 cr.
THTR 1350	Acting Foundations	3 cr.
THTR 1355	Practical Creativity.....	3 cr.
THTR 1370	Introduction to Technical Theatre	3 cr.

MnTC Goal Area 7 - Human Diversity

DVRS 1304	Diversity and Social Justice	3 cr.
DVRS 1310	Human Relations for a Diverse Workplace.....	3 cr.
DVRS 1320	Diversity and Inclusion in Sports	3 cr.
DVRS 2301	Race and Ethnic Relations.....	3 cr.
ENGL 1340	Introduction to Multicultural Literature	3 cr.
ENGL 1341	Introduction to Women's Literature	3 cr.
ENGL 1345	Gender in Literature	3 cr.
ENGL 2315	Literature from our Latinx Communities	3 cr.
GERO 1300	Introduction to Gerontology	3 cr.
HASL 1300	American Sign Language	3 cr.
PSYC 1310	Psychology of Women and Gender	3 cr.

MnTC Goal Area 7 - Human Diversity Continued

SOCI 1350	Sociology of Family and Marriage.....	3 cr.
SPAN 2315	Literature from our Latinx Communities	3 cr.
WMST 1300	Introduction to Women's Studies	3 cr.

MnTC Goal Area 8 - Global Perspective

ANTH 1300	Introduction to Cultural Anthropology.....	3 cr.
ART 1350	Foundation Art History 1: Ancient to Pre-Renaissance	3 cr.
ENGL 1321	Introduction to Modern Fiction	3 cr.
ENGL 1342	Middle Eastern Literature.....	3 cr.
GEOG 1300	World Regional Geography.....	3 cr.
HASL 1408	American Sign Language III	3 cr.
HASL 1412	American Sign Language IV.....	3 cr.
HIST 1320	World History to 1500.....	3 cr.
HIST 1321	World History since 1500.....	3 cr.
HIST 1330	World War II.....	3 cr.
HUMN 1305	Introduction to Latin American Studies	3 cr.
HUMN 1340	Middle Eastern Culture	3 cr.
MUSC 1320	Music in World Culture	3 cr.
PHIL 1360	Comparative World Religions	3 cr.
SPAN 1305	Introduction to Latin American Studies	3 cr.
SPAN 1310	Beginning Spanish I	4 cr.
SPAN 1320	Beginning Spanish II.....	4 cr.
SPAN 2310	Intermediate Spanish I.....	4 cr.
SPAN 2320	Intermediate Spanish II	4 cr.

MnTC Goal Area 9 - Ethical and Civic Responsibility

CMST 2302	Small Group Communication.....	3 cr.
CMST 2315	Persuasion and the Media.....	3 cr.
ECON 1310	Personal Finance.....	3 cr.
HIST 1310	American History Until 1877.....	3 cr.
HIST 1311	The United States Since 1877	3 cr.
HUMN 1320	Holocaust and Genocide Studies.....	3 cr.
PHIL 1320	Ethics.....	3 cr.
POLS 1304	Introduction to American Politics.....	3 cr.
POLS 1320	Public Issues.....	3 cr.
SOCI 1360	The Politics of Food.....	3 cr.

MnTC Goal Area 10 - People and the Environment

BLGY 2360	Ecology.....	4 cr.
CHEM 1305	Chemistry for the Non-Scientist.....	4 cr.
ECON 1340	Environmental Economics	3 cr.
ENVR 1305	Environmental Science.....	4 cr.
ENVR 1310	Environmental Issues	3 cr.
ENVR 1315	Natural Resource Conservation.....	3 cr.
ENVR 2350	Environmental Chemistry.....	4 cr.
SOCI 2305	Environmental Sociology	3 cr.

Accounting Careers

Accounting AAS Degree (64 Credits)

Program Description

The Accounting AAS Degree offers students a diverse in-depth accounting and business curriculum. The program prepares students to be successful in a variety of accounting careers and for advancement in their current positions. Graduates will learn to be critical thinkers and decision makers who have been taught the most up-to-date accounting practices.

Students completing the Accounting AAS Degree are eligible to take the national Accredited Business Accountant (ABA) accreditation and the State of Minnesota Registered Accounting Practitioner (RAP) accreditation exams. In past years, SCTCC graduates have a pass rate more than double the national average on the national accreditation exam.

After reviewing comparable Minnesota State college programs, this program exceeds 60 credits for one or more of the following reasons: national or international program certification, national or international standards including skill standards, standards recommended by a primary employer or multiple employers, national specialized program accreditation, state licensure requirements, and/or national practices or standards.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

The Accounting AAS Degree prepares students to fill accounting roles in public accounting firms, schools, counties, cities, non-profit organizations and every type of for-profit business that needs high quality well trained accounting professionals.

Suggested Technical Studies Semester I

ACCT1215	Accounting Principles I.....	4
BUSM1260	Applied Business Mathematics.....	3
BUSM2275	Legal Environment of Business.....	3
CPTR1210	Introduction to Computers.....	3

Suggested Technical Studies Semester II

ACCT1216	Accounting Principles II.....	4
ACCT1217	Cost Accounting.....	4
ACCT1219	Spreadsheets-Microsoft Excel.....	2
ACCT1220	Payroll Accounting.....	2
ACCT1225	QuickBooks Online.....	3

Suggested Technical Studies Semester III

ACCT2226	Intermediate Accounting I.....	4
ACCT2229	Managerial Accounting.....	4
ACCT2230	Income Tax I.....	4
ACCT2236	Government and Nonprofit Accounting.....	2

Suggested Technical Studies Semester IV

ACCT2227	Intermediate Accounting II.....	4
ACCT2231	Income Tax II.....	2
ACCT2234	Auditing.....	3
ACCT2235	Accounting Comprehensive Review.....	2
OR ACCT2280	Accounting Internship.....	2

General Education - MinnState policy requires AAS degrees to contain at least 15 MnTC credits in at least 3 different Goal Areas

MnTC Goal Area 1	Communications - Oral (CMST).....	3
ENGL1312	Analytical Writing.....	4
MnTC All	Any course(s) from Goal 2 - 10.....	8

Estimated cost of books, supplies and materials: \$2,980

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Accounting Careers

Accounting Diploma (55 Credits)

Program Description

The Accounting Careers diploma prepares students for a variety of accounting positions in public accounting, private industry, and governmental and non-profit organizations. Accounting Careers emphasizes financial analysis, decision making, and ethical behavior and reporting practices.

Students will gain experience working with calculators, computers, and the latest computer software. This program will prepare students as accountants for both private and public accounting.

Students graduating with an Accounting Diploma qualify to sit for the Registered Accounting Practitioner (RAP) exam in the State of Minnesota, and the national Accredited Business Accountant (ABA) accreditation exam through the Accreditation Council for Accountancy and Taxation.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC). The general studies courses are technically focused and not designed for transfer.

Career Opportunities

This program will prepare students as accountants for both private and public accounting.

Suggested Technical Studies Semester I

ACCT1215	Accounting Principles I	4
BUSM1260	Applied Business Mathematics	3
BUSM2275	Legal Environment of Business	3
CPTR1210	Introduction to Computers.....	3

Suggested Technical Studies Semester II

ACCT1216	Accounting Principles II.....	4
ACCT1217	Cost Accounting	4
ACCT1219	Spreadsheets-Microsoft Excel	2
ACCT1220	Payroll Accounting.....	2
ACCT1225	QuickBooks Online	3

Suggested Technical Studies Semester III

ACCT2225	Computerized Accounting Projects	2
ACCT2226	Intermediate Accounting I.....	4
ACCT2229	Managerial Accounting	4
ACCT2230	Income Tax I.....	4
ACCT2236	Government and Nonprofit Accounting	2

Suggested Technical Studies Semester IV

ACCT2227	Intermediate Accounting II.....	4
ACCT2231	Income Tax II	2
ACCT2234	Auditing.....	3
ACCT2235	Accounting Comprehensive Review	2
OR ACCT2280 Accounting Internship		2

General Education/Studies

ENGL1308	Stretch Analytical Writing I	3
See advisor for list of options		3

Estimated cost of books, supplies and materials: \$2,680

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Accounting Careers
Accounting Clerk Diploma (30 Credits)

Program Description

The Accounting Clerk diploma prepares students for long term office positions in bookkeeping and accounting.
An accounting clerk maintains accounting records, posts details of business transactions, reconciles bank statements, prepares vouchers and invoices, and assists management with other accounting duties.
The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC). The general studies courses are technically focused and not designed for transfer.

Career Opportunities

This program will prepare students as accounting clerks for business and governmental organizations; designated by the type of accounting performed, such as Accounts Payable Clerk, Accounts Receivable Clerk, Billing Clerk, Tax Record Clerk.

Table with 2 columns: Course Number, Course Name, and Credits. Rows include Suggested Technical Studies Semester I (ACCT1215, BUSM1260, BUSM2275, CPTR1210), Suggested Technical Studies Semester II (ACCT1216, ACCT1219, ACCT1220, ACCT1225), and General Education/Studies (ENGL1308, See advisor for list of options). Estimated cost of books, supplies and materials: \$1,497.

Architectural Construction Technology

Architectural Construction Technology AAS Degree (61 Credits)

2025-2026 Catalog



Program Description

This program is designed to prepare students for employment in the residential and light commercial construction industry. The objective of the program is to give students a well-rounded, basic construction background, along with CAD (computer aided drafting) skills. Construction technology, materials, design, blueprint reading and estimating are studied in addition to drafting techniques.

Program specific requirements: A laptop computer; the format of the program allows students to work on drafting and design projects in a lab setting as well as off-site.

After reviewing comparable Minnesota State college programs, this program exceeds 60 credits for one or more of the following reasons: national or international program certification, national or international standards including skill standards, standards recommended by a primary employer or multiple employers, national specialized program accreditation, state licensure requirements, and/or national practices or standards.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Employment areas for graduates include general contractors, architectural and engineering firms, building material centers, related material suppliers, and building material manufacturers. Graduates work as drafters, estimators, technical support staff, material salespeople, management trainees, and project managers. Articulation agreements with other schools also give students the opportunity to continue their education for advanced degrees in areas such as construction management.

Technical Studies - Semester I

ARCH1503	Introduction to Architectural Drafting.....	2
ARCH1506	Intro to Architectural CAD.....	3
ARCH 1508	Building Materials & Methods for Arch Design.....	3
ARCH1522	Residential Design Principles.....	2

Suggested Technical Studies Semester II

ARCH1510	CAD and Design Studio.....	6
ARCH 1525	Estimating for Residential Construction.....	3
ARCH1534	Residential Design and Presentation.....	2

Suggested Technical Studies Semester III

ARCH2506	Architectural Design Studio I.....	3
ARCH2510	Architectural CAD II.....	3
ARCH2522	Commercial Design Principles and Practice.....	2
ARCH2530	Sustainable Building Systems.....	2
CNST2502	Estimating for the Construction Trades II.....	3

Suggested Technical Studies Semester IV

ARCH2518	Architectural CAD III.....	3
ARCH2542	Structural Building Systems.....	3
ARCH2551	Professional Constructor Seminar.....	1
CNST2506	Construction Management.....	3
CNST2510	Commercial Estimating and Project Analysis.....	2

General Education - MinnState policy requires AAS degrees to contain at least 15 MnTC credits in at least 3 different Goal Areas

MnTC Goal Area 1	Communications - Oral.....	3
MnTC Goal Area 1	Communications - Written.....	3
MnTC Goal Area 4	Math/Logic.....	3
MnTC Goal Area 5	Social Sciences.....	3
MnTC ALL	MnTC General Education Electives.....	3

Estimated cost of books, supplies and materials: \$3,379

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Architectural Construction Technology

Architectural Construction Technology Diploma (52 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

This program is designed to prepare students for employment in the residential and light commercial construction industry. The objective of the program is to give students a well-rounded, basic construction background, along with CAD (computer aided drafting) skills. Construction technology, materials, design, blueprint reading and estimating are studied in addition to drafting techniques.

Program specific requirements: A laptop computer; the format of the program allows students to work on drafting and design projects in a lab setting as well as off-site.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Employment areas for graduates include general contractors, architectural and engineering firms, building material centers, related material suppliers, and building material manufacturers. Graduates work as drafters, estimators, technical support staff, material sales-people, management trainees, and project managers. Articulation agreements with other schools also give students the opportunity to continue their education for advanced degrees in areas such as construction.

Suggested Technical Studies Semester I

ARCH1503	Introduction to Architectural Drafting.....	2
ARCH1506	Intro to Architectural CAD.....	3
ARCH 1508	Building Materials & Methods for Arch Design.....	3
ARCH1522	Residential Design Principles.....	2

Suggested Technical Studies Semester II

ARCH1510	CAD and Design Studio.....	6
ARCH 1525	Estimating for Residential Construction	3
ARCH1534	Residential Design and Presentation	2

Suggested Technical Studies Semester III

ARCH2506	Architectural Design Studio I.....	3
ARCH2510	Architectural CAD II.....	3
ARCH2522	Commercial Design Principles and Practice	2
ARCH2530	Sustainable Building Systems	2
CNST2502	Estimating for the Construction Trades II.....	3

Suggested Technical Studies Semester IV

ARCH2518	Architectural CAD III	3
ARCH2542	Structural Building Systems.....	3
ARCH2551	Professional Constructor Seminar	1
CNST2506	Construction Management	3
CNST2510	Commercial Estimating and Project Analysis	2

General Education

ENGL1308	Stretch Analytical Writing I	3
DVRS1310	Human Relations for a Diverse Workplace	3

Estimated cost of books, supplies and materials: \$3,029

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Auto Body Collision Technology

Auto Body Collision Technician Diploma (34 Credits)

Program Description

The Auto Body Collision Repair program is designed to meet the needs of today's high-tech and fast-paced Collision industry. The core of the program relies on fundamental repair skills, such as metal straightening, body filler application and sanding of different substrates. Students gain experience on both mild and high strength steel welding using MIG welding standards set by the industry. Students use computers to write estimates, diagnose frame and unibody damage and mix paint. Students completing this program will also have the opportunity to gain industry certificates in Non-Structural Repair and Refinishing from our industry partner I-CAR (Inter-Industry Conference for Collision Repair).

Accreditation information: The Auto Body Collision Technology program is accredited by the ASE Education Foundation, 1503 Edwards Ferry Rd., NE, Suite 401, Leesburg, VA 20176 (703) [669-6650](tel:669-6650) <https://aseeducationfoundation.org/>.

Career Opportunities

The Auto Body Collision Repair program will give graduates sufficient skills to enter the trade as advanced apprentices. Employment opportunities exist with automotive dealers, independent body repair shops, leasing agencies, truck repair shops, and also paint salespersons.

Suggested Technical Studies Semester I

ABCT1520	Collision Repair Industry	4
ABCT1525	Collision Repair I	4
ABCT1535	Production Lab I	3
ABCT1580	Collision Repair II	4
TRAN1518	Transportation Hazardous Materials	1

Suggested Technical Studies Semester II

ABCT2535	Production Lab II	2
ABCT2543	Supervised Internship	2
ABCT2545	Collision Refinishing	4
ABCT2550	Auto Body Mechanics	4
ABCT2560	Structural Repair and Analysis	4
TRAN1520	Workplace Perceptions and Expectations	2

Estimated cost of books, supplies and materials: \$5,120

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Automotive Service Technician

Automotive Service Technician AAS Degree (72 Credits)

2025-2026 Catalog



A member of Minnesota State

Program Description

Today's cars and light trucks are amazing modern marvels. The standard for these automobiles is to deliver unbelievably high performance, fuel economy, aerodynamic styling, navigation, radar alert, parking assist, video, stereo, FV Hybrid, telecommunications and safety features -- but next to zero emissions. And that's not even taking into consideration hybrids or electric vehicles. Virtually every system on today's vehicles is electronically controlled by computers. Because of this high technology in vehicles, modern Automotive Service Technicians need to be well educated and well trained. As a result, they also will be well paid and highly sought after. There is a great demand for technicians in nearly every large city in the United States. Automotive Service graduates are proficient in using the latest equipment for wheel alignment, engine performance (including factory and generic scan tools), electrical and electronic diagnosis, brakes, air conditioning, engine service and drivetrain repair. We have a spacious, well equipped, clean and bright automotive lab. Our classrooms are large and clean, complete with multimedia information delivery systems and state-of-the-art, interactive automotive systems simulators. We use late-model vehicles for training, including a hybrid vehicle. Our lab is operated as an actual automotive repair facility, and 75% of the repairs our students learn to do in the lab are on "live" vehicles with genuine customer concerns. We also have an environmental chamber where we can place a vehicle on a wheel dynamometer to study the effects of climate on vehicle performance and also to help diagnose problem vehicles. Along with the popularity of vehicles with diesel engines, we have also developed a course titled Light Duty Diesel.

All of the program instructors are ASE Master Certified and our Automotive Service Technician Program is a ASF master certified program. St. Cloud Technical & Community College offers an Automotive Service Technician Associate of Applied Science Degree and an Automotive Service Technician Diploma. Both automotive majors prepare students for entry-level positions in the automotive repair industry.

After reviewing comparable Minnesota State college programs, this program exceeds 60 credits for one or more of the following reasons: national or international program certification, national or international standards including skill standards, standards recommended by a primary employer or multiple employers, national specialized program accreditation, state licensure requirements, and/or national practices or standards.

Career Opportunities

Employment opportunities include service technicians, service advisors and shop managers. Trained technicians are offered a broad range of jobs from which to select their area of specialty. Graduates with Associate of Applied Science Degrees may transfer their degree to a 4-year-college in order to attain a baccalaureate degree, which would qualify them to obtain positions with the automotive manufacturer or the automotive aftermarket at a corporate level.

Suggested Technical Studies Semester I

AUTO1508	Automotive Suspension and Alignment.....	4
AUTO1510	Chassis Electrical	4
TRAN1503	General Service	3
TRAN1504	Electricity and Electronic Principles	3
TRAN1517	Scan Tool Data Acquisition	2
TRAN1518	Transportation Hazardous Materials	1

Suggested Technical Studies Semester II

AUTO1512	Engine Repair Theory.....	2
AUTO1516	Brakes	4
AUTO2514	Heating and Air Conditioning	3

Suggested Technical Studies Semester III

AUTO2502	Engine Ignition and Emission Systems	4
AUTO2505	Engine Fuel and Emission Systems.....	5
AUTO2506	Principles of Torque Transfer	7
TRAN1520	Workplace Perceptions and Expectations.....	2

Suggested Technical Studies Semester IV

AUTO2513	Automatic Transmission and Transaxle Overhaul....	4
AUTO2520	Engine Driveability	3
AUTO2524	Advanced Electronic Systems	3

Technical Electives (Choose 3 Credits)

AUTO1514	Engine Repair Lab.....	4
AUTO2512	Driveline Repair	3
AUTO2530	Automotive High Performance Systems	3
AUTO2540	Light Duty Diesel	2

General Education - MinnState policy requires AAS degrees to contain at least 15 MnTC credits in at least 3 different Goal Areas

MnTC Goal Area 1	Communications - Oral or Written	6
MnTC Goal Area 2	Critical Thinking	3
MnTC All	Any from Goals 3 - 10	6

Estimated cost of books, supplies and materials: \$7,496

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Automotive Service Technician

Automotive Service Technician Diploma (67 Credits)

2025-2026 Catalog



Program Description

Today's cars and light trucks are amazing modern marvels. The standard for these automobiles is to deliver unbelievably high performance, fuel economy, aerodynamic styling, navigation, radar alert, parking assist, video, stereo, FV Hybrid, telecommunications and safety features -- but next to zero emissions. And that's not even taking into consideration hybrids or electric vehicles. Virtually every system on today's vehicles is electronically controlled by computers. Because of this high technology in vehicles, modern Automotive Service Technicians need to be well educated and well trained. As a result, they also will be well paid and highly sought after. There is a great demand for technicians in nearly every large city in the United States. Automotive Service graduates are proficient in using the latest equipment for wheel alignment, engine performance (including factory and generic scan tools), electrical and electronic diagnosis, brakes, air conditioning, engine service and drivetrain repair. We have a spacious, well equipped, clean and bright automotive lab. Our classrooms are large and clean, complete with multimedia information delivery systems and state-of-the-art, interactive automotive systems simulators. We use late-model vehicles for training, including a hybrid vehicle. Our lab is operated as an actual automotive repair facility, and 75% of the repairs our students learn to do in the lab are on "live" vehicles with genuine customer concerns. We also have an environmental chamber where we can place a vehicle on a wheel dynamometer to study the effects of climate on vehicle performance and also to help diagnose problem vehicles. Along with the popularity of vehicles with diesel engines, we have also developed a course titled Light Duty Diesel.

All of the program instructors are ASE Master Certified and our Automotive Service Technician Program is a ASF master certified program. St. Cloud Technical & Community College offers an Automotive Service Technician Associate of Applied Science Degree and an Automotive Service Technician Diploma. Both automotive majors prepare students for entry-level positions in the automotive repair industry.

After reviewing comparable Minnesota State college programs, this program exceeds 60 credits for one or more of the following reasons: national or international program certification, national or international standards including skill standards, standards recommended by a primary employer or multiple employers, national specialized program accreditation, state licensure requirements, and/or national practices or standards.

Career Opportunities

Employment opportunities include service technicians, service advisors and shop managers.

Suggested Technical Studies Semester I

AUTO1508	Automotive Suspension and Alignment.....	4
AUTO1510	Chassis Electrical	4
TRAN1503	General Service	3
TRAN1504	Electricity and Electronic Principles	3
TRAN1517	Scan Tool Data Acquisition	2
TRAN1518	Transportation Hazardous Materials	1

Suggested Technical Studies Semester II

AUTO1512	Engine Repair Theory.....	2
AUTO1514	Engine Repair Lab.....	4
AUTO1516	Brakes.....	4
AUTO2514	Heating and Air Conditioning	3

Suggested Technical Studies Semester III

AUTO2502	Engine Ignition and Emission Systems	4
AUTO2505	Engine Fuel and Emission Systems.....	5
AUTO2506	Principles of Torque Transfer	7
TRAN1520	Workplace Perceptions and Expectations.....	2

Suggested Technical Studies Semester IV

AUTO2512	Driveline Repair	3
AUTO2513	Auto Trans. & Transaxle Overhaul.....	4
AUTO2520	Engine Driveability	3
AUTO2524	Advanced Electronic Systems	3

General Education/Studies

General Education/Studies	6
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Estimated cost of books, supplies and materials: \$7,096

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Business Management

Business Transfer Pathway AS Degree (60 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

A degree in Business builds a strong foundation in general business topics and gives you the ability to choose to concentrate in accounting, finance, sales, management, or marketing. Each elective area focuses your practical knowledge in your field of study and provides opportunities to apply these skills in a variety of settings. Emphasis is placed on developing skills in decision-making, interpersonal communication, critical thinking, project management and problem-solving.

The Business Transfer Pathway AS is a great choice for students who want to start at SCTCC and transfer to earn a bachelor's degree at one of the seven Minnesota State universities. All courses directly transfer into designated bachelor's degree programs.

In addition to preparing you to transfer to a Business bachelor's degree program, the Business Transfer Pathway AS degree prepares you to enter the workforce.

Business Transfer Pathway - REQUIRED COURSES

ACCT1215	Accounting Principles I	4
ACCT2229	Managerial Accounting	4
BUSM2275	Legal Environment of Business	3
CPTR1210	Introduction to Computers	3
SAMG1215	Principles of Management	3
SAMG1200	Principles of Marketing	3

General Education Courses - MinnState requires AS degrees to contain at least 30 General Education credits from at least 6 different Goal Areas

ENGL1312	Analytical Writing	4
MnTC Goal Area 1	Oral Communication	3
MATH1360	College Algebra	3
MATH1351	Statistics	4
ECON2320	Introduction to Macroeconomics	3
ECON2330	Introduction to Microeconomics	3
MnTC Goal Area 6	Humanities and Fine Arts	3
MnTC Goal Area 7	Human Diversity	3
MnTC Goal Area 9	Ethical and Civic Responsibility	3
MnTC All	Any Goal Area 1-10	3

Technical Electives - Choose 8 credits

8 credits of Technical Electives from any combination of courses listed below or from one elective area are required.

Marketing Sales Management Options

SAMG1206	Strategic Customer Service	3
SAMG1211	Professional Sales Fundamentals	3
SAMG1221	Branding and Promotion	3
SAMG1251	Financial Strategies for Business	3
SAMG2245	Marketing Strategies	3
SAMG2255	Professional Sales Strategies	3
SAMG2270	Managing Human Resources	3
SAMG2280	Sales Force Management	3
SAMG2285	Entrepreneurship	3

Finance Elective Options

FNCR1201	Money & Banking	3
FNCR1215	Investments	3
FNCR1250	Finance Law, Regulations and Ethics	3
FNCR1260	Principles of Risk Management	3
FNCR2240	Financial Statement Analysis	3
FNCR2245	Consumer Lending	3

Accounting Elective Options

ACCT1216	Accounting Principles II	4
ACCT1217	Cost Accounting	4
ACCT1219	Spreadsheets	2
ACCT1220	Payroll Accounting	2
ACCT1225	QuickBooks Online	3
ACCT2226	Intermediate Accounting I	4
ACCT2230	Income Tax I	4
ACCT2231	Income Tax II	2

Estimated cost of books, supplies and materials: \$2,029

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Business Management

Business Management AAS Degree (60 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

The business world today is facing rapid changes, creating an increased demand for well-trained professionals to fill position in many areas of the public, private and non-profit sectors. The Business Management AAS Degree builds a strong foundation in business topics, designed for students who want to enter the workforce or advance in their careers. Emphasis is placed on developing skills in leadership, decision-making, critical thinking, planning and entrepreneurship. The program begins with core business courses, following for courses in a specific emphasis area. Students can choose electives in accounting, finance, marketing, operations, or sales. Each elective area focuses students' practical knowledge in their field of study and provides opportunities to apply these skills in a variety of settings.

Career Opportunities

Graduates entering the workforce are likely to be employed by public and private organizations in a range of industries, in entry-level operations, business administration, supervisor and manager roles.

Business Management Core Technical Studies

ACCT1215	Accounting Principles I	4
ACCT2229	Managerial Accounting	4
BUSM1260	Applied Business Mathematics	3
BUSM2220	Leadership and Strategic Planning	3
BUSM2275	Legal Environment of Business	3
CPTR1210	Introduction to Computers	3
SAMG1200	Principles of Marketing	3
SAMG1215	Principles of Management	3
SAMG2270	Managing Human Resources	3
SAMG2285	Entrepreneurship	3

Choose 13 credits from the various Electives sections below

Accounting Electives

ACCT1216	Accounting Principles II	4
ACCT1217	Cost Accounting	4
ACCT1219	Spreadsheets	2
ACCT1220	Payroll Accounting	2
ACCT1225	QuickBooks Online	3
ACCT2226	Intermediate Accounting I	4
ACCT2230	Income Tax 1	4
ACCT2231	Income Tax 2	2

Sales and Marketing Electives

SAMG1206	Strategic Customer Service	3
SAMG1211	Professional Sales Fundamentals	3
SAMG1221	Branding and Promotion	3
SAMG2245	Marketing Strategies	3
SAMG2255	Professional Sales Strategies	3
SAMG2280	Sales Force Management	3

Other Electives

BUSM2230	Operations and Supply Chain Management	3
ECON2320	Introduction to Macroeconomics	3
ECON2330	Introduction to Microeconomics	3
FNCR1260	Principles of Risk Management	3

General Education - MinnState policy requires AAS degrees to contain at least 15 MnTC credits in at least 3 different Goal Areas

DVRS1304	Diversity and Social Justice	3
MnTC Goal Area 1	Communications - Oral (CMST)	3
MnTC Goal Area 1	Communications - Written (ENGL)	3
MnTC Goal Area 2	Critical Thinking	3
MnTC All	General Elective - ECON Recommended	3

Estimated cost of books, supplies and materials: \$2,029

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Cardiovascular Technology

Cardiovascular Technology AAS Degree (60 Credits)

Program Description

The demands of the Cardiovascular Technologist require a working knowledge of detailed anatomy, physiology and pathology of the heart, coronary arteries, and cardiac vascular function. Cardiovascular students acquire the skills to assist cardiologists in performing diagnostic, interventional, angioplasty and stent placement procedures; measure cardiovascular parameters such as cardiac output, and intra-cardiac pressure measurements.

Degree Specific Program Requirements: A background check, including fingerprinting, will be completed as a requirement of this program. At the time of the background check submission, students must provide documentation as required by the MN Department of Human Services. If you have been arrested, charged or convicted of any criminal offense, you should investigate the impact that the arrest, charge or conviction may have on your chances of employment in the field you intend to study, or on your ability to obtain federal, state, and other higher education financial aid. Students who have earned a grade of "C" or better, in all required classes, as well as an overall GPA of 2.0 or better will have satisfied the program requirements for the AAS degree.

Accreditation Information: **Cardiovascular Technology** is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), 9355-113th St. N, #7709, Seminole, FL, 33775. Telephone: [\(727\) 210-2350](tel:(727)210-2350) Fax: (727) 210-2354, web site: www.caahep.org and Joint Review Committee on Education in Cardiovascular Technology (JRC-CVT), 355 Hartford Ave West Uxbridge, MA 01569. Telephone: [\(413\) 628-5228](tel:(413)628-5228) www.jrcvt.org.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

The Cardiovascular Technology Program prepares students for employment in cardiac catheterization labs, electrophysiology labs, open heart surgical suites and cardiac research facilities.

*Current CPR, AHA Healthcare Provider, required

*Preference will be given to students who have completed all acceptance AND general education requirements.

*Applicants must be vaccinated against Hepatitis B or sign a release form. HBV series must be completed prior to students starting the Spring semester of the 2nd year.

*Math score may be required-see Advisor for additional details

*NOTE: MOST CLINICAL SITES ARE LOCATED IN THE FIVE STATE AREA. ADDITIONAL SITES IN OTHER STATES MAY ALSO BE AVAILABLE.

Acceptance Requirements (2.5 Cumulative GPA required and no less than 2.0 GPA per each class below)

HLTH1440	Medical Terminology	1
BLGY2310	Human Anatomy/Physiology I	4
MnTC Goal Area 1	Communications Oral (CMST).....	3

Technical Studies Semester I

ICVT1441	Introduction to Clinics.....	3
ICVT1445	Cardiovascular Anatomy and Physiology	3

Technical Studies Semester II

ICVT1422	Cardiovascular Instrumentation	3
ICVT1424	Catheterization Lab Fundamentals I.....	3
ICVT1430	EKG Interpretation.....	1
ICVT1443	Cardiovascular Clinic I.....	5

Technical Studies Semester III

ICVT2405	Cardiovascular Pathology.....	3
ICVT2427	Catheterization Lab Fundamentals II	3
ICVT2446	Cardiovascular Clinical II	5

Technical Studies Semester IV

ICVT2450	Applied Clinical Internship	13
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General Education - MinnState policy requires AAS degrees to contain at least 15 MnTC credits in at least 3 different Goal Areas

BLGY2320	Human Anatomy/Physiology II.....	4
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MnTC Goal Area 1 Communications - Written

ENGL 1312 or 1303	Recommended.....	3
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MnTC Goal Area 4

Select from MATH 1331,1351 or 1360	3
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Estimated cost of books, supplies and materials: \$4,969

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Carpentry

Carpentry Diploma (33 Credits)

Program Description

The Carpentry Program is designed to prepare students to enter the construction industry as skilled tradespeople. The building construction industry is one of the largest industries in America today. With the increasing population and need for more housing, urban redevelopment, commercial and industrial buildings and facilities to improve the environment, the skills of a well-trained carpenter are in demand.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

The Carpentry Program is designed to equip students to enter the trade as the equivalent to advanced apprentices. Graduates may find employment in the areas of residential, light and heavy commercial, highway and heavy bridgework, cabinetry and millwork.

Suggested Technical Studies Semester I	
CARP1507	Construction Tools Equipment and Machines..... 2
CARP1521	Construction Principles 4
CARP1540	Blueprint Reading..... 2
CARP1555	Residential Construction Lab 3
CNST1502	Building Materials and Methods 3
Suggested Technical Studies Semester II	
CARP1524	Rafters and Stairs..... 4
CARP1538	Cabinet Building and Estimating 4
CARP1545	Interior Finish..... 3
CARP1550	Exterior Finish..... 2
CNST1506	Estimating for the Construction Trades I 3
General Education	
DVRS1310	Human Relations for a Diverse Workplace 3
Estimated cost of books, supplies and materials: \$1,156	

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

CNC and Advanced Machining

CNC Machinist Diploma (39 Credits)

Program Description

The CNC Machinist program prepares learners to enter the workforce as skilled machinists. They will be capable of basic programming of CNC machining centers by hand or with CAM. They will have skills to set-up and operate mills, lathes, surface grinders, CNC turning centers, CNC milling centers and Swiss machines.

Career Opportunities

CNC Turning Machinist

CNC Milling Machinist

Required Technical Studies Semester I

MACH1517	Print Reading I.....	1
MACH1518	Machine Tool Technology I.....	3
MACH1522	Machining Math.....	1
MACH1526	Introduction to CNC Milling.....	4
MACH1527	Introduction to CNC Turning.....	4

Required Technical Studies Suggested Semester II

MACH1519	Print Reading II.....	1
MACH1523	Machine Tool Technology II.....	3
MACH1529	CNC Turning Set-up and Operation.....	4
MACH1533	CNC Milling Set-up and Operation.....	4
MACH1534	Essentials of Solidworks.....	1

Required Technical Studies Semester III

MACH1525	Geometric Dimensioning and Tolerance.....	1
MACH1532	CAM I.....	1
MACH2504	CNC Milling/Turning.....	4
MACH2505	Swiss Turning.....	3
MACH2507	Machine Tool Technology III.....	4

Estimated cost of books, supplies and materials: \$1,550

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

CNC and Advanced Machining

CNC Operations Certificate (13 Credits)

Program Description

The CNC Operation Certificate prepares learners to enter the workforce as skilled CNC operators. They will have skills to operate mills, lathes, CNC turning centers and CNC milling centers.

Career Opportunities

CNC Lathe Operator

CNC Mill Operator

Required Technical Studies Semester I

MACH1517	Print Reading I.....	1
MACH1518	Machine Tool Technology I.....	3
MACH1522	Machining Math	1
MACH1526	Introduction to CNC Milling.....	4
MACH1527	Introduction to CNC Turning	4

Estimated cost of books, supplies and materials: \$1,200

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

CNC and Advanced Machining

CNC Set -Up Certificate (26 Credits)

Program Description

The CNC Set-Up Certificate prepares learners to enter the workforce as skilled set-up/operators. They will have skills to set-up and operate mills, lathes, surface grinders, CNC turning and milling centers.

Career Opportunities

CNC Mill Set-Up Technician

CNC Lathe Set-Up Technician

Required Technical Studies Semester I

MACH1517	Print Reading I.....	1
MACH1518	Machine Tool Technology I.....	3
MACH1522	Machining Math.....	1
MACH1526	Introduction to CNC Milling.....	4
MACH1527	Introduction to CNC Turning.....	4

Required Technical Studies Semester II

MACH1519	Print Reading II.....	1
MACH1523	Machine Tool Technology II.....	3
MACH1529	CNC Turning Set-up and Operation.....	4
MACH1533	CNC Milling Set-up and Operation.....	4
MACH1534	Essentials of Solidworks.....	1

Estimated cost of books, supplies and materials: \$1,400

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Computer Programming

Computer Programming AAS Degree (60 Credits)

2025-2026 Catalog



Program Description

Technology and the Internet have become an integral part of daily life. Students will receive extensive exposure to programming methodologies, web development, database design, and mobile development. Programming students will design and write programs for cloud, mobile, and front and back-end applications. Students will develop skills critical to the field and learn to follow system documentation, unit test, and make necessary modifications to achieve desired program output. The program emphasizes development of strong communication, problem solving, and decision-making skills in a team based learning environment.

Degree Specific Program Requirements: All students in the Computer Programming major are required to purchase a computer and webcam for their coursework. They must also have access to high-speed internet. Students will need to earn a grade of "C" or better, in all technical classes, as well as an overall GPA of 2.0 or better to satisfy program requirements for the AAS degree.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

The use of technology is continually increasing in all levels of government and business. Employment potential is outstanding for competent Computer Programming graduates.

Suggested Technical Studies Semester I

CMSC1203	Structured Programming Logic	3
CMSC1206	Introduction to Information Technology Concepts ..	3
CMSC1212	Web Markup Language	3

Suggested Technical Studies Semester II

CMSC1216	Database Modeling I	3
CMSC1217	Introduction to Data Analytics	3
CMSC1236	Java Programming	4

Suggested Technical Studies Semester III

CMSC1255	Server-Side Programming	3
CMSC2201	Database Modeling II	3
CMSC2203	C# Programming I	3
CMSC2204	Mobile Device Programming/Connectivity	3

Suggested Technical Studies Semester IV

CMSC1228	Client-Side Programming	3
CMSC2205	Computer Programming Internship	3
CMSC2240	C# Programming II	3
CMSC2279	Systems Analysis and Design	3

General Education - MinnState policy requires AAS degrees to contain at least 15 MnTC credits in at least 3 different Goal Areas

MnTC Goal Area 1	Communication	
	CMST 1320 Recommended	3
MnTC Goal Area 1	Communication - Written	
	ENGL 1312 Recommended	4
MATH1360	College Algebra	3
MATH1351	Statistics	4
MnTC All	PHIL 1320 Ethics Recommended	3

Estimated cost of books, supplies and materials: \$1,750

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Culinary Arts

Culinary Arts AAS Degree (66 Credits)

2025-2026 Catalog



Program Description

The Culinary Arts AAS Degree offers students extensive hands-on cooking experience while including a broad range of liberal arts and management courses to provide students the skills needed to succeed in the complex food service world. The program embraces a wide range of cuisines and cultures which expose students to a variety of cooking techniques, recipes, and ingredients that satisfy today's consumers. As part of the program students will develop nutrition, kitchen procedures, menu planning, and recipe development in specialized courses that each focus on important aspects of culinary development. Additional courses expose students to the business aspects of culinary arts such as financial planning, human resources, customer relations, and the legal environment. Graduates will have a firm grasp of fundamental culinary and management techniques that support successful culinary operations and are demanded by consumers and industry employers.

After reviewing comparable Minnesota State college programs, this program exceeds 60 credits for one or more of the following reasons: national or international program certification, national or international standards including skill standards, standards recommended by a primary employer or multiple employers, national specialized program accreditation, state licensure requirements, and/or national practices or standards.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Students who complete the Culinary Arts program will be prepared for culinary positions including sous chef, head/executive chef, kitchen manager, dining room manager, caterer, and hospitality management. Employment opportunities can be found in hotels, restaurants, clubs, healthcare, schools, resorts, and many other food-related operations.

Suggested Technical Studies Semester I

CULN1202	Introduction to Culinary Arts	3
CULN1205	Kitchen Operations.....	3
CULN1210	Servsafe Certification	1
CULN1215	Stocks, Soups, Sauces	3
CULN1220	Introduction to Pantry Food Preparation	2
CULN1230	Vegetables, Potato, Rice and Starches.....	2
CULN1235	Introduction to Breakfast.....	2

Suggested Technical Studies Semester II

CULN1245	Basic Baking.....	3
CULN1250	Basic Cooking Principles	4
CULN1265	Basic Food Production Principles	3
CULN1270	Garde Manger.....	4
CULN1275	Social Etiquette.....	2

Suggested Technical Studies Semester III (Summer Term)

CULN1280	Foodservice Internship	2
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Suggested Technical Studies Semester IV

ACCT1215	Accounting Principles I.....	4
BUSM2275	Legal Environment of Business	3
SAMG1215	Principles of Management.....	3

Suggested Technical Studies Semester V

BUSM1290	Job Seeking/Keeping Skills.....	1
CPTR1210	Introduction to Computers.....	3
SAMG1206	Strategic Customer Service	3

General Education -MinnState policy requires AAS degrees to contain at least 15 MnTC credits in at least 3 different Goal Areas

MnTC Goal Area 1 Communications - Written

ENGL1303	Recommended.....	3
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MnTC Goal Area 1 Communications - Oral

CMST2310	Recommended.....	3
CRTK1300	Introduction to Critical Thinking.....	3
DVRS1304	Diversity and Social Justice	3
BLGY1325	Nutrition	3

Estimated cost of books, supplies and materials: \$2,420

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Culinary Arts

Culinary Arts Diploma (38 Credits)

2025-2026 Catalog



A member of Minnesota State

Program Description

The Culinary Arts Diploma offers students extensive hands-on cooking experience while including a broad range of liberal arts and management courses to provide students the skills needed to succeed in the complex food service world. The program embraces a wide range of cuisines and cultures, which expose students to a variety of cooking techniques, recipes, and ingredients that satisfy today's consumers. As part of the program, students will develop nutrition, kitchen procedures, menu planning, and recipe development in specialized courses that each focus on important aspects of culinary development.

Career Opportunities

As a graduate of the program, students will be licensed in ServSafe and may enjoy a career as a chef or cook in hotels, restaurants, resorts, catering, healthcare centers, and more!

Suggested Technical Studies Semester I

BUSM1290	Job Seeking/Keeping Skills.....	1
CULN1202	Introduction to Culinary Arts	3
CULN1205	Kitchen Operations.....	3
CULN1210	Servsafe Certification	1
CULN1215	Stocks, Soups, Sauces	3
CULN1220	Introduction to Pantry Food Preparation	2
CULN1230	Vegetables, Potato, Rice and Starches.....	2
CULN1235	Introduction to Breakfast.....	2

Suggested Technical Studies Semester II

CULN1245	Basic Baking.....	3
CULN1250	Basic Cooking Principles	4
CULN1265	Basic Food Production Principles	3
CULN1270	Garde Manger.....	4
CULN1275	Social Etiquette.....	2

Suggested Technical Studies Semester III (Summer Term)

CULN1280	Foodservice Internship	2
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General Education

DVRS1310	Human Relations for a Diverse Workplace	3
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Estimated cost of books, supplies and materials: \$780

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Dental Assistant

Dental Assistant AAS Degree (60 Credits)

2025-2026 Catalog



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Program Description

The Dental Assistant Program is designed to provide an opportunity for students to acquire background knowledge and develop specialized skills for gaining employment in the dental profession. Specific training is provided in preparing the student for a variety of duties performed by the dental assistant including chairside assisting, infection control procedures, preparing instruments and materials, laboratory procedures, administrative duties and expanded functions such as mechanical polishing and application of sealants.

Degree Specific Requirements: A background check, including fingerprinting, will be completed as a requirement of this program. At the time of the background check submission, students must provide documentation as required by the MN Department of Human Services. If you have been arrested, charged or convicted of any criminal offense, you should investigate the impact that the arrest, charge or conviction may have on your chances of employment in the field you intend to study, or on your ability to obtain federal, state, and other higher education financial aid. Students who have earned a grade of "C" or better, in all required classes, as well as an overall GPA of 2.0 or better will have satisfied the program requirements for the AAS degree.

Program Accreditation Information: The Dental Assistant Program is accredited by the Commission on Dental Accreditation. The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at (800) 232-6108 or at 401 North Michigan Ave Suite 3300, Chicago, IL 60611 <https://coda.ada.org/>. Graduates will be eligible to write the Dental Assisting National Board Certification examination and the Minnesota Licensure examination.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Dental Assistants' schedules are often flexible and include full-time and part-time opportunities in a variety of settings including general dental practices, public health clinics, insurance companies, dental education facilities and specialty practices such as orthodontics and oral surgery.

Technical Studies Pre-requisites: Acceptance Requirements (2.5 Cumulative GPA required and no less than 2.0 GPA per each class below)

MnTC Goal Area 1 Communication - Oral (CMST)..... 3

MnTC Goal Area 1 Communications - Written (ENGL)..... 3

MnTC Goal Area 3 Biology (BLGY) with a Lab..... 4

Prior to entering the Dental Assistant program, students must complete the Accuplacer test with scores above the cutoff point in reading comprehension or successful completion of equivalent general education course work.

In addition, the following must be completed: A medical examination, vaccinations against Hepatitis B or a signed release form, Mantoux test, and background check. Current CPR, AHA Healthcare Provider certification is also required.

Suggested Technical Studies Semester I

DENT1400 Dental Sciences..... 3

DENT1405 Introduction to Dental Assisting..... 2

DENT1413 Preclinical Dental Assisting..... 2

DENT1415 Infection Control in the Dental Environment..... 2

Suggested Technical Studies Semester II

DENT1425 Chairside Assisting I..... 3

DENT1435 Dental Materials..... 3

DENT1441 Dental Radiology I..... 3

DENT1445 Expanded Functions I..... 3

Suggested Technical Studies Semester III

DENT2406 Dental Health..... 1

DENT2424 Chairside Assisting II..... 4

DENT2447 Dental Radiology II..... 3

DENT2454 Expanded Functions II..... 4

Suggested Technical Studies Semester IV

DENT2413 Dental Practice Management..... 2

DENT2461 Internship..... 7

DENT2486 Internship Seminar..... 1

DENT2488 Dental Ethics and Jurisprudence..... 1

General Education

MnTC Goal Area 5 Psychology (PSYC)..... 3

MnTC All Any MnTC course in Goal 2, 6, 7, 8, 9, or 10..... 3

Estimated cost of books, supplies and materials: \$2,644

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Dental Assistant

Dental Assistant Diploma (53 Credits)

2025-2026 Catalog



A member of Minnesota State

Program Description

The Dental Assistant diploma is designed to provide an opportunity for students to acquire background knowledge and develop specialized skills for gaining employment in the dental profession. Specific training is provided in preparing the student for a variety of duties performed by the dental assistant including chairside assisting, infection control procedures, preparing instruments and materials, laboratory procedures, administrative duties and expanded functions such as mechanical polishing and application of sealants.

Degree Specific Requirements: A background check, including fingerprinting, will be completed as a requirement of this program. At the time of the background check submission, students must provide documentation as required by the MN Department of Human Services. If you have been arrested, charged or convicted of any criminal offense, you should investigate the impact that the arrest, charge or conviction may have on your chances of employment in the field you intend to study, or on your ability to obtain federal, state, and other higher education financial aid. Students who have earned a grade of "C" or better, in all required classes, as well as an overall GPA of 2.0 or better will have satisfied the program requirements the diploma.

Accreditation Information: The Dental Assistant Program is accredited by the Commission on Dental Accreditation. The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at (800) 232-6108 or at 401 North Michigan Ave Suite 3300, Chicago, IL 60611 <https://coda.ada.org/>. Graduates will be eligible to write the Dental Assisting National Board Certification examination and the Minnesota Licensure examination.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Dental Assistants' schedules are often flexible and include full-time and part-time opportunities in a variety of settings including general dental practices, public health clinics, insurance companies, dental education facilities and specialty practices such as orthodontics and oral surgery.

Current CPR, AHA Healthcare Provider required

Prior to entering the Dental Assistant program, students must complete the Accuplacer test with scores above the cutoff point in reading comprehension or successful completion of equivalent general education course work.

In addition the following must be completed: A medical examination, vaccinations against Hepatitis B or a signed release form, Mantoux test, mandatory attendance at an informational meeting, and background check. Students must be at least 18 years old when beginning the technical (DENT) courses.

Technical Studies Pre-requisites:

ENGL1308	Stretch Analytical Writing I	3
DVRS1310	Human Relations for a Diverse Workplace	3

Suggested Technical Studies Semester I

DENT1400	Dental Sciences	3
DENT1405	Introduction to Dental Assisting	2
DENT1413	Preclinical Dental Assisting	2
DENT1415	Infection Control in the Dental Environment	2

Suggested Technical Studies Semester II

DENT1425	Chairside Assisting I	3
DENT1435	Dental Materials	3
DENT1441	Dental Radiology I	3
DENT1445	Expanded Functions I	3

Suggested Technical Studies Semester III

DENT2406	Dental Health	1
DENT2424	Chairside Assisting II	4
DENT2447	Dental Radiology II	3
DENT2454	Expanded Functions II	4

Suggested Technical Studies Semester IV

DENT2413	Dental Practice Management	2
DENT2461	Internship	7
DENT2486	Internship Seminar	1
DENT2488	Dental Ethics and Jurisprudence	1

General Education

MnTC Goal Area 5	Psychology (PSYC)	3
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Estimated cost of books, supplies and materials: \$2,644

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Dental Hygiene

Dental Hygiene AAS Degree (81 Credits)

2025-2026 Catalog



A member of Minnesota State

Program Description

The Dental Hygiene Program provides the students with academic and clinical opportunities to acquire the knowledge, skills and attitude necessary to become a dental hygiene professional. A dental hygienist is a member of the dental team who provides direct care to patients under the supervision of a licensed dentist. Patient assessments, taking radiographs, teeth cleaning and polishing, applying preventive agents, nonsurgical periodontal therapies (scaling & root planning), and administering local anesthesia and nitrous oxide. Upon graduation, students must successfully complete the National Board Dental Hygiene Exam, a Clinical Board Exam and then obtain a license in the state they wish to practice. After reviewing comparable Minnesota State college programs, this program exceeds 60 credits for one or more of the following reasons: national or international program certification, national or international standards including skill standards, standards recommended by a primary employer or multiple employers, national specialized program accreditation, state licensure requirements, and/or national practices or standards.

Degree Specific Program Requirements: A background check, including fingerprinting, will be completed as a requirement of this program. At the time of the background check submission, students must provide documentation as required by the MN Department of Human Services. If you have been arrested, charged or convicted of any criminal offense, you should investigate the impact that the arrest, charge or conviction may have on your chances of employment in the field you intend to study, or on your ability to obtain federal, state, and other higher education financial aid. Students who have earned a grade of "C" or better, in all required classes, as well as an overall GPA of 2.0 or better will have satisfied the program requirements for the AAS degree.

Accreditation Information: The Dental Hygiene program is accredited by the Commission on Dental Accreditation. The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at [\(800\) 232-6108](tel:8002326108) or at 401 North Michigan Ave Suite 3300, Chicago, IL 60611 <https://coda.ada.org/>.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Licensed dental hygienists can work in many different settings: clinical dental offices, nursing homes, public health agencies, dental and pharmaceutical companies, teaching in dental hygiene education programs and doing dental research.

Technical Studies Prerequisites: Acceptance Requirements (3.5 cumulative GPA required)

BLGY2310	Human Anatomy/Physiology I (w/lab).....	3
BLGY2320	Human Anatomy/Physiology II (w/lab).....	3
BLGY2330	Microbiology (w/lab).....	3
MnTC Goal Area 3	Introduction to General Chemistry (w/lab) CHEM 1345 or 1350.....	3
MnTC Goal Area 1	Communications Oral (CMST).....	3
MnTC Goal Area 1	Communications Written (ENGL).....	3
MnTC Goal Area 5	Psychology (PSYC).....	3
MnTC Goal Area 5	Sociology (SOCI).....	3
PHIL1320	Ethics.....	3
Applicant may be invited to take the Admission Test for Dental Hygiene (ATDH) after the application period closes.		
You must be at least 18 years old to begin the the first semester of Technical (DEHY) classes.		

Suggested Technical Studies Semester I

DEHY1400	Dental Hygiene Seminar I.....	2
DEHY1414	Nutrition and Dental Hygiene.....	2
DEHY1418	Introduction to Radiology.....	2
DEHY1424	Head, Neck and Dental Anatomy.....	3
DEHY1428	General & Oral Pathology.....	3
DEHY1481	Pre-Clinical Dental Hygiene I.....	4

Suggested Technical Studies Semester II

DEHY1402	Dental Hygiene Seminar II.....	2
DEHY1410	Introduction to Dental Materials and Methods.....	2
DEHY1422	Dental Pharmacology.....	2
DEHY1448	Dental Hygiene Radiology II.....	2
DEHY1460	Periodontics I.....	2
DEHY1485	Clinical Dental Hygiene II.....	4

Suggested Technical Studies Semester III

DEHY1404	Clinical Seminar III.....	2
DEHY1421	Dental Hygiene Materials and Methods.....	1
DEHY1440	Community Dental Health I.....	2
DEHY1468	Pain Management.....	2
DEHY1486	Clinical Dental Hygiene III.....	6

Suggested Technical Studies Semester IV

DEHY1406	Clinical Seminar IV.....	2
DEHY1445	Community Dental Health II.....	1
DEHY1464	Periodontics II.....	1
DEHY1488	Clinical Dental Hygiene IV.....	6
DEHY1490	Dental Hygiene Licensure and Jurisprudence.....	1

Estimated cost of books, supplies and materials: \$8,044

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Education

Early Childhood Education AAS Degree (60 Credits)

2025-2026 Catalog



A member of Minnesota State

Program Description

Students will enjoy learning to care for and educate children, youth and families is important to students in the Early Childhood Education program (formerly known as Child, Adult Care and Education/Paraprofessional Educator). Students will enjoy an interactive, hands-on experience and gain valuable information, insight and networking opportunities related to early childhood education. Students receiving this degree typically work as paraprofessionals in schools or as teachers/assistant teachers in child care centers or Head Start locations. The Early Childhood Education AAS degree covers child development, behavior management, learning environments, planning curriculums, and implementing strategies for learning. In addition, site visits, service learning, and two internships help students gain real-world experience in multiple areas of education.

Degree Specific Program Requirements: Before being placed in an internship, students will be required to complete and submit a MN Department of Human Service (DHS) Background Study form. If you have been arrested, charged or convicted of any criminal offense, you should investigate the impact that the arrest, charge or conviction may have on your chances of employment in the field you intend to study, or on your ability to obtain federal, state, and other higher education financial aid. Students who have earned a grade of C or better, in all technical classes, as well as an overall GPA of 2.0 or better will have satisfied the program requirements for the AAS degree.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Graduates enjoy a consistently high placement rate in their new careers. Career opportunities for Early Childhood Education graduates may be found in early childhood centers, school settings, licensed family childcare, and facilities for children with disabilities, as well as those who are interested in starting their own business as childcare providers.

Note

***Note: First Aid & CPR for Child Care or equivalent required: Current CPR, Sudden Unexplained Infant Death and Shaken Baby Certification must be maintained throughout the program. This is a pre-requisite to ECED 1250: Early Childhood Internship Suggested Technical Studies Semester I**

ECED1230	Professional Relations in Early Childhood Careers .	3
ECED1235	Guidance: Managing the Physical and Social Env...	3
ECED1240	Planning & Implementing Curriculum.....	3
EDUC1200	Introduction to Education.....	3
EDUC1225	Education Internship I	3

Suggested Technical Studies Semester II

ECED1245	Safety, Health and Nutrition.....	3
ECED1250	Early Childhood Education Internship II	3
EDUC1210	Multicultural Education.....	3
EDUC1220	Child Growth and Development.....	3
SPED1205	Introduction to Special Education	3

Suggested Technical Studies Semester III

ECED2205	Family & Community Relations	3
ECED2210	Literature & Language Development Experiences ..	3
ECED2220	Caring for Children with Special Health Needs.....	2
EDUC1215	Technology Strategies for Educators.....	2

Suggested Technical Studies Semester IV

ECED2230	Teaching Young Children / Challenging Behaviors .	3
ECED2240	Autism Spectrum Disorder (ASD)	1

General Education

ENGL1312	Analytical Writing (or ENGL 1308 +1309)	4
MnTC Goal Area 1 Communication - Oral		
CMST2300 Recommended		3
MnTC Goal Area 3 Natural Sciences.....		3
OR MnTC Goal Area 4 Math/Logic		3
MnTC Goal Area 5 Historical/Social and Behavior Science		3
MnTC Goal Area 7 Human Diversity		3

Estimated cost of books, supplies and materials: \$1,630

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Education

Early Childhood Education Diploma (34 Credits)

Program Description

Learning to care for and educate children, youth and families is important to students in the Early Childhood Education program (formerly known as Child, Adult Care and Education/Paraprofessional Educator). In a non-lecture-based format, students enjoy an interactive, hands-on experience and gain valuable information, insight and networking opportunities related to early childhood education.

The Early Childhood Education diploma degree covers child development, behavior management, learning environments, planning curriculums and implementing strategies for learning. In addition, site visits, service learning and an internship help student's gain real-world experience in multiple areas of education.

Students who have earned a grade of "C" or better, in all technical classes, as well as an overall GPA of 2.0 or better will have satisfied the requirements for the degree.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Note: First Aid & CPR for Child Care or equivalent required: Current CPR, Sudden Unexpected Infant Death and Shaken Baby certification must be maintained throughout the program.

This is a pre-requisite to ECED 1250: Early Childhood Internship

Suggested Technical Studies Semester I

ECED1230	Professional Relations in Early Childhood Careers .	3
ECED1235	Guidance: Managing the Physical and Social Env...	3
ECED1240	Planning & Implementing Curriculum.....	3
ECED2210	Literature & Language Development Experiences ..	3
EDUC1225	Education Internship I	3

Suggested Technical Studies Semester II

ECED1245	Safety, Health and Nutrition	3
ECED1250	Early Childhood Education Internship II	3
ECED2240	Autism Spectrum Disorder (ASD)	1
ECED2205	Family & Community Relations	3
EDUC1220	Child Growth and Development.....	3

General Education

ENGL1308	Stretch Analytical Writing I.....	3
DVRS1304	Diversity and Social Justice	3

Estimated cost of books, supplies and materials: \$905

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Education

Early Childhood Education Certificate (18 Credits)

Program Description

Learning to care for and educate children, youth and families is important to students in the Early Childhood Education certificate program. In an online format in the summer semester and a hybrid format during the fall/spring semesters, students will gain valuable information, insight and networking opportunities related to early childhood education.

The Early Childhood Education certificate covers child development, behavior management, licensing requirements, professional behavior, working with diverse students and families, and also prepares students to provide developmentally appropriate activities in an early childhood setting.

Students who have earned a grade of "C" or better, in all technical classes, as well as an overall GPA of 2.0 or better will have satisfied the program requirements for the certificate degree.

Suggested Technical Studies Semester I		
EDUC 1220	Child Growth and Development.....	3
ECED 1240	Planning and Implementing Curriculum	3
ECED 2205	Family and Community Relations.....	3
Suggested Technical Studies Semester II		
ECED 1230	Professional Relations in Early Childhood Careers .	3
ECED 1235	Managing the Physical & Social Environment	3
ECED 1245	Safety, Health & Nutrition	3

Estimated cost of books, supplies and materials: \$500

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Education

Elementary Education Foundations Transfer Pathway AS Degree (60 Credits)

2025-2026 Catalog



Program Description

In carefully designed education core courses, students will learn about the role of a teacher in the K-6 educational system, how students learn, strategies for facilitating learning, and creating culturally relevant classrooms. Students will have classroom field experience and learn the foundations of teaching and learning.

Students completing this AS degree at SCTCC will have seamless transfer to any of the seven universities* in the Minnesota State system that have an elementary education degree and will have only 60 credits at the university level. This degree contains purposefully-chosen general education courses to prepare for methods courses, and will meet all goal areas/complete MnTC. In addition, this degree was developed in collaboration with current licensed teachers and university partners in the system.

* The Minnesota State universities are Bemidji State University; Metropolitan State University; Minnesota State University, Mankato; Minnesota State University Moorhead; St. Cloud State University; Southwest Minnesota State University; and Winona State University.

Degree Specific Program Requirements: Before being placed in an internship, students will be required to complete and submit a MN Department of Human Service (DHS) Background Study form. If you have been arrested, charged or convicted of any criminal offense, you should investigate the impact that the arrest, charge or conviction may have on your chances of employment in the field you intend to study, or on your ability to obtain federal, state, and other higher education financial aid. Students who have earned a grade of "C" or better, in all technical classes and MATH courses, as well as an overall GPA of 2.0 or better will have satisfied the program requirements.

Suggested Technical Studies Semester I

EDUC1200	Introduction to Education.....	3
EDUC1215	Technology Strategies for Educators.....	2
EDUC1225	Education Internship I.....	3

Suggested Technical Studies Semester II

EDUC1210	Multicultural Education.....	3
EDUC1220	Child Growth and Development.....	3

General Education

ART1300	Art Appreciation.....	3
OR ART1310	Foundation of 2D Design and Materials.....	4
OR ART1321	Foundation of Drawing I.....	4
BLGY1351	General Biology I.....	4
CMST2300	Introduction to Public Speaking.....	3
CRTK1300	Introduction to Critical Thinking.....	3
DVRS1304	Diversity and Social Justice.....	3
ENGL1312	Analytical Writing.....	4
ENGL1340	Introduction to Multicultural Literature.....	3
OR ENGL1345	Gender in Literature.....	3
MATH1341	Elements of Math I.....	4
MATH1345	Elements of Math II.....	4
PHYS1305	Conceptual Physics.....	4
POLS1304	Introduction to American Politics.....	3
OR HIST1310	American History Until 1877.....	3
MUSC1320	Music in World Culture.....	3
SOCI1310	Introduction to Sociology.....	3

See faculty advisor for recommended sequencing of General Education courses.

Elective

Elective (Any college level course)..... 2

EDUC courses contain specific standards required by the Professional Educators Licensing and Standards Board (PELSB). Students must meet all PELSB standards in EDUC courses to earn credit for the class.

Estimated cost of books, supplies and materials: \$1,630

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Education

Special Education Transfer Pathway AS Degree (60 Credits)

2025-2026 Catalog



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Program Description

In carefully designed education core courses, students will learn about the role of a special education teacher in the educational system, how students learn, strategies for facilitating learning and creating culturally relevant classrooms. Students will have classroom field experience and learn the foundations of teaching and learning. Students completing this AS degree at SCTCC will have seamless transfer to any of the seven universities* in the Minnesota State system that have a special education degree, and will have only 60 credits at the university level. This degree contains purposefully-chosen general education courses and special education courses to prepare for methods courses, and will meet all goal areas/complete MnTC. In addition, this degree was developed in collaboration with current licensed teachers and university partners in the system to ensure that courses meet PELSB licensure requirements.

* The Minnesota State universities are Bemidji State University; Metropolitan State University; Minnesota State University, Mankato; Minnesota State University Moorhead; St. Cloud State University; Southwest Minnesota State University; and Winona State University.

Degree Specific Program Requirements: Before being placed in an internship, students will be required to complete and submit a MN Department of Human Service (DHS) Background Study form. If you have been arrested, charged or convicted of any criminal offense, you should investigate the impact that the arrest, charge or conviction may have on your chances of employment in the field you intend to study, or on your ability to obtain federal, state, and other higher education financial aid. Students who have earned a grade of "C" or better, in all technical classes and MATH courses, as well as an overall GPA of 2.0 or better will have satisfied the program requirements.

Suggested Technical Studies Semester I

EDUC1200	Introduction to Education.....	3
EDUC1215	Technology Strategies for Educators.....	2
EDUC1225	Education Internship I.....	3

Suggested Technical Studies Semester II

EDUC1210	Multicultural Education.....	3
EDUC1220	Child Growth and Development.....	3
SPED1205	Introduction to Special Education.....	3

Suggested Technical Studies Semester III

EDUC2200	Educational Psychology.....	3
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General Education

CMST2300	Introduction to Public Speaking.....	3
ENGL1312	Analytical Writing.....	4
CRTK1300	Introduction to Critical Thinking.....	3
BLGY1351	General Biology I.....	4
PHYS1305	Conceptual Physics.....	4
MATH1341	Elements of Math I.....	4
PSYC1300	Introduction to Psychology.....	3
	OR PSYC1304 Lifespan Developmental Psychology.....	3
	OR PSYC1350 Positive Psychology.....	3
	OR PSYC2310 Psychopathology: The Science of Mental Health3	
HIST1310	American History Until 1877.....	3
	OR POLS1304 Introduction to American Politics.....	3
MUSC1320	Music in World Culture.....	3

ART 1300	Art Appreciation.....	3
	OR ART 1310 Foundation of 2D Design and Materials.....	4
	OR ART 1321 Foundation Drawing I.....	4
	OR ENGL1340 Introduction to Multicultural Literature.....	3
	OR ENGL1345 Gender in Literature.....	3
DVRS1304	Diversity and Social Justice.....	3

See faculty advisor for recommended sequencing of General Education courses

EDUC courses contain specific standards required by the Professional Educators Licensing and Standards Board (PELSB). Students must meet all PELSB standards in EDUC courses to earn credit for the class.

Estimated cost of books, supplies and materials: \$1,630

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Electrical Construction Technology

Electrical Construction Technology AAS Degree (81 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

The Electrical Construction Technology Program prepares students for a career as an electrician. The program begins with basic principles and progresses to more technical information. The early part of the program includes D.C. theory, related math, National Electrical Code, shop skills and safety. Students will learn to apply knowledge to actual projects in the shop or mock-ups. Students will receive training in A.C. and D.C. motor and generator theory, transformers, lighting, three phase systems, motor control, solid state, variable frequency drives (VFD) and programmable logic controls (PLC).

After reviewing comparable Minnesota State college programs, this program exceeds 60 credits for one or more of the following reasons: national or international program certification, national or international standards including skill standards, standards recommended by a primary employer or multiple employers, national specialized program accreditation, state licensure requirements, and/or national practices or standards.

Accreditation Information: The Electrical Construction Technology Program is approved by MN Department of Labor and Industry, 443 Lafayette Road N., St. Paul, MN 55155, (651) 284-5005, www.dli.mn.gov. Credit is given toward the state electrical license upon completion of this two year course.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

After completing an apprenticeship, the graduate may be eligible to take the state examination for a journey person's license. A master electrician's license can be obtained after an electrician has worked for a number of years and gained further knowledge and skills. The Minnesota State Board of Electricity recognizes this program for credit towards the license.

The properly trained electrician will be called upon to wire buildings ranging from private homes to industrial plants. An electrician may perform maintenance work in industrial plants, office buildings, hospitals, or public buildings. Some electricians may specialize in particular fields such as motor rewinding, machine tool manufacture, appliance repair, or industrial controls.

Suggested Technical Studies Semester I

ELEC1502	Wiring and Materials I.....	5
ELEC1510	National Electrical Code I.....	2
ELEC1518	Applied Electrical Principles & Formulas.....	5
ELEC1523	Drafting Blueprint Reading and Specification	4

Suggested Technical Studies Semester II

ELEC1506	Wiring and Materials II	5
ELEC1515	National Electrical Code II.....	3
ELEC1526	Applied Electrical Principles & AC Fundamentals..	5
ELEC1530	Electric Heat	2
ELEC1534	Safety, Certifications and Skills	3

Suggested Technical Studies Semester III

ELEC1538	Industry Skills Development.....	1
ELEC2502	Residential Wiring I.....	2
ELEC2510	National Electrical Code III	2
ELEC2519	Commercial Wiring	3
ELEC2520	Commercial Lighting	2
ELEC2522	AC Motor Control I.....	3
ELEC2538	Transformers, Three Phase Systems, and Formulas..	3

Suggested Technical Studies Semester IV

ELEC2506	Residential Wiring II	2
ELEC2514	National Electrical Code IV	2
ELEC2526	AC Motor Control II.....	4
ELEC2532	Solid State & PLC Controls	3
ELEC2534	Industrial Systems	3
ELEC2540	Low Voltage Systems	1
EMSC1420	AHA Heartsaver CPR and First Aid.....	1

General Education

MnTC Goal Area 1 Communications Oral	3
MnTC Goal Area 1 Communications Written	3
MnTC Goal Area 6 Humanities	3
MnTC Goal Area 4 Mathematics and Logic	3
MnTC General Education Elective (any Goal Area)	3

Estimated cost of books, supplies and materials: \$2,535

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Electrical Construction Technology

Electrical Construction Technology Diploma (72 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

The Electrical Construction Technology Program prepares students for a career as an electrician. The program begins with basic principles and progresses to more technical information. The early part of the program includes D.C. theory, related math, National Electrical Code, shop skills and safety. Students will learn to apply knowledge to actual projects in the shop or mock-ups. Students will receive training in A.C. and D.C. motor and generator theory, transformers, lighting, three phase systems, motor control, solid state, variable frequency drives (VFD) and programmable logic controls (PLC).

Accreditation Information: The Electrical Construction Technology Program is approved by MN Department of Labor and Industry, 443 Lafayette Road N., St. Paul, MN 55155, [\(651\) 284-5005](tel:6512845005), www.dli.mn.gov. Credit is given toward the state electrical license upon completion of this two year course.

The general studies courses are technically focused and not designed for transfer.

Career Opportunities

After completing an apprenticeship, the graduate may be eligible to take the state examination for a journey person's license. A master electrician's license can be obtained after an electrician has worked for a number of years and gained further knowledge and skills. The Minnesota State Board of Electricity recognizes this program for credit towards the license.

The properly trained electrician will be called upon to wire buildings ranging from private homes to industrial plants. An electrician may perform maintenance work in industrial plants, office buildings, hospitals, or public buildings. Some electricians may specialize in particular fields such as motor rewinding, machine tool manufacture, appliance repair, or industrial controls.

Suggested Technical Studies Semester I

ELEC1502	Wiring and Materials I.....	5
ELEC1510	National Electrical Code I.....	2
ELEC1518	Applied Electrical Principles & Formulas.....	5
ELEC1523	Drafting Blueprint Reading and Specification	4

Suggested Technical Studies Semester II

ELEC1506	Wiring and Materials II	5
ELEC1515	National Electrical Code II.....	3
ELEC1526	Applied Electrical Principles & AC Fundamentals..	5
ELEC1530	Electric Heat	2
ELEC1534	Safety, Certifications and Skills	3

Suggested Technical Studies Semester III

ELEC1538	Industry Skills Development.....	1
ELEC2502	Residential Wiring I.....	2
ELEC2510	National Electrical Code III	2
ELEC2519	Commercial Wiring	3
ELEC2520	Commercial Lighting	2
ELEC2522	AC Motor Control I.....	3
ELEC2538	Transformers, Three Phase Systems, and Formulas.	3

Suggested Technical Studies Semester IV

ELEC2506	Residential Wiring II	2
ELEC2514	National Electrical Code IV	2
ELEC2526	AC Motor Control II.....	4
ELEC2532	Solid State & PLC Controls	3
ELEC2534	Industrial Systems	3
ELEC2540	Low Voltage Systems	1
EMSC1420	AHA Heartsaver CPR and First Aid.....	1

General Studies

General Studies	6
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Estimated cost of books, supplies and materials: \$2,315

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Emergency Medical Tech (Credit)

Emergency Medical Technician Certificate (9 Credits)

Program Description

This certificate program instructs students to meet and exceed standard knowledge needed to be a valid Emergency Medical Technician. The curriculum includes skills necessary for a student to provide entry level emergency medical care, life support, and ambulance service.

Career Opportunities

- Emergency Medical Technicians
- Firefighters
- Ambulance Drivers and Attendants
- Emergency Management Directors
- First-Line Supervisors of Firefighting and Prevention Workers
- Public Safety Telecommunicators
- Medical and Health Services Managers
- Nursing Assistants
- Lifeguards, Ski Patrol, and more!

Emergency Medical Technician Certificate

EMSC1450	EMT-1.....	6
EMSC1455	EMT-2.....	3

Estimated cost of books, supplies and materials: \$377

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Environmental Science

Environmental Science AS Degree (60 Credits)

2025-2026 Catalog



A member of Minnesota State

Program Description

Environmental Science is an interdisciplinary academic field of study that deals with the interactions of physical, chemical, and biological processes in the ecosystems. SCTCC offers an AS Degree in Environmental Science which provides an excellent foundation and the skills to prepare students for a four-year degree. The program provides an understanding of natural resource and the human impact on ecological processes. The Environmental Science Degree (AS) is transferable to the Environmental Studies program via an articulation agreement with SCSU and BSU.

Environmental Science-Required Courses

BLGY1351	General Biology 1	4
CHEM1350	General Chemistry I	4
CRTK1300	Introduction to Critical Thinking.....	3
DVRS1304	Diversity in Social Justice	3
ENVR1305	Environmental Science	4
ENVR1310	Environmental Issues	3
ENVR1315	Natural Resource Conservation.....	3
ENVR2305	Field Methods in Environmental Science	3
ENVR2350	Environmental Chemistry.....	4
ENVR2370	Internship in Environmental Science	2
GEOG2305	Intro to Geographic Information System (GIS)	3
MATH1360	College Algebra	3
	OR MATH1351 Statistics.....	4
PHIL1320	Ethics	3
RNEW1300	Introduction to Renewable Energy.....	3
WETT1506	Introduction to Water/Wastewater Technology	3
MnTC Goal Area 1	Communication - Oral	3
MnTC Goal Area 1	Communication - Written	3
MnTC Goal Area 5	Social Sciences	
	SOCI2305 Recommended.....	3
MnTC Goal Area 8	Global Perspective	3

Completion of the Environmental Science AS degree does NOT fulfill requirements for the AA or MnTC.

Estimated cost of books, supplies and materials: \$2,300

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Farm Management

Advanced Farm Business Management Certificate (30 Credits)

Program Description

The Farm Business Management Program is concerned with the economic principles and agricultural practices used in making decisions about alternative ways of using land, labor, capital and management ability to make a profit in farming. Information about farm business relationships, legal aspects of estate planning, partnerships, trusts, and business transfers from older to younger farmers is available when needed.

Students learn a system of a farm business record keeping necessary for computerized farm business analysis. This is the core of the instructional program. Instructional activities include the annual series of class meetings and individual conferences with farmers and others concerned with a farm operated by a family unit. Instruction is based on the economic, social, and cultural goals of the family and business unit.

30 Credits required for Advanced Farm Business Management Certificate

FBMA2930	Fund of Financial Mgmt as it Relates to Risk Mgmt	3
FBMA2931	Applied Financial Mgmt as it Relates to Risk Mgmt	3
FBMA2932	Fund of Financial Mgmt/Strategic Plan Emphasis...	3
FBMA2933	Applied Financial Mgmt/Strategic Plan Emphasis ..	3
FBMA2934	Fund of Financial Mgmt/Business Plan Emphasis...	3
FBMA2935	Financial Mgmt/Business Plan Emphasis	3
FBMA2936	Directed Study - Decision Making.....	2
FBMA2937	Directed Study - Communications	2
FBMA2938	Directed Study - Modern Agricultural Tech.....	2
FBMA2939	Directed Study - Enterprise Alternatives.....	2
FBMA2940	Directed Study - Farm Bus. Family Transition	2
FBMA2941	Directed Study - Personnel Management.....	2

Estimated cost of books, supplies and materials: \$0

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Farm Management

Agriculture Commodities Marketing Certificate (30 Credits)

Program Description

The Commodities Marketing for Farm Business Management Certificate will provide the education necessary to develop the understanding, knowledge, and skills to market farm commodities. Specific skills include learning the individual marketing options available for producers to market their commodities. Students will also learn how to calculate an accurate cost of production for use in an individualized marketing plan.

30 Credits required for Commodities Farm Business Management Certificate

FBMT1170	Introduction to Farm Commodities Marketing	3
FBMT1173	Introduction to Farm Commodities Marketing	2
FBMT1180	Applying Commodity Marketing Fundamentals.....	3
FBMT1183	Applying Commodity Marketing Fundamentals.....	2
FBMT1190	Evaluating Farm Commodity Marketing Tools.....	3
FBMT1193	Evaluating Farm Commodity Marketing Tools.....	2
FBMT1223	Using System Analysis in Total Farm Planning	2
FBMT2170	Monitoring Farm Commodity Marketing Plans.....	3
FBMT2173	Monitoring Farm Commodity Marketing Plans.....	2
FBMT2180	Strategies in Farm Commodity Marketing.....	3
FBMT2183	Strategies in Farm Commodity Marketing.....	2
FBMT2205	Special Topics: General Farm Management.....	2
FBMT2212	Special Topics: Marketing.....	1

Estimated cost of books, supplies and materials: \$0

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Farm Management

Applications Of Farm Business Management Certificate
(30 Credits)

Program Description

The Farm certificate program is designed to provide instruction that will expand on the foundation for financial management which was learned in the Essentials of Farm Business Management certificate. Students in this program will use accounting skills to record and evaluate data related to the profitability and longevity of their business. Education is primarily delivered in an individualized setting at the student's business, or the students preferred location. Students will use data management, planning strategies, and a business analysis to successfully manage their farm business.

30 Credits required for Applications in Farm Business Management

FBMT2141	Interpreting and Evaluation of Financial Data	4
FBMT2142	Interpreting Trends in Business Planning.....	4
FBMT2151	Strategies in Farm System Data Management	4
FBMT2152	Integrating System Information for Financial Planning	4
FBMT2161	Examination of the Context of Farm System Mgmt	4
FBMT2162	Refining Farm System Management	4
FBMT2204	Special Topics: General Farm Management.....	1
FBMT2210	Special Topics: Marketing	1
FBMT2211	Special Topics: Marketing	1
FBMT2222	Special Topics: Crops	1
FBMT2233	Special Topics: Livestock.....	1
FBMT2234	Special Topics: Livestock.....	1

Estimated cost of books, supplies and materials: \$0

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Farm Management

Current Issues In Farm Business Management Certificate

(30 Credits)

Program Description

The Current Issues Certificate Program is designed to further develop student skills in farm business management as they relate to the many variables affecting the operation. It provides an opportunity for students to investigate and apply tools that may be effective in improving risk management plans, strategic plans, and business plans in their farming operations. Emphasis is placed on the research of business management alternatives to meet their business and personal needs.

Current Issues in Farm Business Certificate		
FBMA2210	Current Issues in Farm Business Management	5
FBMA2211	Current Issues in Farm Business Management	5
FBMA2212	Current Issues in Farm Business Management	5
FBMA2213	Current Issues in Farm Business Management	5
FBMA2214	Current Issues in Farm Business Management	5
FBMA2220	Current Issues in Farm Business Management	5
FBMA2221	Current Issues in Farm Business Management	5
FBMA2222	Current Issues in Farm Business Management	5
FBMA2223	Current Issues in Farm Business Management	5
FBMA2224	Current Issues in Farm Business Management	5
All courses are 1 - 5 Variable Credits		

Estimated cost of books, supplies and materials: \$0

Farm Management

Essentials Of Farm Business Management Certificate (30 Credits)

Program Description

The Farm Certificate program is designed to provide instruction that will help to build a foundation for successful financial management of the farm business. Students in this program will use basic accounting practices and goal setting to provide bench marking information and a direction for the business. Education is primarily delivered in an individualized setting at the student's business, or the students preferred location. Students use business records to provide information for completing a business analysis and initiate a financial trend analysis for sound decision-making.

30 Credits required for Essentials of Farm Management Certificate

FBMT1112	Foundations for Farm Business Management	4
FBMT1121	Preparation for Farm Business Analysis	4
FBMT1122	Implementing the System Management Plan.....	4
FBMT1131	Managing and Modifying Farm System Data	4
FBMT1132	Interpreting and Using Farm System Data	4
FBMT1211	Introduction to Farm Business Management.....	4
FBMT2200	Special Topics: General Farm Management.....	1
FBMT2220	Special Topics: Crops	1
FBMT2221	Special Topics: Crops	1
FBMT2230	Special Topics: Livestock.....	1
FBMT2231	Special Topics: Livestock.....	1
FBMT2232	Special Topics: Livestock.....	1

Estimated cost of books, supplies and materials: \$0

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Finance

Finance AAS Degree (60 Credits)

2025-2026 Catalog

Program Description

The Finance program will prepare students for career opportunities in the Finance industry. Preparing students for a diverse employment market, courses cover a variety of business-related areas including. including investment analysis, portfolio management, financial statement analysis, personal finance, financial laws and regulations, consumer lending, insurance, risk management, accounting, computer applications, management, and communications.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC). The general studies courses are technically focused and not designed for transfer.

Career Opportunities

Finance graduates have found many job opportunities in a variety of businesses such as commercial banks, credit unions, finance companies, broker-dealers, collection agencies, self-employed small businesses, medical facilities, mortgage companies, property management associations, and in the finance and credit departments of retail, wholesale, and service organizations, such as finance departments of auto dealerships.

Suggested Technical Studies Semester I

ACCT1215	Accounting Principles I.....	4
BUSM1267	Introduction to Business.....	2
CPTR1210	Introduction to Computers.....	3
FNCR1201	Money and Banking	3

Suggested Technical Studies Semester II

ACCT1219	Spreadsheets-Microsoft Excel.....	2
ACCT2229	Managerial Accounting	4
FNCR1215	Investments.....	3
SAMG1200	Principles of Marketing.....	3

Suggested Technical Studies Semester III

BUSM2275	Legal Environment of Business	3
FNCR1260	Principles of Risk Management	3
FNCR2275	Internship.....	3

Suggested Technical Studies Semester IV

FNCR1250	Finance Law, Regulations and Ethics.....	3
FNCR2240	Financial Statement Analysis	3
FNCR2245	Consumer Lending	3

General Education

ECON1310	Personal Finance.....	3
ECON2330	Introduction to Microeconomics	3
MnTC Goal Area 1	Communications-Written	3
MnTC Goal Area 1	Communications - Oral	3
MnTC Goal Area 2	Critical Thinking	3
MnTC Goal Area 4	Mathematical/Logical Reasoning	3

Estimated cost of books, supplies and materials: \$3,140

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Finance

Finance Diploma (54 Credits)

2025-2026 Catalog

Program Description

The Finance Program will prepare students for career opportunities in the Finance industry. Preparing students for a diverse employment market, courses cover a variety of business-related areas including investment analysis, portfolio management, financial statement analysis, personal finance, financial laws and regulations, consumer lending, insurance, risk management, accounting, computer applications, management, and communications.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC). The general studies courses are technically focused and not designed for transfer.

Career Opportunities

Career Opportunities Finance graduates have found many job opportunities in a variety of businesses such as commercial banks, credit unions, finance companies, broker-dealers, collection agencies, self-employed small businesses, medical facilities, mortgage companies, property management associations, and in the finance and credit departments of retail, wholesale, and service organizations, such as finance departments of auto dealerships.

Suggested Technical Studies Semester I

ACCT1215	Accounting Principles I	4
BUSM1267	Introduction to Business	2
CPTR1210	Introduction to Computers	3
FNCR1201	Money and Banking	3

Suggested Technical Studies Semester II

ACCT1219	Spreadsheets-Microsoft Excel	2
ACCT2229	Managerial Accounting	4
FNCR1215	Investments	3
SAMG1200	Principles of Marketing	3

Suggested Technical Studies Semester III

BUSM2275	Legal Environment of Business	3
FNCR1260	Principles of Risk Management	3
FNCR2275	Internship	3

Suggested Technical Studies Semester IV

FNCR1250	Finance Law, Regulations and Ethics	3
FNCR2240	Financial Statement Analysis	3
FNCR2245	Consumer Lending	3

General Education

ECON1310	Personal Finance	3
ECON2330	Introduction to Microeconomics	3
ENGL1308	Stretch Analytical Writing I	3
DVRS1310	Human Relations for a Diverse Workplace	3

Estimated cost of books, supplies and materials: \$3,140

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Health Information Technology

Health Information Technology AAS Degree (64 Credits)

Program Description

With a degree in Health Information Technology (HIT), you are responsible for the quality, safety, and efficiency of health data. The exchange of clear, accurate health information is becoming more and more important as health records become digital. The HIT AAS degree prepares you to serve others through patient registration, medical coding, billing, pre-authorization and referrals, data management and analysis, and the sharing of patient information in a legally compliant manner. This is a career for people who have great critical thinking skills and attention to detail.

Degree Specific Requirements: This program is 100% online, with the exception of an on-site internship experience. Students must have a laptop or desktop PC with consistent highspeed internet access. Students will be required to connect to online software applications, download various software programs and lecture videos, upload documents and photos, and access the internet for assignment submissions. Students will use Microsoft Word, Excel and PowerPoint, as well as Desire To Learn (D2L) on a regular basis. Students are expected to use resources at SCTCC's IT department, the software vendors and their internet company to assist with troubleshoot technical issues.

Students who have earned a grade of "C" or better (80%), in all technical courses will have satisfied the program requirements for the diploma. A background check is required for the internship course in this program. If you have been arrested, charged or convicted of any criminal offense, you should investigate the impact that the arrest, charge or conviction may have on your chances of employment in the field you intend to study, or on your ability to obtain federal, state, and other higher education financial aid.

Because the Health Information Technology AAS program is accredited by CAHIIM, graduates are eligible to sit for the national RHIT (Registered Health Information Technician) credential, which is required by many employers to work in this field.

Accreditation Information: The **Health Information Technology program** is accredited by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM), 200 East Randolph Street, Suite 5100, Chicago, IL, 60601. Telephone: [\(312\) 235-3255](tel:3122353255).
www.cahiim.org.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum.

Career Opportunities

Health Information Technology AAS degree graduates are prepared for entry-level positions in both Revenue Management and Data Management of patient records. They may work in a Health Information Management Department, Billing Office, or the Privacy, Registry, or Credentialing departments at hospitals, clinics, nursing homes, chiropractic offices, etc. They may also work at insurance companies, public health agencies, law firms, outsourcing companies, or vendors for electronic health records, among many other types of employers. Many jobs in this field are remote positions.

Suggested Technical Studies Semester I

HITM1210	Health Information Foundations	2
HITM1228	Administrative Medical Terminology	3
HITM1230	Pathophysiology & Pharmacology	4
HITM1244	Anatomy and Physiology for Health Information....	4
HITM 1230 and HITM 1244 require simultaneous registration for HITM 1228 for students who have not completed it with a grade of C or better in the past.		

Suggested Technical Studies Semester II

HITM1220	Legal Aspects of Health Information Technology....	3
HITM1226	CPT Coding.....	3
HITM1227	ICD-CM Coding.....	3
HITM1240	Computerized Health Information.....	3

Suggested Technical Studies Semester III

HITM1236	ICD-10-PCS Coding.....	3
HITM2200	Quality Management of Health Information	3
HITM2210	Medical Billing and Reimbursement.....	3
HITM2215	HIT Management and Supervision.....	3
HITM2231	Healthcare Statistics	2

Suggested Technical Studies Semester IV

HITM2209	HIT Professional Practice Experience I	2
HITM2224	Advanced Medical Coding	3
HITM2240	Health Data Analytics	3
HITM2244	HIT Comprehensive Review	1
HITM 2224 This course requires simultaneous registration in HITM 1236 and HITM 2210 for students who have not completed them with a grade of C or better in the past.		
**See Program Handbook for specific information about co-req requirements.		

General Education

MATH1351	Statistics.....	4
MnTC Goal Area 1 Communications - Oral		3
MnTC Goal Area 1 Communications - Written		
ENGL1303 Recommended		3
MnTC Goal 2 or 6		
CRTK1300 Recommended		3
MnTC Goal 5 or 7		
DVRS1304 Recommended		3

Estimated cost of books, supplies and materials: \$3,054

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Health Information Technology

Medical Coding Diploma (44 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

The Medical Office Coding diploma prepares students for in-demand careers in medical coding, billing, and reimbursement. Students learn inpatient and outpatient coding guidelines, business office practices, privacy regulations, how to navigate through an electronic health record, and other medical office procedures. After finishing the program, grads are able to take the national Certified Coding Associate (CCA) exam through AHIMA. This certification is a great way to increase job options in the workforce.

Degree Specific Requirements: This program is 100% online. Students must have a laptop or desktop PC with consistent highspeed internet access. Students will be required to connect to online software applications, download various software programs and lecture videos, upload documents and photos, and access the internet for assignment submissions. Students will use Microsoft Word, Excel and PowerPoint, as well as Desire To Learn (D2L) on a regular basis. Students are expected to use resources at SCTCC's IT department, the software vendors and their internet company to assist with troubleshoot technical issues.

Students who have earned a grade of "C" or better (80%), in all technical courses will have satisfied the program requirements for the diploma. If you have been arrested, charged or convicted of any criminal offense, you should investigate the impact that the arrest, charge or conviction may have on your chances of employment in the field you intend to study, or on your ability to obtain federal, state, and other higher education financial aid.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC). The general studies courses are technically focused and not designed for transfer.

Career Opportunities

Medical Coding graduates become employed in clinics, hospitals, insurance offices, medical testing facilities, long-term care facilities, and industrial medical facilities, public health agencies, or Electronic Health Record (EHR) software companies. Many jobs in this field are remote positions.

Suggested Technical Studies Semester I

HITM1210	Health Information Foundations	2
HITM1228	Administrative Medical Terminology	3
HITM1230	Pathophysiology & Pharmacology	4
HITM1244	Anatomy and Physiology for Health Information....	4
HITM 1230 and HITM 1244 require simultaneous registration for HITM 1228 for students who have not completed it with a grade of C or better in the past.		

Suggested Technical Studies Semester II

HITM1220	Legal Aspects of Health Information	3
HITM1226	CPT Coding	3
HITM1227	ICD-CM Coding	3
HITM1240	Computerized Health Information	3

Suggested Technical Studies Semester III

HITM1236	ICD-10-PCS Coding	3
HITM2200	Quality Management of Health Information	3
HITM2210	Medical Billing and Reimbursement	3
HITM2224	Advanced Medical Coding	3
BUSM1290	Job Seeking/Keeping Skills	1
HITM 2224: This course requires simultaneous registration in HITM 1236 and HITM 2210 for students who have not completed them with a grade of C or better in the past.		

***See Program Handbook for specific information about co-req requirements.

General Education

MnTC Goal Area 1 Communications - Written	
ENGL1303 Recommended	3
MnTC Goal Area 5 or 7	
DVRS1304 Recommended	3

Estimated cost of books, supplies and materials: \$1,900

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Health Sciences Broad Field

Health Sciences Broad Field AS Degree (60 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

The Health Sciences AS degree is a comprehensive, 60 credit degree designed for students who seek careers in a health field; moreover, it supports transfer to a baccalaureate degree (BS) in a related scientific or technical field such as Nursing, Dental Hygiene, or Kinesiology.

The purpose of this program is to give students a solid foundation in the sciences required for application to the SCTCC Health and Nursing programs and to allow a more seamless transfer to a baccalaureate degree major or program in the sciences, math or other health care or medical field.

Career Opportunities

The Health Science Broad Field degree is intended for transfer to a university for a health care related degree, i.e., pre-medicine, nursing (BSN), radiologic technology, or medical laboratory science. Consult with the Academic Advising Center to learn more about various transfer opportunities. If you are interested in finding a job upon graduation, you are encouraged to visit the Career Center to learn about a variety of job opportunities in healthcare that provide on the job training.

MnTC Goal Area 1 Communications - Written

ENGL1312 Analytical Writing 4

MnTC Goal Area 1 Communications- Oral

CMST1320 Introduction to Communication Studies..... 3

OR CMST2310 Interpersonal Communication..... 3

MnTC Goal Area 3 Natural Sciences

BLGY1325 Nutrition 3

BLGY1351 General Biology I 4

BLGY2310 Human Anatomy/Physiology I 4

BLGY2320 Human Anatomy/Physiology II..... 4

BLGY2330 Microbiology 4

CHEM1345 General, Organic and Biological Chemistry Fnds.... 4

OR CHEM1350 General Chemistry I 4

MnTC Goal Area 4 Mathematical/Logical Reasoning

MATH1351 Statistics..... 4

MATH1360 College Algebra..... 3

MnTC Goal Area 5 History and the Social and Behavioral Sciences

PSYC1300 Introduction to Psychology 3

PSYC1304 Lifespan Development 3

MnTC Goal Area 7 (and 5) Human Diversity

DVRS1304 Diversity and Social Justice 3

MnTC Goal Area 9 (and 6) Ethic & Civic Responsibility

PHIL1320 Ethics..... 3

Elective Credits

These can be additional MnTC courses or other college level courses including program specific courses. Please consult with your advisor for course selection

College level courses 11

Estimated cost of books, supplies and materials: \$1,600

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Heating Air Conditioning & Refrigeration

*Heating, Air Conditioning, and Refrigeration Technology
Commercial AAS Degree (72 Credits)*

2025-2026 Catalog



Program Description

The Heating, Air Conditioning, and Refrigeration Technology Program prepares students to enter the heating, ventilation, air conditioning, and refrigeration field. First year emphasizes residential service, maintenance, and installation of forced air furnaces, heat pumps, and air conditioning systems. Second year emphasizes commercial service, maintenance, and installation of heating, air conditioning, and refrigeration systems. Students will gain knowledge in troubleshooting of electrical controls, motors, service and maintenance of refrigeration, heating and air conditioning systems and equipment.

After reviewing comparable Minnesota State college programs, this program exceeds 60 credits for one or more of the following reasons: national or international program certification, national or international standards including skill standards, standards recommended by a primary employer or multiple employers, national specialized program accreditation, state licensure requirements, and/or national practices or standards.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Employment is available with heating, air conditioning, and refrigeration service companies; wholesale supply companies; maintenance positions at hospitals, schools, supermarkets, etc. Other positions include sales, installation, and design, and manufacturer representatives. Technicians trained in this field will perform preventive maintenance to keep systems operating efficiently and respond to service calls to perform repairs to systems as needed. Service technicians will work alone much of the time and use their training and knowledge to diagnose systems and perform needed repairs.

Suggested Technical Studies Semester I

HART1502	Copper and Gas Piping.....	1
HART1510	Sheetmetal	1
HART1514	Forced Air Heating	5
HART1518	Electrical Controls for Heating and AC	4
HART1540	Internship - Residential	2

Suggested Technical Studies Semester II

HART1506	Schematics & Blue Print Reading.....	3
HART1522	Installation of Heating and AC.....	3
HART1526	Principles of Air Conditioning	4
HART1530	Heat Pumps.....	2
HART1534	Troubleshooting Heating & AC.....	3
HART1538	HART Job Preparation	1

Suggested Technical Studies Semester III

HART2506	Commercial Refrigeration I.....	4
HART2510	Commercial Electrical and Controls	3
HART2526	Commercial Heating and HVAC Systems.....	3
HART2530	Commercial Load Calculating.....	2
HART2540	Internship - Commercial.....	2

Suggested Technical Studies Semester IV

HART2502	Commercial Refrigeration II	4
HART2514	Compressor Operation & Troubleshooting	3
HART2518	Commercial Troubleshooting.....	2
HART2522	Commercial Air Conditioning.....	3
HART2534	Commercial HVAC Controls.....	2

General Education

MnTC Goal Area 1 Communications-Oral	3
MnTC Goal Area 1 Communications-Written	3
MnTC Goal Area 4 Mathematical/Logical Reasoning	3
MnTC General Education Electives	6

Estimated cost of books, supplies and materials: \$2,605

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Heating Air Conditioning & Refrigeration

Heating, Air Conditioning, and Refrigeration Technology Commercial Diploma (66 Credits)

2025-2026 Catalog



A member of Minnesota State

Program Description

The Heating, Air Conditioning, and Refrigeration Technology program prepares workers to enter the heating, ventilation, air conditioning, and refrigeration field. First year emphasizes residential service, maintenance, and installation of forced air furnaces, heat pumps, and air conditioning systems. Second year emphasizes commercial service, maintenance, and installation of heating, air conditioning, and refrigeration systems. Students will gain knowledge in troubleshooting of electrical controls, motors, service and maintenance of refrigeration, heating and air conditioning systems and equipment.

Well-trained service technicians are in great demand in this rapidly growing trade. Service, maintenance and proper installation are of great concern to the customer. Technicians trained in this field will perform preventive maintenance to keep systems operating efficiently and respond to service calls to perform repairs to systems as needed. Service technicians will work alone much of the time and use their training and knowledge to diagnose systems and perform needed repairs. The service technician must also have good customer relation skills.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

The general studies courses are technically focused and not designed for transfer.

Career Opportunities

Employment is available with heating, air conditioning, and refrigeration service companies; wholesale supply companies; maintenance positions at hospitals, schools, supermarkets, etc. Other positions include sales, installation, and design, and manufacturer representatives.

Suggested Technical Studies Semester I

HART1502	Copper and Gas Piping.....	1
HART1510	Sheetmetal	1
HART1514	Forced Air Heating	5
HART1518	Electrical Controls for Heating and AC	4
HART1540	Internship - Residential	2

Suggested Technical Studies Semester II

HART1506	Schematics & Blue Print Reading.....	3
HART1522	Installation of Heating and AC.....	3
HART1526	Principles of Air Conditioning	4
HART1530	Heat Pumps.....	2
HART1534	Troubleshooting Heating & AC.....	3
HART1538	HART Job Preparation	1

Suggested Technical Studies Semester III

HART2506	Commercial Refrigeration I.....	4
HART2510	Commercial Electrical and Controls	3
HART2526	Commercial Heating and HVAC Systems.....	3
HART2530	Commercial Load Calculating.....	2
HART2540	Internship - Commercial.....	2

Suggested Technical Studies Semester IV

HART2502	Commercial Refrigeration II	4
HART2514	Compressor Operation & Troubleshooting	3
HART2518	Commercial Troubleshooting.....	2
HART2522	Commercial Air Conditioning	3
HART2534	Commercial HVAC Controls.....	2

General Education

ENGL1308	Stretch Analytical Writing I	3
DVRS1310	Human Relations for a Diverse Workplace	3
General Studies - Electives	3

Estimated cost of books, supplies and materials: \$2,405

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Heating Air Conditioning & Refrigeration

*Heating, Air Conditioning, and Refrigeration Technology
Residential Diploma (35 Credits)*

Program Description

The Heating, Air Conditioning, and Refrigeration Technology Program prepares workers to enter the heating, ventilation, air conditioning, and refrigeration field. The first year of instruction emphasizes residential service, maintenance, and installation of forced air furnaces, heat pumps, and air conditioning systems.

The second year of the program emphasizes commercial service, maintenance, and installation of heating, air conditioning, and refrigeration systems. Students will gain knowledge in trouble shooting electrical controls, motors, service and maintain refrigeration equipment, heating and air conditioning systems.

Service, maintenance and proper installation are of great concern to the customer. Technicians trained in this field will perform preventive maintenance to keep systems operating efficiently and respond to service calls to perform repairs to systems as needed. Service technicians will work alone much of the time and use their training and knowledge to diagnose systems and perform needed repairs. The service technician must also have good customer relation skills.

Career Opportunities

Employment is available with heating, air conditioning, and refrigeration service companies; wholesale supply companies; maintenance positions at hospitals, schools, supermarkets, etc. Other positions include sales, installation, and design, and manufacturer representatives.

Suggested Technical Studies Semester I

HART1502	Copper and Gas Piping.....	1
HART1510	Sheetmetal	1
HART1514	Forced Air Heating	5
HART1518	Electrical Controls for Heating and AC	4
HART1540	Internship - Residential	2

Suggested Technical Studies Semester II

HART1506	Schematics & Blue Print Reading.....	3
HART1522	Installation of Heating and AC.....	3
HART1526	Principles of Air Conditioning	4
HART1530	Heat Pumps.....	2
HART1534	Troubleshooting Heating & AC.....	3
HART1538	HART Job Preparation	1

General Education

ENGL1308	Stretch Analytical Writing I	3
DVRS1310	Human Relations for a Diverse Workplace	3

Estimated cost of books, supplies and materials: \$2,185

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Information Technology

Cybersecurity AAS Degree (60 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

Cybersecurity major combines the Information Technology foundation and focused cybersecurity skills and knowledge to develop entry-level security specialists. The curriculum includes planning and implementing security measures to protect computer networks and information. Hands-on coursework includes incident response, forensic examination of hardware and networks, system hardening, and offensive security methodologies.

Degree-Specific Program Requirements: Students who have earned a grade of "C" or better in all required classes and an overall GPA of 2.0 or better will have satisfied the program requirements for the AAS degree. The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

All students majoring in information technology are required to purchase a laptop computer for their coursework.

**** All Courses Require a Grade of C or Better ** Technical Studies Suggested Semester I**

MSNA1214	Windows Desktop OS	3
MSNA1230	Introduction to Networks I	2
MSNA1246	Software Support.....	3
MSNA1265	Introduction to Computer Security.....	2

Technical Studies Suggested Semester II

MSNA1213	Microsoft Server I	3
MSNA1235	Intro to Virtualization	2
MSNA1241	Hardware Support.....	2
MSNA1255	Introduction to Networks II.....	2
MSNA2211	Linux Server	3

Technical Studies Suggested Semester III

BUSM1290	Job Seeking/Keeping Skills.....	1
CSEC2200	Ethics in Information Technology	2
CSEC2205	Cloud Computing Fundamentals.....	3
CSEC2210	Computer Forensics.....	3
CSEC2215	Scripting & Automation	3

Technical Studies Suggested Semester IV

CSEC2220	Offensive Security	3
CSEC2225	Network Defense.....	3
CSEC2230	Advanced Security Concepts.....	3
MSNA2226	MSNA Capstone.....	2

General Education Courses

CMST2302	Small Group Communication.....	3
CRTK1300	Introduction to Critical Thinking.....	3
MnTC Goal Area 1	Communications - Oral.....	3
MnTC Goal Area 1	Communications - Written.....	3
MnTC Goal Area 4	Mathematical/Logical Reasoning	3

Estimated cost of books, supplies and materials: \$1,550

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Information Technology

Network Administration AAS Degree (60 Credits)

2025-2026 Catalog



A member of Minnesota State

Program Description

The Network Administration major reflects current Information Technology (IT) industry requirements, focusing on certifications. Students learn theoretical knowledge and hands-on proficiency in a high-demand industry. General Education courses help to develop students' interpersonal communication abilities, and other important "soft skills" needed in the IT field. The capstone course includes comprehensive lab and internship experiences, exposing students to actual IT scenarios and work environments and allowing them to demonstrate their abilities in the presence of prospective employers.

Degree-Specific Program Requirements: Students who have earned a grade of "C" or better in all required classes and an overall GPA of 2.0 or better will have satisfied the program requirements for the AAS degree.

All students majoring in information technology must purchase a laptop computer for their coursework.

Career Opportunities

Employment includes positions in IT Helpdesk, desktop and server assembly and configuration, systems upgrade and repair, user training, and more. The curriculum includes a strong combination of skills, which combined with very attainable certifications, results in excellent job placement potential.

**** All Courses Require a Grade of C or Better ** Suggested**

Technical Studies Semester I

MSNA1214	Windows Desktop Operating System.....	3
MSNA1230	Introduction to Networks I.....	2
MSNA1246	Software Support.....	3
MSNA1265	Introduction to Computer Security.....	2

Suggested Technical Studies Semester II

MSNA1213	Microsoft Server I.....	3
MSNA1235	Introduction to Virtualization.....	2
MSNA1241	Hardware Support.....	2
MSNA1255	Introduction to Networks II.....	2
MSNA2211	Linux Server.....	3

Suggested Technical Studies Semester III

BUSM1290	Job Seeking/Keeping Skills.....	1
MSNA1205	Introduction to Help Desk.....	3
MSNA2201	Microsoft Server II.....	3
MSNA2227	Advanced Networking I.....	3

Suggested Technical Studies Semester IV

MSNA2215	MSNA Internship.....	2
MSNA2226	MSNA Capstone.....	2
MSNA2237	Advanced Networking II.....	3
MSNA2260	MS Server Applications.....	3

Technical Electives - choose 3 credits Technical Electives

CMSC1203	Structured Programming Logic.....	3
OR CMSC1212	Web Markup Language.....	3
OR CMSC1216	Database Modeling I.....	3

General Education

CMST2302	Small Group Communication.....	3
CRTK1300	Introduction to Critical Thinking.....	3
CMST1320	Introduction to Communication Studies.....	3
OR CMST2310	Interpersonal Communication.....	3
MnTC Goal Area 1	Communications - Written.....	3
MnTC Goal Area 4	Mathematics and Logic.....	3

Estimated cost of books, supplies and materials: \$1,550

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Land Surveying/Civil Engineering

Land Surveying/Civil Engineering AAS Degree (70 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

The Land Surveying/Civil Engineering Technology program prepares individuals for employment as engineering/surveying technicians. Students learn surveying and drafting techniques, along with design and construction practices pertaining to sewer, water, streets, roads, and land surveying. Students are introduced to modern surveying equipment; computer applications; computer aided drafting and design, and surveying methods.

Technicians must be able to work with other professional people, as well as the general public on a day-to-day basis. Working conditions for technicians may involve a variety of indoor and/or outdoor settings. Problem solving and critical thinking skills are essential to this profession.

After reviewing comparable Minnesota State college programs, this program exceeds 60 credits for one or more of the following reasons: national or international program certification, national or international standards including skill standards, standards recommended by a primary employer or multiple employers, national specialized program accreditation, state licensure requirements, and/or national practices or standards.

Degree Specific Program Requirements: Students who have earned a grade of "C" or better, in all technical classes, as well as an overall GPA of 2.0 or better will have satisfied the program requirements for the AAS degree.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Technicians may be employed by state, county and city governmental agencies, contractors, private engineering or land surveying firms in a wide range of starting positions. Civil Engineering design, boundary surveying, computer application, testing of materials, construction surveying and inspection, estimating and general design work are just a few examples of career possibilities.

Suggested Technical Studies Semester I

LSCE1510	Civil Drafting Methods	3
LSCE1518	Materials, Estimating, and Specifications	3
LSCE1530	Survey Fundamentals	5

Suggested Technical Studies Semester II

LSCE1502	Surveying Principles I	3
LSCE1506	Advanced Survey	5
LSCE1514	Civil CADD I	3
LSCE1527	Technical Computations II	3

Suggested Technical Studies Semester III

LSCE2502	Control and Digital Surveys	5
LSCE2514	Civil CADD II	3
LSCE2518	Utility Design I	3
LSCE2526	Subdivision Design	4

Suggested Technical Studies Semester IV

LSCE2507	Construction Design and Surveying Principles	3
LSCE2510	Surveying Principles II	3
LSCE2522	Civil CADD III	3
LSCE2530	Utility Design II	3
LSCE2540	LSCE Internship	2

General Education - MinnState Policy requires AAS degrees to contain at least 15 MnTC credits in at least three different Goal Areas

MATH1360	College Algebra	3
MATH1370	College Trigonometry	3
MnTC Goal Area 1	Communications - Oral (CMST)	3
MnTC Goal Area 1	Communications - Written (ENGL)	4
MnTC All	MnTC Goal Area 2, 5, 6 or 7	3

Estimated cost of books, supplies and materials: \$3,519

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Land Surveying/Civil Engineering

Land Surveying/Civil Engineering Diploma (63 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

The Land Surveying/Civil Engineering Technology program prepares individuals for employment as engineering/surveying technicians. Students learn surveying and drafting techniques, along with design and construction practices pertaining to sewer, water, streets, roads, and land surveying. Students are introduced to modern surveying equipment; computer applications; computer aided drafting and design, and surveying methods.

Technicians must be able to work with other professional people, as well as the general public on a day-to-day basis. Working conditions for technicians may involve a variety of indoor and/or outdoor settings. Problem solving and critical thinking skills are essential to this profession.

Degree Specific Program Requirements: Students who have earned a grade of "C" or better, in all technical classes, as well as an overall GPA of 2.0 or better will have satisfied the program requirements for the AAS degree.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Technicians may be employed by state, county and city governmental agencies, contractors, private engineering or land surveying firms in a wide range of starting positions. Civil Engineering design, boundary surveying, computer application, testing of materials, construction surveying and inspection, estimating and general design work are just a few examples of career possibilities.

Suggested Technical Studies Semester I

LSCE1510	Civil Drafting Methods	3
LSCE1518	Materials, Estimating, and Specifications	3
LSCE1530	Survey Fundamentals	5
TECH1545	Technical Computations	3

Suggested Technical Studies Semester II

LSCE1502	Surveying Principles I	3
LSCE1506	Advanced Survey	5
LSCE1514	Civil CADD I	3
LSCE1527	Technical Computations II	3

Suggested Technical Studies Semester III

LSCE2502	Control and Digital Surveys	5
LSCE2514	Civil CADD II	3
LSCE2518	Utility Design I	3
LSCE2526	Subdivision Design	4

Suggested Technical Studies Semester IV

LSCE2507	Construction Design and Surveying Principles	3
LSCE2510	Surveying Principles II	3
LSCE2522	Civil CADD III	3
LSCE2530	Utility Design II	3
LSCE2540	LSCE Internship	2

General Education

MnTC Goal Area 1 Communications

ENGL 1308 Recommended	3
AND	
MnTC Goal Area 7 Human Diversity	3
OR MnTC Goal Area 5 Social Sciences	3
ORMnTC Goal Area 6 Humanities and the Fine Arts	3

Estimated cost of books, supplies and materials: \$3,787

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Liberal Arts and Sciences

Biology Transfer Pathway AS Degree (60 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

The Biology Transfer Pathway AS degree offers students an opportunity to complete an associate degree that fully transfers to a Biology bachelor's degree program at any one of seven universities within the Minnesota State system* that offers the major. The entire curriculum has been carefully designed to meet designated bachelor's degree program requirements for transfer students planning initial study at one of the 30 community and technical colleges of Minnesota State that offers the pathway. Students planning to transfer outside of the Minnesota State system are advised to consult with their intended transfer institution to determine transferability of the courses in this curriculum.

*The Minnesota State universities are: Bemidji State University; Metropolitan State University; Minnesota State University, Mankato; Minnesota State University Moorhead; St. Cloud State University; Southwest Minnesota State University; and Winona State University.

General REQUIREMENTS:

1. A minimum of 60 semester credits in courses numbered 1000 or above.
2. A minimum grade point average (GPA) of 2.0 at SCTCC in courses numbered 1000 or above.
3. A minimum of 15 semester credits applied toward the degree must be taken from SCTCC.
4. Completion of specific degree requirements below.

Career Opportunities

The AA degree is intended for transfer to a university for a variety of majors. Consult with the Academic Advising Center to learn more about various transfer opportunities. The Career Center can help you explore career options and/or assist you with a job search. Visit the Career Center early on to better position yourself to have identify and gain work experience related to your desired future career.

Biology Transfer Pathway AS Requirements. These courses do NOT fulfill all the requirements for the AA or the MnTC. Students are advised to work with their advisor and choose goal area classes depending on their transfer university destination.

MnTC Goal Area 1 - Communications - the Pathway requires 2 courses 7 credits

ENGL1312	Analytical Writing	4
OR ENGL1308	Stretch Analytical Writing I	3
AND ENGL1309	Stretch Analytical Writing II	3
CMST1320	Intro to Communications Studies	3
OR CMST2310	Interpersonal Communications	3

MnTC Goal Area 3 - Natural Sciences - the Pathway requires 6 courses 24 credits

BLGY1351	General Biology I	4
BLGY1355	General Biology II	4
BLGY2340	Genetics	4
AND BLGY2330	Microbiology	4
OR BLGY2350	Cellular Biology	4
OR BLGY2360	Ecology	4
AND CHEM1350	General Chemistry I	4
CHEM1355	General Chemistry II	4

MnTC Goal Area 4 - Mathematics - the Pathway requires 2 courses / 6 credits

MATH1360	College Algebra	3
MATH1370	Trigonometry	3
MATH1380	Pre-Calculus	5
MATH2321	Calculus II	5
MATH2330	Calculus III	5
MATH2340	Differential Equations	4
MATH2350	Differential Equations with Linear Algebra	4

MnTC Goal Area 5 - History, and the Social & Behavioral Sciences - the Pathway requires 1 course / 3 credits

MnTC Goal Area 5	History, Social and Behavioral Sciences	3
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MnTC Goal Area 6 - Humanities and the Fine Arts - the Pathway requires 1 course / 3 credits

MnTC Goal Area 6	Humanities & the Fine Arts	3
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Elective Credits: In addition to the above courses, select credits to complete the 60 total credits the Transfer Pathway requires. They can be additional MnTC courses or any other college level course. Please consult with your advisor.

Useful elective credits within the sciences may include: Geology, Calculus, Anatomy and Physiology, Organic Chemistry I and II, Physics, Environmental Science, and Statistics.

Estimated cost of books, supplies and materials: \$2,300

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Liberal Arts and Sciences

Liberal Arts and Sciences AA Degree (60 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

This degree constitutes the first two years of a baccalaureate degree at most colleges and universities anywhere in the world. The AA Degree provides students with a broad base of classes to help develop key communication and critical thinking skills and exposes students to new and diverse ideas. An Associate in Arts Degree is a stackable credential that students can use in a career or as a basis for further academic studies.

Minnesota Transfer Curriculum (MnTC). This curriculum is designed for those students who intend on transferring to another college or university within the Minnesota State system and was designed to give students certainty on how their general education courses transfer within Minnesota State. The MnTC is the core of the Associate in Arts Degree and serves as the key to all undergraduate education at SCTCC and all Minnesota State institutions. The courses that students complete at SCTCC can help them earn a degree at any Minnesota State institution and are often transferable to other colleges and universities.

Career Opportunities

The AA degree is intended for transfer to a university for a variety of majors. Consult with the Academic Advising Center to learn more about various transfer opportunities. The Career Center can help you explore career options and/or assist you with a job search. Visit the Career Center early on to better position yourself to have identify and gain work experience related to your desired future career.

The entire MnTC must be completed.

The Minnesota Transfer Curriculum (MnTC) consists of 40 credits in 10 different Goal Areas established by the Minnesota State. Some courses cover several different goal areas, however, the credits can only be counted one time. All are transferable to other Minnesota state institutions and many other colleges and universities as well.

MnTC Goal Area 1 Communications - 2 courses

ENGL1312 and any CMST course 7

MnTC Goal Area 2 Critical Thinking - 1 course

CRTK1300 is required 3

MnTC Goal Area 3 Natural Sciences

2 courses in different disciplines/subjects (1 lab) 7

MnTC Goal Area 4 Mathematical/ Logical Reasoning

1 course 3

MnTC Goal Area 5 History/Social/Behavioral Sciences

3 courses in different disciplines/subjects 9

MnTC Goal Area 6 Humanities and the Fine Arts

3 courses different disciplines/subjects 9

MnTC Goal Area 7 Human Diversity, Race, Power, and Justice in the United States - 2 courses

DVRS1304 required 6

MnTC Goal Area 8 Global Perspective

1 course 3

MnTC Goal Area 9 Ethical and Civic Responsibility

1 course 3

MnTC Goal Area 10 People and the Environment

1 course 3

WELLNESS REQUIREMENT - 1 course - 2 credits

BLGY1325 Nutrition 3

HPER1310 Life Wellness 2

HPER1311 Applied Nutrition 2

HPER1360 Weight Training and Conditioning 1

PSYC1350 Positive Psychology 3

ELECTIVE CREDITS - up to 18 credits - Any additional general education or college-level course work to complete 60 credit requirement

General Studies courses at SCTCC.

These are NOT MnTC and are NOT intended for transfer but MAY be acceptable in some diploma programs. Check with your advisor.

BUSM1267 Introduction to Business 2

BUSM2275 Legal Environment of Business 3

CPTR1210 Introduction to Computers 3

EMSC1420 AHA Heartsaver CPR and First Aid 1

GBUS1320 Professional Development I 1

GBUS1324 Professional Development II 1

GTEC1304 The Automobile in America 3

INTS1165 Student Success Seminar 2

READ1112 Critical Reading 3

SAMG1211 Professional Sales Fundamentals 3

SAMG2285 Entrepreneurship 3

TECH1530 Computer Applications 2

TECH1550 Basic CADD 2

WELD1502 Welding for Work and Leisure 2

Estimated cost of books, supplies and materials: \$1,600

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Liberal Arts and Sciences

Mathematics Transfer Pathway AA Degree (60 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

The Mathematics Transfer Pathway AA degree offers students an opportunity to complete an associate degree that fully transfers to a Mathematics bachelor's degree program at any one of seven universities within the Minnesota State system* that offers the major. The entire curriculum has been carefully designed to meet designated bachelor's degree program requirements for transfer students planning initial study at one of the 30 community and technical colleges of Minnesota State that offers the pathway. Students planning to transfer outside of the Minnesota State system are advised to consult with their intended transfer institution to determine transferability of the courses in this curriculum.

* The Minnesota State universities are Bemidji State University; Metropolitan State University; Minnesota State University, Mankato; Minnesota State University Moorhead; St. Cloud State University; Southwest Minnesota State University; and Winona State University.

General REQUIREMENTS:

1. A minimum of 60 semester credits in courses numbered 1000 or above.
2. A minimum grade point average (GPA) of 2.0 at SCTCC in courses numbered 1000 or above. Students who have transferred to SCTCC must have a minimum GPA of 2.0 in SCTCC courses and accepted transfer courses for the MnTC.
3. A minimum of 15 semester credits applied toward the degree must be taken from SCTCC.
4. Completion of specific degree requirements below.

Mathematics Transfer Pathway Courses

MATH2311	Calculus I.....	5
MATH2321	Calculus II	5
MATH2230	Calculus III: Multivariable Calculus.....	5
MATH2350	Differential Equations with Linear Algebra	4

Completion of the Minnesota Transfer Curriculum (MnTC)

The full listing of course options and Minnesota Transfer Curriculum requirements can be found at: <http://www.sctcc.edu/degrees-programs/minnesota-transfer-curriculum>

MnTC Goal Area 1 Written Communications

ENGL 1312 or ENGL 1308 AND 1309

MnTC Goal Area 1 Oral Communications - 1 course, 3 credits

MnTC Goal Area 2 Critical Thinking - CRTK 1300 required

MnTC Goal Area 3 Natural Science

7 credits, 2 courses from 2 disciplines, must include a lab.
OR 9 credits from one discipline, must include a lab.

MnTC Goal Area 4 Mathematical/Logical Reasoning

Will be completed with required pathway courses

MnTC Goal Area 5 History and Social and Behavioral Sciences

9 credits from 3 disciplines

MnTC Goal Area 6 Humanities and Fine Arts

9 credits from 3 disciplines

MnTC Goal Area 7 Diversity - 6 credits

DVRS 1304 required

MnTC Goal Area 8 Global Perspective - 3 credits

MnTC Goal Area 9 Ethical & Civic Responsibility - 3 credits

MnTC Goal Area 10 People and the Environment - 3 credits

AA Wellness Requirement - 2 credits

Choose from BLGY1325, HPER1310, HPER 1311, HPER1360, PSYC1350

A minimum of 60 college level credits with a 2.0 GPA is required to complete the Mathematics Transfer Pathway AA degree.

Estimated cost of books, supplies and materials: \$1,600

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Liberal Arts and Sciences

Psychology Transfer Pathway AA Degree (60 Credits)

2025-2026 Catalog

Program Description

The Psychology Transfer Pathway AA degree offers students an opportunity to complete an associate degree that fully transfers to a Psychology bachelor's degree program at any one of seven universities within the Minnesota State system* that offers the major. The entire curriculum has been carefully designed to meet designated bachelor's degree program requirements for transfer students planning initial study at one of the 30 community and technical colleges of Minnesota State that offers the pathway. Students planning to transfer outside of the Minnesota State system are advised to consult with their intended transfer institution to determine transferability of the courses in this curriculum.

***The Minnesota State universities are: Bemidji State University; Metropolitan State University; Minnesota State University, Mankato; Minnesota State University Moorhead; St. Cloud State University; Southwest Minnesota State University; and Winona State University. General REQUIREMENTS:**

1. A minimum of 60 semester credits of college level courses numbered 1000 or above.
2. A minimum grade point average (GPA) of 2.0 at SCTCC in courses numbered 1000 or above. Students who have transferred to SCTCC must have a minimum GPA of 2.0 in SCTCC courses and accepted transfer courses for the MnTC
3. Completion of the 10 goals areas of the Minnesota Transfer Curriculum
4. A minimum of 15 semester credits applied toward the degree must be taken from SCTCC.
5. Completion of specific degree requirements below.

Career Opportunities

The Psychology Transfer Pathway degree is intended for transfer to a university for psychology, social work or related human services type degree. Consult with the Academic Advising Center to learn more about various transfer opportunities. If you are interested in finding a job upon graduation, you are encouraged to visit the Career Center to learn more about a variety of job opportunities, e.g., mental health technician, behavioral technician, behavioral support specialist, paraprofessional (K-12), corrections officer trainee.

Psychology Transfer Pathway AA Requirements:

PSYC1300	Introduction to Psychology	3
PSYC2330	Statistics for Psych/Behavioral Sciences.....	4

Select one of the following courses and one more Psychology course not selected in the above requirement.

PSYC1304	Lifespan Developmental Psychology	3
PSYC2310	Psychopathology: The Sci of Mental Hlth	3
PSYC2320	Social Psychology	3
MnTC Goal Area 5	Any other Psychology course.....	3

Associate of Arts Degree Requirements - 60 credits.

The entire MnTC must be completed. The Minnesota Transfer Curriculum (MnTC) consists of 40 credits in 10 different Goal Areas established by the Minnesota State. Some courses cover several different goal areas, however, the credits can only be counted one time. All are transferable to other Minnesota state institutions and many other colleges and universities as well.

MnTC Goal Area 1 COMMUNICATIONS - 2 courses

ENGL1312 and any CMST course	7
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MnTC Goal Area 2 CRITICAL THINKING - 1 course

CRTK1300 is required	3
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MnTC Goal Area 3 NATURAL SCIENCES

2 courses in different disciplines/subjects (1 lab)	7
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MnTC Goal Area 4 Mathematical/Logical Reasoning

1 course	3
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MnTC Goal Area 5 History/Behavioral Sciences

3 courses in different disciplines/subjects.....	9
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MnTC Goal Area 6 HUMANITIES and the FINE ARTS

3 courses different disciplines/subjects.....	9
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MnTC Goal Area 7 HUMAN DIVERSITY, RACE, POWER, and JUSTICE in the UNITED STATES - 2 courses

DVRS1304 required.....	6
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MnTC Goal Area 8 GLOBAL PERSPECTIVE

1 course	3
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MnTC Goal Area 9 ETHICAL and CIVIC RESPONSIBILITY

1 course	3
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MnTC Goal Area 10 PEOPLE and the ENVIRONMENT

1 course	3
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WELLNESS REQUIREMENT - 1 course - 2 credits

BLGY1325	Nutrition	3
HPER1310	Life Wellness	2
HPER1311	Applied Nutrition	2
HPER1360	Weight Training and Conditioning.....	1
PSYC1350	Positive Psychology	3

ELECTIVE CREDITS - up to 18 credits - Any additional general education or college-level course work to complete 60 credit requirement

Estimated cost of books, supplies and materials: \$1,900

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Liberal Arts and Sciences

Spanish Transfer Pathway AA Degree (60 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

The Spanish Transfer Pathway AA degree offers students an opportunity to complete an associate degree that fully transfers to a Spanish bachelor's degree program at any one of five universities within the Minnesota State system that offers the major*. The entire curriculum has been carefully designed to meet designated bachelor's degree program requirements for transfer students planning initial study at one of the 30 community and technical colleges of Minnesota State that offers the pathway. Students planning to transfer outside of the Minnesota State system are advised to consult with their intended transfer institution to determine transferability of the courses in this curriculum.

Degree Specific Program Requirements:

1. A minimum of 60 semester credits in courses numbered 1000 or above.
2. A minimum grade point average (GPA) of 2.0 at SCTCC in courses numbered 1000 or above. Students who have transferred to SCTCC must have a minimum GPA of 2.0 in SCTCC courses and accepted transfer courses for the MnTC.
3. A minimum of 15 semester credits applied toward the degree must be taken from SCTCC.
4. Completion of specific degree requirements below.

For full MnTC course listings go to www.setcc.edu/degrees-programs/minnesota-transfer-curriculum

Career Opportunities

The Spanish Transfer Pathway AA is intended for transfer to a university for a degree in Spanish. Consult with the Academic Advising Center to learn more about various transfer opportunities. If you are interested in finding a job upon graduation, you are encouraged to visit the Career Center to learn more about a variety of job opportunities, e.g., paraprofessional (K-12), human resources (bilingual), interpreter, customer service (bilingual) or a human services role (bilingual).

Spanish Transfer Pathway Courses

SPAN1310	*Beginning Spanish I	4
SPAN1320	*Beginning Spanish II	4
SPAN2310	Intermediate Spanish I (required)	4
SPAN2320	Intermediate Spanish II (required)	4
*See Placement chart. Students who have been placed by faculty into an upper-level SPAN course, will select elective credits to ensure completion of 60 credits to earn the degree. ENGL2315 or SPAN2315 or HUMN1305 or SPAN1305 are recommended.		

Liberal Arts and Sciences - Associate of Arts Degree Requirements - 60 credits

MnTC Goal Area 1 COMMUNICATIONS - 2 courses

ENGL1312 and any CMST course

MnTC Goal Area 2 CRITICAL THINKING - 1 course

CRTK1300 is required

MnTC Goal Area 3 NATURAL SCIENCES

2 courses in different disciplines/subjects (1 lab course)

MnTC Goal Area 4 Mathematical/Logical Reasoning

1 course

MnTC Goal Area 5 History/Behavioral Sciences

3 courses in different disciplines/subjects

MnTC Goal Area 6 HUMANITIES and the FINE ARTS

3 courses different disciplines/subjects

MnTC Goal Area 7 HUMAN DIVERSITY, RACE, POWER, and JUSTICE in the UNITED STATES - 2 courses

DVRS1304 required

MnTC Goal Area 8 GLOBAL PERSPECTIVE

1 course

MnTC Goal Area 9 Ethical and Civic Responsibility

1 course

MnTC Goal Area 10 PEOPLE and the ENVIRONMENT

1 course

ELECTIVE CREDITS - up to 18 credits - Any additional general education or college-level course work to complete 60 credit requirement

Estimated cost of books, supplies and materials: \$1,600

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Liberal Arts and Sciences

Coaching Certificate (12 Credits)

Program Description

The Coaching Certificate meets the requirements of the Minnesota State High School League and Minnesota Statute 122A.33, which dictates the minimum coaching education necessary to be a head coach at the high school level. The Coaching Certificate also meets requirements and recommendations of many school districts and youth sports organizations to coach at any level. The Coaching Certificate consists of 4 classes and 12 credits that can be taken in one semester or spread out by semester as needed.

Career Opportunities

The Coaching certificate meets the requirements of the Minnesota State High School League and Minnesota Statute 122A.33, which dictates the minimum coaching education necessary to be a head coach at the high school level. The Coaching Certificate also meets the requirements and recommendations of many school districts and youth sports organizations to coach at any level.

Technical Studies

HPER1325	Psychology of Sports and Coaching.....	3
HPER1330	Coaching Methods.....	3
HPER1351	Coaching Theory, Skills and Officiating	2
HPER2017	Injury, Prevention, Care, 1st Aid and CPR in Sports	4

Estimated cost of books, supplies and materials: \$150

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Marketing And Design

Marketing And Design AAS Degree (60 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

The marketing and design student studies the various forms of communication mediums while developing the graphic design skills and creative talent necessary to market ideas, concepts and products.

This program covers all general marketing concepts including graphic design, copywriting, typography, consumer buying behavior, branding, media planning, promotions, marketing research, digital marketing, social media, strategic planning, and video marketing. Students also learn a variety of industry software and build critical skills in leadership, team building, decision making and customer communications. Marketing and Design students will have the opportunity to be a part of The Northway Group, a one-of-a-kind, student-run, in-house advertising agency. Being a part of this will broaden knowledge of the marketing, advertising, communication, and design industries. Innovation, confidence, organizational and communication skills are developed throughout the curriculum with a substantial focus on graphic design.

The marketing and design field is an exciting career choice with unlimited opportunity for creativity and job advancement. It's estimated that more than one third of all Americans have marketing activities in their positions. Currently the Marketing and Design field is ranked as one of the best top five career paths in the 21st Century.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Employment opportunities exist within marketing firms, advertising agencies, newspapers, in-house advertising departments, social media companies, magazine publishers, radio and television stations, media research companies, direct marketing and outdoor advertising businesses.

Technical Studies Semester I

SAMG1200	Principles of Marketing	3
MKAD1211	Adobe InDesign.....	3
MKAD1216	Adobe Illustrator.....	3
MKAD1250	Copywriting and Design.....	3

Technical Studies Semester II

MKAD1221	Adobe Photoshop	3
MKAD1240	Web Design Fundamentals.....	3
MKAD1265	Visual Design	3
MKAD2241	The Northway Group.....	3

Technical Studies Semester III

MKAD2241	The Northway Group.....	3
MKAD2270	Media Marketing	4
MKAD2285	Content Creation.....	4

Technical Studies Semester IV

MKAD2241	The Northway Group.....	3
MKAD2260	Strategic Marketing Campaign.....	4
MKAD2290	Portfolio Practicum.....	3

General Education - MinnState requires AAS degrees to contain at least 15 MnTC credits in at least 3 different Goal Areas

MnTC Goal Area 1	Oral Communications	3
MnTC Goal Area 1	Written Communications	3
MnTC Goal Area 5	History, Social and Behavioral Science	
	PSYC 1300 OR SOCI 1310 Recommended	3
	OR	
MnTC Goal Area 9	Ethical & Civic Responsibility	
	PHIL 1320 OR CMST 2315 Recommended	3
MnTC Goal Area 6	Humanities and the Fine Arts.....	3
MnTC All MnTC	General Education Electives.....	3

Estimated cost of books, supplies and materials: \$1,350

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Program Description

The marketing and design student studies the various forms of communication mediums while developing the graphic design skills and creative talent necessary to market ideas, concepts and products.
This program covers all general marketing concepts including graphic design, copywriting, typography, consumer buying behavior, branding, media planning, promotions, marketing research, digital marketing, social media, strategic planning, and video marketing. Students also learn a variety of industry software and build critical skills in leadership, team building, decision making and customer communications. Marketing and Design students will have the opportunity to be a part of The Northway Group, a one-of-a-kind, student-run, in-house advertising agency. Being a part of this will broaden knowledge of the marketing, advertising, communication, and design industries.
Innovation, confidence, organizational and communication skills are developed throughout the curriculum with a substantial focus on graphic design. The marketing and design field is an exciting career choice with unlimited opportunity for creativity and job advancement. It's estimated that more than one third of all Americans have marketing activities in their positions. Currently the Marketing and Design field is ranked as one of the best top five career paths in the 21st Century.

Career Opportunities

This program prepares students for entry level positions in the advertising field.

Table with 2 columns: Course Number, Course Name, and Credits. It lists courses for Technical Studies Semester I, Technical Studies Semester II, and General Education.

Estimated cost of books, supplies and materials: \$540

Marketing Sales Management

Marketing Sales Management AAS Degree (60 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

The Sales Management Marketing program is designed for students who want to start their career in sales, management or marketing. The program introduces students to a broad base of sales, marketing and management related knowledge and includes experiences and opportunities for students to network and make connections in the community while they attend classes.

Students develop skills in business applications, including communication, sales, prospecting, marketing, customer relationship management, managing a business, supervising employees, and related technology applications. Courses emphasize practical business related knowledge and hands-on learning. During the program, students complete internship experiences that directly apply classroom learning to the workplace. This work experience broadens student's knowledge and helps them successfully secure positions after graduation.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Sales Management Marketing AAS graduates are often employed as department managers, store managers, retail sales associates, hospitality managers, customer service representatives, supervisors, business-to-business salespeople, and business owners. Graduates work in the areas of wholesale, industrial, and commercial sales, management, or marketing.

Suggested Technical Studies Semester I

BUSM1260	Applied Business Mathematics	3
SAMG1200	Principles of Marketing	3
SAMG1206	Strategic Customer Service	3
SAMG1211	Professional Sales Fundamentals	3
SAMG1236	Professional Development.....	2

Suggested Technical Studies Semester II

CPTR1210	Introduction to Computers.....	3
SAMG1215	Principles of Management.....	3
SAMG1221	Branding and Promotion	3
SAMG1251	Financial Strategy Fundamentals	3

Suggested Technical Studies Semester III

SAMG1241	Internship I	2
SAMG2255	Professional Sales Strategies.....	3
SAMG2270	Managing Human Resources.....	3
SAMG2280	Sales Force Management.....	3

Suggested Technical Studies Semester IV

SAMG2245	Marketing Strategies.....	3
SAMG2266	Internship II	2
SAMG2285	Entrepreneurship	3

General Education - MinnState requires AAS degrees to contain at least 15 MnTC credits in at least 3 different Goal Areas

MnTC Goal Area 1	Oral Communications	3
MnTC Goal Area 1	Written Communications	3
MnTC Goal Area 5	History, Social and Behavioral Sciences	3
MnTC Goal Area 6	Humanities and the Fine Arts	3
MnTC All	MnTC General Education Electives.....	3

Estimated cost of books, supplies and materials: \$1,500

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Marketing Sales Management

Marketing Sales Management Diploma (51 Credits)

2025-2026 Catalog



Program Description

The Sales Management Marketing diploma program is designed for students who want to start their career in sales, management or marketing and want to enter this dynamic, rapidly growing field. The program introduces students to a broad base of business related knowledge and includes experiences and opportunities for students to network and make connections in the community while they attend classes.

Students develop skills in business applications, including communication, sales, prospecting, marketing, customer relationship management, managing a business, supervising employees, and related technology applications. Courses emphasize practical business related knowledge and hands-on learning. During the program, students complete two internship experiences that directly apply classroom learning to the workplace. This work experience broadens students' knowledge and helps them successfully secure positions after graduation.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Sales Management Marketing graduates are often employed as department managers, store managers, retail sales associates, hospitality managers, customer service representatives, supervisors, business-to-business salespeople, and entrepreneurs. Graduates work in the areas of marketing, management, or wholesale, industrial and commercial sales.

Suggested Technical Studies Semester I

BUSM1260	Applied Business Mathematics	3
SAMG1200	Principles of Marketing	3
SAMG1206	Strategic Customer Service	3
SAMG1211	Professional Sales Fundamentals	3
SAMG1236	Professional Development.....	2

Suggested Technical Studies Semester II

CPTR1210	Introduction to Computers.....	3
SAMG1215	Principles of Management.....	3
SAMG1221	Branding and Promotion	3
SAMG1251	Financial Strategy Fundamentals	3

Suggested Technical Studies Semester III

SAMG1241	Internship I	2
SAMG2255	Professional Sales Strategies.....	3
SAMG2270	Managing Human Resources.....	3
SAMG2280	Sales Force Management.....	3

Suggested Technical Studies Semester IV

SAMG2245	Marketing Strategies.....	3
SAMG2266	Internship II	2
SAMG2285	Entrepreneurship	3

General Education

ENGL1308	Stretch Analytical Writing I	3
DVRS1310	Human Relations for a Diverse Workplace	3

Estimated cost of books, supplies and materials: \$1,500

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Marketing Sales Management

Marketing Sales Management Associate Diploma (31 Credits)

Program Description

The Sales Management Marketing diploma program is designed for students who want to start their career in sales, management or marketing and want to enter this dynamic, rapidly growing field. The program introduces students to a broad base of business related knowledge and includes experiences and opportunities for students to network and make connections in the community while they attend classes.

Students develop skills in business applications, including communication, sales, prospecting, marketing, customer relationship management, managing a business, supervising employees, and related technology applications. Courses emphasize practical business related knowledge and hands-on learning. During the program, students complete an internship experience that directly apply classroom learning to the workplace. This work experience broadens students' knowledge and helps them successfully secure positions after graduation.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Sales Management Marketing graduates are often employed as department managers, store managers, retail sales associates, hospitality managers, customer service representatives, supervisors, business-to-business salespeople, and entrepreneurs. Graduates work in the areas of marketing, management, or wholesale, industrial and commercial sales.

Suggested Technical Studies Semester I		
BUSM1260	Applied Business Mathematics	3
SAMG1200	Principles of Marketing	3
SAMG1206	Strategic Customer Service	3
SAMG1215	Principles of Management.....	3
SAMG1236	Professional Development.....	2
Suggested Technical Studies Semester II		
CPTR1210	Introduction to Computers.....	3
SAMG1211	Professional Sales Fundamentals	3
SAMG1241	Internship I	2
SAMG1251	Financial Strategies for Business	3
General Education		
ENGL1308	Stretch Analytical Writing I.....	3
DVRS1310	Human Relations for a Diverse Workplace	3

Estimated cost of books, supplies and materials: \$1,500

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Mechanical Design Engineering Technology

Mechanical Design Engineering Technology AAS Degree
(68 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

The Mechanical Design Engineering Technology program consists of a concentration of computer-aided design technology and related math and general education courses. Students learn basic concepts in related fields such as electronics, machine shop, and welding. This program prepares students to create mechanical drawings that meet industry standards. Drawings, whether plotted on paper or in an electronic format are the universal graphic language in the manufacturing industry.

After reviewing comparable Minnesota State college programs, this program exceeds 60 credits for one or more of the following reasons; national or international program certification, national or international standards, including skill standards; standards recommended by a primary employer or multiple employers; national specialized program accreditation; state licensure requirements; and/or national practices or standards.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Graduates can expect career opportunities in many areas of the engineering field. Graduates will often assist engineers with product design, tool design or product continuation or improvement. Entry-level positions may include: CAD Drafter/Designer, Engineering Technician, Research and Development Technician, Quality Control or Field Service Technicians and other related areas.

Suggested Technical Studies Semester I

CADD1502	AutoCAD Foundations.....	3
CADD1512	Inventor Foundations.....	3
CADD1520	SolidWorks Foundations	3
TECH1545	Technical Computations.....	3
TECH1552	Basic Metal Joining and Fabrication.....	2

Suggested Technical Studies Semester II

CADD1507	Drawing Principles I.....	3
CADD1516	Drawing Principles II	3
CADD1523	Design Calculations I	3
CADD2532	Geo-Dim for Designers	2
TECH1556	Basic Manual - Automated Machining.....	2

Suggested Technical Studies Semester III

CADD1530	Basic Electric Circuits.....	1
CADD2505	Advanced Drawing Principles I	3
CADD2509	Advanced Drawing Principles II.....	3
CADD2518	Design Calculations II.....	3
CADD2529	Manufacturing Systems.....	2

Suggested Technical Studies Semester IV

CADD2510	Design Concepts.....	3
CADD2514	Computer- Aided Design.....	3
CADD2522	Machine Design.....	3
CADD2541	Mastercam Fundamentals.....	2
CADD2542	Reverse Engineering.....	2
CADD2550	Mechanical Design Technical Communications	1

General Education - MinnState requires AAS degrees to contain at least 15 MnTC credits in at least 3 different Goal Areas

MnTC Goal Area 1	Communications	3
MnTC Goal Area 7	Human Diversity	3
MnTC All	MnTC General Education Electives.....	9

Estimated cost of books, supplies and materials: \$5,308

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Mechanical Design Engineering Technology

Mechanical Design Engineering Technology Diploma (59 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

The Mechanical Design Engineering Technology program consists of a concentration of computer-aided design technology and related math and general studies courses. Students learn basic concepts in related fields such as electronics, machine shop, and welding. This program prepares students to create mechanical drawings that meet industry standards. Drawings, whether plotted on paper or in an electronic format are the universal graphic language in the manufacturing industry.

This program immerses students in the product design process, including manufacturing process selection, material selections, design and stress calculations, applying geometric dimensioning and tolerancing, the FEA (finite element analysis) process, cost of product and safety of products to consumers in regard to product design.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Graduates can expect career opportunities in many areas of the engineering field. Graduates will often assist engineers with product design, tool design or product continuation or improvement. Entry-level positions may include: CAD Drafter/Designer, Engineering Technician, Research and Development Technician, Quality Control or Field Service Technicians and other related areas.

Suggested Technical Studies Semester I

CADD1502	AutoCAD Foundations.....	3
CADD1512	Inventor Foundations.....	3
CADD1520	SolidWorks Foundations	3
TECH1545	Technical Computations	3
TECH1552	Basic Metal Joining and Fabrication.....	2

Suggested Technical Studies Semester II

CADD1507	Drawing Principles I.....	3
CADD1516	Drawing Principles II	3
CADD1523	Design Calculations I	3
CADD2532	Geo-Dim for Designers	2
TECH1556	Basic Manual - Automated Machining.....	2

Suggested Technical Studies Semester III

CADD1530	Basic Electric Circuits.....	1
CADD2505	Advanced Drawing Principles I	3
CADD2509	Advanced Drawing Principles II	3
CADD2518	Design Calculations II	3
CADD2529	Manufacturing Systems.....	2

Suggested Technical Studies Semester IV

CADD2510	Design Concepts.....	3
CADD2514	Computer- Aided Design.....	3
CADD2522	Machine Design.....	3
CADD2541	Mastercam Fundamentals.....	2
CADD2542	Reverse Engineering.....	2
CADD2550	Mechanical Design Technical Communications	1

General Education

MnTC Goal Area 1 Communications	
ENGL1308 Recommended	3
MnTC Goal Area 7 Diversity	
DVRS1310 Recommended	3

Estimated cost of books, supplies and materials: \$4,730

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Medium/Heavy Truck Technician

Medium/Heavy Truck Technician AAS Degree (72 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

The Medium/Heavy Truck Technician Program is designed to provide individuals with the knowledge and skills needed for an entry-level technician position in the trucking industry. Students perform maintenance, repair, and overhaul on medium/heavy duty trucks and tractor/trailer vehicles in this program. Students develop and practice their skills in a well-equipped shop and study challenging areas, such as truck computers, diesel engines, electrical systems, suspension, air-brakes, and power-train. Students also explore welding, transport refrigeration, automatic transmissions, and truck body repair.

After reviewing comparable Minnesota State college programs, this program exceeds 60 credits for one or more of the following reasons: national or international program certification, national or international standards including skill standards, standards recommended by a primary employer or multiple employers, national specialized program accreditation, state licensure requirements, and/or national practices or standards.

Accreditation Information: The Medium/Heavy Truck program is accredited by the ASE Education Foundation, 1503 Edwards Ferry Rd., NE, Suite 401, Leesburg, VA 20176 (703) 669-6650 <https://aseeducationfoundation.org/>.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Upon graduation, medium/heavy truck technicians may wish to specialize in one phase of the field, such as component rebuilding, transport refrigeration, or preventive maintenance. There are also opportunities for AAS Degree graduates as medium/heavy truck technicians, shop supervisors, dealer and factory representatives.

Required Technical Studies Suggested Semester I

MHTT1514	Truck Brake Systems.....	4
MHTT1526	Truck and Trailer Preventative Maintenance	3
MHTT2538	Supervised Internship	2
TRAN1503	General Service	3
TRAN1518	Transportation Hazardous Materials	1
TRAN1520	Workplace Perceptions and Expectations.....	2

Required Technical Studies Suggested Semester II

MHTT1510	Truck Power Train.....	4
MHTT1518	Truck Steering/Suspension.....	3
MHTT1523	Truck Electrical Systems.....	3
MHTT1529	Welding.....	2
OR MHTT2513 Gas Engines and Alternative Fuel Systems....		2
TRAN1504	Electricity and Electronic Principles.....	3

Required Technical Studies Suggested Semester III

MHTT1507	Mobile Hydraulics.....	3
MHTT1508	Truck Computer Systems	2
MHTT2503	Heavy Duty Diesel Engine Repair Procedures.....	5
MHTT2520	Automatic and Automated Manual Transmissions... ..	4
MHTT2531	Truck Heating and AC Systems	3

Required Technical Studies Suggested Semester IV

MHTT2506	Fuel System Management and Emission Controls... ..	4
MHTT2522	Advanced Chassis Electrical Diagnostics	3
MHTT2545	Truck Troubleshooting and Repair.....	3

General Education - MinnState requires AAS degrees to contain at least 15 MnTC credits in at least 3 different Goal Areas

MnTC Goal Area 1	Communications - Oral (CMST)	3
MnTC Goal Area 1	Communications - Written (ENGL).....	3
MnTC Goal Area 2	Critical Thinking.....	3
MnTC All	Any course from Goals 3 - 10	6

Estimated cost of books, supplies and materials: \$5,980

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Medium/Heavy Truck Technician

Medium/Heavy Truck Technician Diploma (63 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

The Medium/Heavy Truck Technician Program is designed to provide individuals with the knowledge and skills needed for an entry-level technician position in the trucking industry. Students perform maintenance, repair, and overhaul on medium/heavy duty trucks and tractor/trailer vehicles in this program. Students develop and practice their skills in a well-equipped shop and study challenging areas, such as truck computers, diesel engines, electrical systems, suspension, air-brakes, and power-train. Students also explore welding, transport refrigeration, automatic transmissions, and truck body repair.

Accreditation Information: The Medium/Heavy Truck program is accredited by the ASE Education Foundation, 1503 Edwards Ferry Rd., NE, Suite 401, Leesburg, VA 20176 [\(703\) 669-6650 https://aseeducationfoundation.org/](https://aseeducationfoundation.org/).

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

The general studies courses are technically focused and not designed for transfer.

Career Opportunities

Upon graduation, medium/heavy truck technicians may wish to specialize in one phase of the field, such as component rebuilding, transport refrigeration, or preventive maintenance.

Required Technical Studies Suggested Semester I

MHTT1514	Truck Brake Systems.....	4
MHTT1526	Truck and Trailer Preventative Maintenance	3
MHTT2538	Supervised Internship	2
TRAN1503	General Service	3
TRAN1518	Transportation Hazardous Materials	1
TRAN1520	Workplace Perceptions and Expectations.....	2

Required Technical Studies Suggested Semester II

MHTT1510	Truck Power Train.....	4
MHTT1518	Truck Steering/Suspension.....	3
MHTT1523	Truck Electrical Systems.....	3
MHTT1529	Welding.....	2
OR MHTT2513	Gas Engines and Alternative Fuel Systems.....	2
TRAN1504	Electricity and Electronic Principles.....	3

Required Technical Studies Suggested Semester III

MHTT1507	Mobile Hydraulics.....	3
MHTT1508	Truck Computer Systems	2
MHTT2503	Heavy Duty Diesel Engine Repair Procedures.....	5
MHTT2520	Automatic and Automated Manual Transmissions...	4
MHTT2531	Truck Heating and AC Systems	3

Required Technical Studies Suggested Semester IV

MHTT2506	Fuel System Management and Emission Controls...	4
MHTT2522	Advanced Chassis Electrical Diagnostics	3
MHTT2545	Truck Troubleshooting and Repair.....	3

General Education

ENGL1308	Stretch Analytical Writing I.....	3
Any Elective	3

Estimated cost of books, supplies and materials: \$5,880

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Nursing (ADN)

Nursing - LPN To ADN Mobility AS Degree (64 Credits)

2025-2026 Catalog



A member of Minnesota State

Program Description

The Associate Degree in Nursing (ADN) program is designed for graduates from Practical Nursing programs. The nursing program includes a focus on Gerontology as healthcare practitioners are serving a growing population of patients with longer life expectancy. Supervised clinical experience is provided in hospital departments such as pediatrics, mental health, maternity, and surgery. Clinical experiences also include rural and community hospital settings, and ambulatory clinics. Graduates are eligible to articulate to BSN/BAN programs in the Minnesota State system as part of the Minnesota State Nursing Articulation Agreement.

After reviewing comparable Minnesota State college programs, this program exceeds 60 credits for one or more of the following reasons: national or international program certification, national or international standards including skill standards, standards recommended by a primary employer or multiple employers, national specialized program accreditation, state licensure requirements, and/or national practices or standards.

Degree Specific Program Requirements: A background check, including fingerprinting, will be completed as a requirement of this program. At the time of the background check submission, students must provide documentation as required by the MN Department of Human Services. If you have been arrested, charged or convicted of any criminal offense, you should investigate the impact that the arrest, charge or conviction may have on your chances of employment in the field you intend to study, or on your ability to obtain federal, state, and other higher education financial aid. Students who have earned a grade of "C" or better, in all required classes, as well as an overall GPA of 2.0 or better will have satisfied the program requirements for the AS degree. Students will receive 9 credits for their PN education and must be currently licensed as an LPN at the time of application. Students must also complete the required 31 General Education credits and 24 Professional Nursing credits to receive a Nursing, RN AS degree for a total of 64 credits.

Accreditation Information: The Nursing (ADN) Program is approved by the Minnesota Board of Nursing. <http://mn.gov/health-licensing-boards/nursing>. This program is accredited by the National League for Nursing Commission for Nursing Education Accreditation (NLN CNEA), <https://cnea.nln.org> 2600 Virginia Avenue, NW, Eighth Floor, Washington, DC 20037. Telephone: (202) 909-2526. Graduates of this program are eligible to apply to take the National Council Licensure Examination (NCLEX-RN), which is required for practice as a Registered Nurse.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

A nursing career enables a graduate to help where help is greatly needed. The big demand can also translate into registered nursing jobs with enticing perks and attractive nursing salaries for skilled and qualified applicants.

Acceptance Requirements

A minimum grade of C or better and cumulative GPA of 3.0 or above in all Acceptance coursework is required to be considered for admission and must be maintained.

BLGY1325	Nutrition	3
BLGY2310	Human Anatomy/Physiology I	4
BLGY2320	Human Anatomy/Physiology II.....	4
BLGY2330	Microbiology	4
CMST2310	Interpersonal Communication	3
OR CMST1320	Introduction to Communication Studies	3
ENGL1312	Analytical Writing	4
GERO1300	Introduction to Gerontology	3
PHIL1320	Ethics.....	3
PSYC1304	Lifespan Developmental Psychology	3
LPN Credits granted for advanced standing	9

THE FOLLOWING LICENSE/REGISTRATION MUST BE CURRENT AND ON FILE PRIOR TO ADMISSION INTO THE PROGRAM: 1) Minnesota Board of Nursing LPN License AND 2) CPR/AED (Adult, Child & Infant) at a Health Care Provider Level.

Required Technical Studies Semester I

NURS2401	Transitional Nursing Concepts	3
NURS2415	Nursing Concepts I.....	5
NURS2418	Clinical Concepts I.....	4

Required Technical Studies Semester II

NURS2411	Professional Nursing Concepts	3
NURS2421	Nursing Concepts II.....	5
NURS2424	Clinical Concepts II.....	4

Estimated cost of books, supplies and materials: \$3,090

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Paramedicine

Paramedicine AAS Degree (60 Credits)

2025-2026 Catalog



Program Description

The Paramedic works in the exciting and expanding field of Emergency Medical Services (EMS). Graduates of the Paramedicine AAS program will be eligible to take the national level Paramedicine exam. This degree incorporates theoretical knowledge with extensive clinical application and experience. AAS degree graduates have greater potential for upward progression in the career of pre-hospital care.

After reviewing comparable Minnesota State college programs, this program meets 60 credits for completion of a AAS degree.

Degree Specific Program Requirements: All Paramedicine students are required to have an portable touchscreen device and required software. A background check, including fingerprinting, will be completed as a requirement of this program. At the time of the background check submission, students must provide documentation as required by the MN Department of Human Services. If you have been arrested, charged or convicted of any criminal offense, you should investigate the impact that the arrest, charge or conviction may have on your chances of employment in the field you intend to study, or on your ability to obtain federal, state, and other higher education financial aid. Students who have earned a grade of "C" or better, in all required classes, as well as an overall GPA of 2.0 or better will have satisfied the program requirements for the AAS degree.

Accreditation Information: The Paramedicine program is is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) www.caahep.org upon the recommendation of the Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions (CoAEMSP). Commission on Accreditation of Allied Health Education Programs (CAAHEP), 9355-113th St. N, #7709, Seminole, FL, 33775. Telephone: (727) 210-2350 Fax: (727) 210-2354. www.caahep.org CoAEMSP: Telephone (214) 703-8445. Fax (214) 703-8992. www.coaemsp.org.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Career opportunities for paramedics include private ambulance companies, hospitals, industry, city health agencies, fire departments and law enforcement agencies. Park services, ski patrols and other groups in many countries often educate their personnel to become Emergency Medical Technicians or Paramedics as part of their duties.

EMT Basic is required before beginning the Paramedicine program (must submit MN EMSRB EMT-B card). In addition, the following must be completed: A medical examination, vaccinations against Hepatitis B or signed release form, Mantoux test, and background check.

Suggested Technical Studies Semester I

EMSP1450	Introduction to Paramedicine Practice	3
EMSP1452	Patient Assessment and Airway Management.....	4
EMSP1454	Trauma Management.....	4
EMSP1456	Clinical Experience 1	3

Suggested Technical Studies Semester II

EMSP1458	Emergency Pharmacology.....	3
EMSP1460	Medical Emergencies	4
EMSP1462	Cardiology.....	4
EMSP1464	Clinical Experience 2	2

Suggested Technical Studies Semester III (Summer)

EMSP2450	Special Populations	3
EMSP2452	EMS Operations	3
EMSP2454	Clinical Experience 3	3

Suggested Technical Studies Semester IV

EMSP2456	Paramedic Psychomotor Synthesis Lab	2
EMSP2458	Paramedic Capstone Internship.....	3

General Education - MinnState requires AAS degrees to contain at least 15 MnTC credits in at least 3 different Goal Areas

MnTC All	Electives	19
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General Education courses are suggested to be taken during the program with any remaining classes to be taken in the final 5th semester after technical studies are complete.

Estimated cost of books, supplies and materials: \$1,225

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Plumbing

Plumbing, Shop Management AAS Degree (60 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

The Plumbing program is designed to give students a series of experiences with a wide variety of tasks normally performed by a plumber. Some areas included are installation of fixtures, pipe threading, use of tools and equipment, hot and cold water supply, drainage systems, fabrication and testing, maintenance and repair of plumbing, and hydronic heating. Students choosing an AAS degree will find added emphasis on shop management and communication skills.

Related material covered includes blueprint reading and sketching, plumbers' mathematics, the Minnesota State Plumbing Code, and a considerable amount of trade knowledge. The building construction industry is moving ahead rapidly and becoming more complex each year. There is a need for people with the desire and ambition to learn the basics of plumbing and enter the field as apprentices.

Plumbers must keep informed on the latest developments in sanitary science. They contribute to the public health and welfare by means of well-designed and properly installed plumbing.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

The plumbing industry presents many outstanding opportunities for advancement and success in residential, commercial, industrial and service plumbing.

Suggested Technical Studies Semester I

PLBG1504	Piping Procedures I	5
PLBG1508	Plumbing Calculations I	4
PLBG1510	Minnesota State Plumbing Code I.....	3
PLBG1518	Blueprint Reading and Estimating I.....	4

Suggested Technical Studies Semester II

PLBG1514	Minnesota State Plumbing Code II	3
PLBG1520	Blueprint Reading and Estimating II.....	3
PLBG1524	Plumbing Calculations II.....	3
PLBG1530	Piping Procedures II	3
PLBG1538	Plumbing Internship	2
PLBG1544	Career Planning/Customer Relations	1

Technical Electives

Technical Electives	9
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General Education - MinnState requires AAS degrees to contain at least 15 MnTC credits in at least 3 different Goal Areas

CMST1320	Intro to Communication Studies	3
ENGL1312	Analytical Writing	4
MnTC Goal Area 4	Mathematical/Logical Reasoning	3
MnTC Goal Area 5	Social Sciences.....	3
MnTC Goal Area 6	Humanities and the Fine Arts.....	3
MnTC All	MnTC General Education Electives	4

Estimated cost of books, supplies and materials: \$2,120

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Plumbing

Plumbing Diploma (37 Credits)

Program Description

The Plumbing program is designed to give students a series of experiences with a wide variety of tasks normally performed by a plumber. Some areas included are installation of fixtures, pipe threading, use of tools and equipment, hot and cold water supply, drainage systems, fabrication and testing, maintenance and repair of plumbing, and hydronic heating.

Related material covered includes blueprint reading and sketching, plumbers' mathematics, the Minnesota State Plumbing Code, and a considerable amount of trade knowledge. The building construction industry is moving ahead rapidly and becoming more complex each year. There is a need for people with the desire and ambition to learn the basics of plumbing and enter the field as apprentices.

Plumbers must keep informed on the latest developments in sanitary science. They contribute to the public health and welfare by means of well-designed and properly installed plumbing.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

The general studies courses are technically focused and not designed for transfer.

Career Opportunities

The plumbing industry presents many outstanding opportunities for advancement and success in residential, commercial, industrial and service plumbing.

Suggested Technical Studies Semester I	
PLBG1504	Piping Procedures I 5
PLBG1508	Plumbing Calculations I 4
PLBG1510	Minnesota State Plumbing Code I..... 3
PLBG1518	Blueprint Reading and Estimating I 4
Suggested Technical Studies Semester II	
PLBG1514	Minnesota State Plumbing Code II 3
PLBG1520	Blueprint Reading and Estimating II..... 3
PLBG1524	Plumbing Calculations II..... 3
PLBG1530	Piping Procedures II 3
PLBG1538	Plumbing Internship 2
PLBG1544	Career Planning/Customer Relations 1
General Education/Studies	
DVRS1310	Human Relations for a Diverse Workplace 3
General Studies - Electives 3	

Estimated cost of books, supplies and materials: \$1,650

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Practical Nursing

Practical Nursing Diploma (40 Credits)

2025-2026 Catalog



Program Description

Practical Nursing is a challenging, meaningful, and fulfilling career with the benefits of intellectual stimulation, attractive earning potential, and personal rewards. The program is designed to prepare interested men and women to provide nursing care in a variety of patient care settings. The focus of the provision of care includes promotion of health, prevention of illness, holistic and restorative interventions, and acute and long-term care practice.

Degree Specific Program Requirements: A background check, including fingerprinting, will be completed as a requirement of this program. At the time of the background check submission, students must provide documentation as required by the MN Department of Human Services. If you have been arrested, charged or convicted of any criminal offense, you should investigate the impact that the arrest, charge or conviction may have on your chances of employment in the field you intend to study, or on your ability to obtain federal, state, and other higher education financial aid. Students who have earned a grade of "C" or better, in all required classes, as well as an overall GPA of 2.0 or better will have satisfied the program requirements for the diploma. All required practical nursing, PRSG prefix, courses must be completed at SCTCC. The program exists to educate and prepare individuals to complete the National Council Licensure Exam (NCLEX-PN).

Accreditation Information: The Practical Nursing Program is approved by the Minnesota Board of Nursing. <http://mn.gov/health-licensing-boards/nursing>. The program is accredited by the Accreditation Commission for Education in Nursing (ACEN) <http://www.acenursing.org/> 3390 Peachtree Road NE, Suite 1400, Atlanta, GA 30326. Telephone: (404) 975-5000.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

There are many choices for employment for Practical Nursing graduates including hospitals, nursing homes, clinics, and home health care. LPNs may be hired as private nurses. Many health insurance companies are hiring LPNs to answer patients questions concerning health needs. The Practical Nursing program provides an educational foundation for career mobility to associate or baccalaureate RN programs.

Technical Studies Prerequisites

HLTH1440	Medical Terminology	1
BLGY1321	Human Biology	4
PSYC1304	Lifespan Developmental Psychology	3
MnTC Goal Area 1	Written Communications	
	ENGL1312 required in ADN	3

*Current CPR/AED Adult, Child & Infant (Health Care Provider level) AND completion of a Minnesota 75 hour NA course (HLTH1402) or being current on the Minnesota Department of Health Nursing Assistant registry.

* Applicants may only apply after successful completion of prerequisite requirements. These courses must be completed prior to starting the program. In addition, students must have completed the math Accuplacer with scores above the cutoff points for Practical Nursing or successful completion of equivalent course work.

* A minimum grade of "C" of better and a cumulative GPA of 2.5 or above in prerequisite coursework is required to be considered for admission to the Practical Nursing Program.

***Prerequisites may be taken up to 3 times per the college policy to increase your chances of getting into the PN program.**

Technical Studies Semester I

PRSG2401	Medical Surgical Nursing I	3
PRSG2409	Basic Nursing Concepts	3
PRSG2419	Nursing Skills	3
PRSG2429	Essentials of Clinical Pharmacology	2
PRSG2439	Clinical Application I	3

Technical Studies Semester II

PRSG2402	Medical Surgical Nursing II	3
PRSG2411	Bridging to Nursing Practice	2
PRSG2440	Clinical Application II	5
PRSG2450	Maternal Child Nursing	3
PRSG2460	Mental Health Nursing	2

Estimated cost of books, supplies and materials: \$3,485

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Robotics & Industrial Controls

Instrumentation & Process Control AAS Degree (60 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

The Instrumentation and Process Control program prepares individuals to apply electronic engineering principles and technical skills in the fields of instrumentation measurement and industrial control systems, automated systems, process control, plant equipment maintenance, embedded microcontrollers, and data acquisition systems. This program prepares individuals with knowledge and skills in the areas of AC/DC electronics, digital and analog circuits, use of electronic test equipment, use of computers for analysis and problem solving, reading electrical schematics and system diagrams, process and instrument diagrams, scientific methods, and problem solving skills.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Graduates from this program find exciting opportunities as electro-mechanical technicians who install, maintain, and repair electronic equipment and automated systems used in a variety of industries. Examples include aerospace, paper manufacturing, food processing, petro-chemical production, power generation, mining, municipal water and waste water treatment, plant maintenance, medical device testing and calibration, and environmental monitoring and control systems.

Suggested Technical Studies Semester I

ETEC1511	DC Electronics	3
ETEC1512	AC Electronics	3
ETEC1515	Safety Awareness.....	2
ETEC1517	Maintenance Process and Production.....	2

Suggested Technical Studies Semester II

ETEC1507	Digital Electronics.....	3
ETEC1524	Print Reading and Design.....	2
ETEC1526	Quality Practice.....	2
ETEC1528	Maintenance Awareness	2
ETEC1535	Networking Systems.....	2

Suggested Technical Studies Semester III

ETEC2515	Introduction to Process Control.....	3
ETEC2535	Fluid Power and Control	4
ETEC2541	Electrical Motors and Control Systems.....	3
ETEC2543	Programmable Logic Control.....	3

Suggested Technical Studies Semester IV

ETEC2532	Instrumentation Control and Data Acquisition.....	4
ETEC2542	Industrial Motor Applications	3
ETEC2544	Automated Manufacturing Systems	3

General Education

ENGL1303	Technical Writing	3
MATH1360	College Algebra.....	3
PHYS1305	Conceptual Physics.....	4
OR PHYS2300 General Physics I.....		4
CRTK1300	Introduction to Critical Thinking.....	3
MnTC Goal Area 5 Social Sciences.....		3

Estimated cost of books, supplies and materials: \$4,861

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Robotics & Industrial Controls

Mechatronics & Automation AAS Degree (60 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

The Mechatronics program prepares individuals to apply electronic engineering principles and technical skills in the fields of instrumentation and industrial control systems, digital and analog circuits, automated manufacturing and robotics, manufacturing and facilities maintenance, embedded microcontrollers, and telecommunications systems. The program prepares individuals with knowledge and skills in the areas of AC/DC electronics, digital and analog circuits, use of electronic test equipment, use of computers for analysis and problem solving, reading electrical schematics and system diagrams, scientific methods, and problem solving skills. Additional topics include programmable logic controllers (PLCs), industrial automation, process control systems, instrumentation techniques and calibration, microcomputer hardware and network support, computer programming, telecommunications systems, computer aided drafting, and statistical process control.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Graduates from this program find exciting opportunities as electro-mechanical technicians who install, maintain, and repair electronic equipment and automated systems used in a variety of industries. Examples include aerospace, paper manufacturing, food processing, petro-chemical production, power generation, mining, municipal water and waste water treatment, plant maintenance, medical device testing and calibration, and environmental monitoring and control systems.

Suggested Technical Studies Semester I

ETEC1511	DC Electronics	3
ETEC1512	AC Electronics	3
ETEC1515	Safety Awareness.....	2
ETEC1517	Maintenance Process and Production.....	2
TECH1552	Basic Metal Joining and Fabrication.....	2

Suggested Technical Studies Semester II

ETEC1507	Digital Electronics.....	3
ETEC1524	Print Reading and Design.....	2
ETEC1526	Quality Practice	2
ETEC1528	Maintenance Awareness	2
ETEC1535	Networking Systems.....	2

Suggested Technical Studies Semester III

ETEC2521	Mechanical Systems.....	3
ETEC2525	FANUC Robotics Certification.....	2
ETEC2535	Fluid Power and Control	4
ETEC2541	Electrical Motors and Control Systems.....	3
ETEC2543	Programmable Logic Control.....	3

Suggested Technical Studies Semester IV

ETEC2542	Industrial Motor Applications	3
ETEC2570	Advanced Mechanical Systems.....	3

General Education

ENGL1303	Technical Writing	3
MATH1360	College Algebra.....	3
PHYS1305	Conceptual Physics.....	4
	OR PHYS2300 General Physics I.....	4
CRTK1300	Introduction to Critical Thinking.....	3
	MnTC Goal Area 5 Social Sciences	3

Estimated cost of books, supplies and materials: \$4,440

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Robotics & Industrial Controls

Mechatronics & Automation Certificate (30 Credits)

Program Description

The Mechatronics certificate program prepares individuals with a fundamental knowledge of AC/DC electronics, digital and analog circuits, use of electronic test equipment, use of computers for analysis and problem solving, and reading electronic schematics.

Career Opportunities

Graduates from this program coupled with prior experience or other education experiences find exciting opportunities in a variety of fields, such as, selling electronic equipment, alarm and security system installers, and electronic assembly. They may also use this certificate to transfer to other programs in electronics, such as biomedical technician, instrumentation and process control technician, and electronics technician programs.

Suggested Technical Studies Semester I

ETEC1511	DC Electronics	3
ETEC1512	AC Electronics	3
ETEC1515	Industrial Safety	2
ETEC1517	Maintenance Process and Production.....	2
MATH1360	College Algebra.....	3
TECH1530	Computer Applications.....	2

Suggested Technical Studies Semester II

ETEC1507	Digital Electronics.....	3
ETEC1524	Print Reading and Design.....	2
ETEC1526	Quality Practice	2
ETEC1528	Maintenance Awareness	2
ETEC1535	Networking Systems.....	2
PHYS1305	Conceptual Physics.....	4
PHYS2300	General Physics I.....	4

Estimated cost of books, supplies and materials: \$3,650

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Sonography

Diagnostic Medical Sonography-Generalist AAS Degree (70 Credits)

2025-2026 Catalog



Program Description

The Sonography Program provides students with academic study, laboratory and clinical experience in diagnostic medical sonography. Students receive comprehensive training and experience performing scanning procedures in abdominal, superficial structures, gynecological, obstetrical, and vascular ultrasound. Students are affiliated with health-care facilities during the clinical ultrasound internship courses. Diagnostic Medical Sonographers perform and analyze ultrasound images through the use of high frequency sound waves in a variety of medical settings.

After reviewing comparable Minnesota State college programs, this program exceeds 60 credits for one or more of the following reasons: national or international program certification, national or international standards including skill standards, standards recommended by a primary employer or multiple employers, national specialized program accreditation, state licensure requirements, and/or national practices or standards.

Degree Specific Program requirements: A background check, including fingerprinting, will be completed as a requirement of this program. At the time of the background check submission, students must provide documentation as required by the MN Department of Human Services. If you have been arrested, charged or convicted of any criminal offense, you should investigate the impact that the arrest, charge or conviction may have on your chances of employment in the field you intend to study, or on your ability to obtain federal, state, and other higher education financial aid. Students who have earned a grade of "C" or better, in all required classes, as well as an overall GPA of 2.0 or better will have satisfied the program requirements for the AAS degree.

Accreditation Information: This program is is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) www.caahep.org upon recommendation of the Joint Review Committee on Education in Diagnostic Medical Sonography (JRC-DMS). Commission on Accreditation of Allied Health Education Programs (CAAHEP) 9355-113th St. N, #7709, Seminole, FL, 33775. Telephone: (727) 210-2350 Fax: (727) 210-2354. www.caahep.org Joint Review Committee on Education in Diagnostic Medical Sonography (JRC-DMS), 6021 University Blvd, Suite 500, Ellicott City, MD 21043. Telephone: (443) 973-3251. Fax: (866) 738-3444. www.jrcdms.org

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Upon completion of the program, graduates are eligible to take the national registry exams in Ultrasound Physics, Abdominal Ultrasound, and Obstetrical and Gynecological Ultrasound following American Registry for Diagnostic Medical Sonography (ARDMS) prerequisite guidelines. Graduates of this program will be able to obtain, review and integrate pertinent and supporting clinical data to facilitate optimum diagnostic results, analyze and process anatomic, pathologic and/or physiologic data for interpretation by a physician.

Acceptance Requirements

BLGY2310	Human Anatomy & Physiology	4
BLGY2320	Human Anatomy & Physiology II.....	4
HLTH1440	Medical Terminology	1
MATH1360	College Algebra.....	3
PHYS1305	Conceptual Physics	
	or PHYS2300 General Physics	4
MnTC Goal Area 1	Communication Oral	
	CMST2300 recommended	3
MnTC Goal Area 1	Communication Written	
	ENGL1312 recommended.....	4
*Applicants may only apply to the Sonography program after successful completion of the acceptance requirements with a 3.0 minimum GPA.		

Suggested Technical Studies Semester I

DMSG1401	Introduction to the Sonography Field.....	1
DMSG1402	Ultrasound Cross-Sectional Anatomy I.....	3
DMSG1404	Diagnostic Medical Sonography I.....	3
DMSG1405	Ultrasound Physics.....	3
DMSG1406	Clinical Ultrasound Lab I	3

Suggested Technical Studies Semester II

DMSG1410	Ultrasound Cross-Sectional Anatomy II.....	3
DMSG1411	Diagnostic Medical Sonography II.....	3
DMSG1412	Clinical Ultrasound Lab II.....	5
DMSG1415	Prof. Development and Growth in Sonography	2

Suggested Technical Studies Semester III

DMSG2403	Introduction to Vascular Sonography	4
DMSG2425	Clinical Ultrasound Internship I	5

Suggested Technical Studies Semester IV

DMSG2407	Sonography Board Reviews	1
DMSG2430	Clinical Ultrasound Internship II.....	11

Estimated cost of books, supplies and materials: \$8,119

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Surgical Technology

Surgical Technology AAS Degree (60 Credits)

2025-2026 Catalog



A member of Minnesota State

Program Description

The Surgical Technology Program prepares students to function as part of the operating room team by handing instruments to the surgeon during various surgical procedures. The surgical technologist works under medical supervision to facilitate the safe and effective conduct of invasive surgical procedures. This individual acts in association with the registered nurse and surgeon to ensure that the operating room environment is safe, that equipment functions properly, and that the operative procedure is conducted under conditions that maximize patient safety. The curriculum includes classroom, laboratory and clinical experiences.

A surgical technologist possesses expertise in the theory and application of sterile and aseptic technique and combines the knowledge of human anatomy, surgical procedures and implementation tools and technologies to facilitate a physician's performance of invasive therapeutic and diagnostic procedures. Personal qualities of patience, manual dexterity and the ability to work under stress and to stand for long periods of time are necessities in this field.

Degree Specific Program Requirements: A background check, including fingerprinting and drug and alcohol testing, will be completed as a requirement of this program. At the time of the background check submission, students must provide documentation as required by the MN Department of Human Services. If you have been arrested, charged or convicted of any criminal offense, you should investigate the impact that the arrest, charge or conviction may have on your chances of employment in the field you intend to study, or on your ability to obtain federal, state, and other higher education financial aid. Students who have earned a grade of "C" or better, in all required classes, as well as an overall GPA of 2.5 or better will have satisfied the program requirements for the AAS degree. Students will be asked to sign an acknowledgement of policies pertaining to drug and alcohol use prior to the clinical experience. This profession does require some lifting. A physical examination is required prior to clinical practice.

Accreditation Information: This program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) www.caahep.org upon the recommendation of the Accreditation Review Council on Education in Surgical Technology and Surgical Assisting (ARC/STSA). Commission on Accreditation of Allied Health Education Programs (CAAHEP), 9355-113th St. N, #7709, Seminole, FL, 33775. Telephone: (727) 210-2350 Fax: (727) 210-2354. www.caahep.org. Students join the Association of Surgical Technologists and graduates of the Surgical Technology Program will be eligible to take the National Certification Examination.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Employment options include but are not limited to hospitals, same day surgery centers, and specialty clinics.

Technical Studies Prerequisites

HLTH1440	Medical Terminology	1
BLGY1351	General Biology I	4
BLGY2310	Human Anatomy/Physiology I	4
BLGY2320	Human Anatomy/Physiology II	4
CMST2310	Interpersonal Communication	3
DVRS1304	Diversity and Social Justice	3
PHIL1320	Ethics	3
MnTC Goal Area 1	Written Communication	3

*Current Healthcare Provider certificate, CPR/AED required before beginning the Surgical Technology program. Students are required to maintain this certificate throughout the program.

*All acceptance requirement courses must be completed with a grade of "C" or better and cumulative GPA of 2.5 prior to admission to the program.

Suggested Technical Studies Semester I

SURG1400	Medical Microbiology	2
SURG1404	Surgical Pharmacology	2
SURG1420	Operating Room Techniques	3
SURG1424	Operating Room Techniques Lab	4

Suggested Technical Studies Semester II

SURG1442	Surgical Procedures I	6
SURG1462	Operating Room Clinical Lab I	14

Suggested Technical Studies Semester III (Summer term)

SURG1443	Surgical Procedures II	1
SURG1463	Operating Room Clinical Lab II	3

Estimated cost of books, supplies and materials: \$3,828

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Water Environment Technologies

Water Environment Technologies AAS Degree (62 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

Water Environment Technologies (WETT) is an environmental program geared toward protecting the world's most precious resource: WATER. Courses cover a variety of chemical, biological, physical and mechanical water and wastewater treatment processes and techniques being applied today. The students learn the complex processes of obtaining water from its source, through treatment, distribution, collection, and treatment again on its journey back to the source. Through this process, students learn to identify, troubleshoot, and solve problems involved with the treatment of water.

After reviewing comparable Minnesota State college programs, this program exceeds 60 credits for one or more of the following reasons: national or international program certification, national or international standards including skill standards, standards recommended by a primary employer or multiple employers, national specialized program accreditation, state licensure requirements, and/or national practices or standards.

Accreditation Information: The Water Environment Technologies program is certified by the Minnesota Department of Health, 625 Robert Street North, St. Paul MN, 55164 Telephone: [\(651\) 201-5000](tel:6512015000) and the Minnesota Pollution Control Agency, 520 Lafayette Road, St. Paul, MN 55155-4194 Telephone: [\(651\) 296-6300](tel:6512966300). Students who successfully pass the state exams receive Class D Water and Wastewater certificates, which are required to operate water and wastewater treatment facilities for both public and private entities.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Graduates of the Water Environment Technologies Program are prepared to accept positions as entry-level water and/or wastewater operators at various water purification facilities. A career in water treatment offers dynamic, rapid growing employment opportunities with competitive salaries and benefit packages. Students may also choose to become lab technicians, facility mechanics, equipment sales persons, solids handlers, meter readers, utility service operators, or pursue other various related positions in the water treatment field.

Suggested Technical Studies Semester I

WETT1502	Basic Laboratory Skills	1
WETT1506	Introduction to Water/Wastewater Technology	3
WETT1510	Water/Wastewater Treatment Calculations.....	2
WETT1514	Source Water Treatment and Development.....	4
WETT1518	Water Plant Operation I.....	3
WETT1526	Water Distribution Systems.....	3
WETT1530	Understanding OSHA Safety Regulations	3

Suggested Technical Studies Semester II

WETT1522	Water Plant Operation II.....	3
WETT1534	Wastewater Plant Operation I.....	3
WETT1538	Wastewater Plant Operations II.....	4
WETT1542	Wastewater Laboratory Procedures	3
WETT1554	Automated Control Systems.....	3
WETT1558	Understanding the EPA Part 503 Biosolids Rule	3

Technical Electives

Technical Electives	3
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Suggested Technical Studies Semester III (Summer term)

WETT1546	Collection and Disinfection Systems Operation	3
WETT1550	Strategic Planning for Success	3

General Education - MinnState requires AAS degrees to contain at least 15 MnTC credits in at least 3 different Goal Areas

MnTC Goal Area 1	Communications - Oral (CMST)	3
MnTC Goal Area 1	Communications - Written (ENGL).....	3
MnTC All	Any courses from Goal Areas 2 - 10	9

Estimated cost of books, supplies and materials: \$2,205

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Water Environment Technologies

Water Environment Technologies Diploma (50 Credits)

2025-2026 Catalog



Program Description

Water Environment Technologies (WETT) is an environmental program geared toward protecting the world's most precious resource: WATER. Courses cover a variety of chemical, biological, physical and mechanical water and wastewater treatment processes and techniques being applied today. The students learn the complex processes of obtaining water from its source, through treatment, distribution, collection, and treatment again on its journey back to the source. Through this process, students learn to identify, troubleshoot, and solve problems involved with the treatment of water.

Accreditation Information: The Water Environment Technologies program is certified by the Minnesota Department of Health, 625 Robert Street North, St. Paul MN, 55164 Telephone: [\(651\) 201-5000](tel:6512015000) and the Minnesota Pollution Control Agency, 520 Lafayette Road, St. Paul, MN 55155-4194 Telephone: [\(651\) 296-6300](tel:6512966300). Students who successfully pass the state exams receive Class D Water and Wastewater certificates, which are required to operate water and wastewater treatment facilities for both public and private entities.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Graduates of the Water Environment Technologies Program are prepared to accept positions as entry-level water and/or wastewater operators at various water purification facilities. A career in water treatment offers dynamic, rapid growing employment opportunities with competitive salaries and benefit packages. Students may also choose to become lab technicians, facility mechanics, equipment sales persons, solids handlers, meter readers, utility service operators, or pursue other various related positions in the water treatment field.

Suggested Technical Studies Semester I

WETT1502	Basic Laboratory Skills	1
WETT1506	Introduction to Water/Wastewater Technology	3
WETT1510	Water/Wastewater Treatment Calculations.....	2
WETT1514	Source Water Treatment and Development.....	4
WETT1518	Water Plant Operation I.....	3
WETT1526	Water Distribution Systems.....	3
WETT1530	Understanding OSHA Safety Regulations	3

Suggested Technical Studies Semester II

WETT1522	Water Plant Operation II.....	3
WETT1534	Wastewater Plant Operation I.....	3
WETT1538	Wastewater Plant Operations II.....	4
WETT1542	Wastewater Laboratory Procedures.....	3
WETT1554	Automated Control Systems.....	3
WETT1558	Understanding the EPA Part 503 Biosolids Rule	3

Suggested Technical Studies Semester III (Summer Term)

WETT1546	Collection and Disinfection Systems Operation	3
WETT1550	Strategic Planning for Success	3

General Education

MnTC Goal Area 1	Communications Oral or Written.....	3
MnTC ALL	Any course from Goal Areas 2 - 10	3

Estimated cost of books, supplies and materials: \$1,630

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

Welding/Fabrication

Welding/Fabrication Diploma (37 Credits)

2025-2026 Catalog

ST. CLOUD
TECHNICAL & COMMUNITY COLLEGE

A member of Minnesota State

Program Description

The Welding Program provides both practical and theoretical knowledge for qualified welding technicians. The specific subjects include: Shielded Metal Arc Welding, Oxy-Acetylene Welding and Brazing, Gas Metal Arc Welding, Gas Tungsten Arc Welding, Cutting Processes-fuel gas and plasma, Metallurgy, Fabrication and Equipment, Automated Machining, CADD Drafting, Blueprint Reading and Math. Safety procedures are also an important part of each welding process. Written and Fundamental tests will be done in accordance with the American Welding Society (AWS) SENSE curriculum and code books.

Degree Specific Program Requirements: Students who have earned a grade of "C" or better, in all required classes, as well as an overall GPA of 2.0 or better will have satisfied the program requirements for the diploma.

The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Positions for graduates may be found in fabricating, plant maintenance, structural steel, pipe fitting, plumbing, and in sales. Many students will find opportunities in supervisory positions after gaining some experience on the job.

Suggested Technical Studies Semester I

TECH1550	Basic CADD.....	2
TECH1556	Basic Manual - Automated Machining.....	2
WELD1505	Arc Welding Processes	5
WELD1515	Thermal Welding and Cutting Process	3
WELD1520	Metallurgy & Safety in Fabrication.....	3
WELD1529	Print Reading & Math Applications	2

Suggested Technical Studies Semester II

WELD1533	Blueprint Reading II.....	1
WELD1540	Arc Welding Processes II	6
WELD1545	Gas Tungsten Arc Welding.....	4
WELD1558	Robotics, Inspection, and Testing.....	3

General Education

ENGL1308	Stretch Analytical Writing I	3
DVRS1310	Human Relations for a Diverse Workplace	3

Estimated cost of books, supplies and materials: \$2,456

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

COURSE DESCRIPTIONS & OUTCOMES

(alphabetical by course number)

ABCT 1520 - Collision Repair Industry

This course combines lecture and laboratory practice to introduce students to the knowledge and skills required in the auto body industry. The course introduces students to industry equipment and processes. Students will be instructed on safety and basic familiarization with industry related terminology. Blue printing and estimating will be covered in this course. Written and demonstration tests will be done in accordance with Inter-Industry Conference on Auto Collision Repair (I-CAR) curriculum and online learning modules. Students will learn skills in customer relations and how to interact with customers of all backgrounds.

Student Learning Outcomes:

- * Apply personal and shop safety practices according to I-CAR and NATE standards.
- * Describe the collision repair industry and related career choices.
- * Define safety and environmental issues related to the work place.
- * Label automotive panels and parts with accuracy.
- * Name auto body trim and hardware.
- * Identify collision related hand, power tools, and equipment.
- * Show appropriate use of auto body specific tools and equipment.
- * Define auto body vehicle terminology according to I-CAR and industry standards.
- * Identify different types of vehicle damage.
- * Use blueprinting principles in the estimating process.
- * Develop hand-written and computer-generated estimates
- * Interpret Repair orders/estimates
- * Demonstrate interpersonal skills while interacting with a diverse customer population
- * Perform vehicle reconditioning procedures on customer vehicles to industry standards.
- * Demonstrate honesty, integrity, and reliability

(4 C: 2 lect/pres, 2 lab, 0 other)

ABCT 1525 - Collision Repair I

This course will focus on sheetmetal straightening and welding practices used in the collision industry. Both lecture and laboratory practice will be used to introduce students to industry standard techniques and procedures. Students will be introduced to aluminum, silicon bronze and MIG (metal inert gas) welding with major emphasis on MIG welding. Plasma cutting and oxyacetylene torch operation will also be covered. Sheetmetal straightening will cover small and large dent removal, filler and primer application. Emphasis will be placed on tools and techniques used for returning panels to their pre-accident condition.

Student Learning Outcomes:

- * Identify safety procedures for welding and sheetmetal repair.
- * Choose and utilize appropriate Personal Protective Equipment (PPE) and safety equipment.
- * Locate and identify collision repair welds and explain their structural differences.
- * Reproduce collision repair MIG welds according to I-CAR standards.
- * Describe and practice the use of welding equipment for aluminum, silicon bronze and MIG welding.
- * Select appropriate welding or cutting tools based on work to be performed.
- * Use plasma and oxyacetylene equipment to cut steel.
- * Identify power tools, and equipment used to repair sheetmetal.
- * Demonstrate basic methods of sheet metal repair. Compare the types, purpose and composition of body fillers.
- * Demonstrate various body filler application techniques.
- * Select proper grit sand paper based on repair steps and technical data sheets.
- * Demonstrate proper selection and use of metal straightening tools.
- * Identify and repair imperfections in body filler.
- * Estimate amount of time needed for basic dent repair.
- * Summarize and demonstrate the steps of sheet metal repair up to final sanding of primer.
- * Describe and practice the use of basic primer equipment and application procedures according to technical data
- * Use technical data sheets

- * Follow SOP plans provided (Standard Operating Procedures)
- (4 C: 2 lect/pres, 2 lab, 0 other)

ABCT 1535 - Production Lab I

Students apply basic procedures on production type vehicles and projects according to ASE (Automotive Service Excellence) and I-CAR (Inter-Industry Conference on Auto Collision Repair) standards. This is a lab course in which students apply and refine skills learned in co-courses. Students accomplish this by having the opportunity to observe, practice and demonstrate these skills in an industry like setting. Instructor guided projects along with live customer work allow students to experience a wide range of structured reinforcement of skills specific to their major. Emphasis will be placed on demonstrating these principles to industry standards (SOP) and completing entry level technician processes.

Student Learning Outcomes:

- * Perform daily work according to repair order process.
- * Update supplement repair order as needed.
- * Analyze basic types of auto body damage.
- * Perform detailing of vehicles.
- * Perform disassembly and assembly of vehicles.
- * Perform metal finishing techniques to industry standards.
- * Demonstrate methods of applying and sanding body filler to industry standards.
- * Complete panel removal, replacement and adjustment.
- * Perform corrosion protection according to manufacturer and industry standards.
- * Demonstrate a variety of welding and cutting techniques.
- * Perform varying task using SOP,s (standard operating procedures)Show safe shop operation practices.
- * Apply primer and paint products.

(3 C: 0 lect/pres, 3 lab, 0 other)

ABCT 1541 - Advanced and Custom Refinishing

This course will explore various techniques of advanced refinishing such as: tinting, blending, masking, and tri-stage color application. Students will use a variety of types of refinishing equipment and materials to produce let-down panels spray tri-stage paints and have the opportunity to design, mask, and spray custom designed panels of their own.

Student Learning Outcomes:

- * Identify various masking techniques
- * Discuss tinting and blending on a variety of paints and colors
- * Identify problems associated with tri-stage and mica paints and applications
- * Identify and comply with personal safety practices
- * Apply tri-stage and custom finish materials
- * Identify paint gun types, set-up, and variations
- * Discuss paint mixing and spraying considerations

(2 C: 1 lect/pres, 1 lab, 0 other)

ABCT 1580 - Collision Repair II

As weight reduction becomes a driving force to improve fuel economy, manufacturers are looking at alternative materials to build vehicles with. Plastics have been used for many years for vehicle construction, but technicians are being expected to repair more plastics each year. Aluminum has been used on expensive luxury and sports cars but now it is being used on mainstream everyday vehicles. This means tomorrow's technicians will need to repair these substrates with skill and accuracy. Students are introduced to industry accepted methods of repairing both plastic and aluminum. Composites and other non-steel alternatives will be explored in this course. Students in this course will be expected to complete both theory and hands on projects.

Student Learning Outcomes:

- * Demonstrate safe shop operation practices.
- * Explain different techniques used in repairing plastic and aluminum.
- * Identify different types of plastic.
- * Perform plastic welding according to industry standards.
- * Perform adhesive repairs according to technical data sheets.

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

- * Calculate cost of repair versus replacement.
 - * Explain the importance of separating aluminum repair tools from steel repair tools.
 - * Perform aluminum welding to I-CAR standards.
 - * Repair aluminum substrate according to I-CAR standards.
 - * Choose proper materials to apply on non-steel substrates.
 - * Repair SMC and fiberglass according to technical data sheets and manufacturer standards.
 - * Use SOP's (standard operating procedures) to complete a variety of repairs.
 - * Explore alternate repairs to non-steel substrates.
 - * Identify PPE (personal protective equipment) used in the repair of non-steel products.
 - * Use PPE while completing repairs.
- (4 C: 2 lect/pres, 2 lab, 0 other)

ABCT 2535 - Production Lab II

Students demonstrate collision repair procedures on production type vehicles and projects according to ASE Automotive Service Excellence and Inter-Industry Conference on Auto Collision Repair (I-CAR) standards. Students gain hands on experience and continue to refine skills learned in previous courses. Students accomplish this by having the opportunity to observe, practice and demonstrate their skills in an industry like setting. Students will complete projects including refinishing, mechanical, structural measuring and repair. Students will have the opportunity to work with all aspects of the collision industry.

Student Learning Outcomes:

- * Perform daily work according to repair order process.
 - * Use structural repair equipment and measuring systems.
 - * Perform metal finishing techniques to industry standards.
 - * Interpret technical data sheets.
 - * Complete panel removal, replacement and adjustment.
 - * Perform various refinishing application techniques on single and multi stage paints.
 - * Weld various substrates including steel, aluminum and plastic.
 - * Use SOP's to complete projects.
 - * Complete mechanical repairs as they relate to collision repair.
 - * Show safe shop operation practices.
- (2 C: 0 lect/pres, 2 lab, 0 other)

ABCT 2543 - Supervised Internship

Internships help students make the transition from school to work. Placement in shops will be determined after discussion with the student to make sure they are placed in a facility that is compatible with the outcomes they are looking to achieve. Students will work with a mentor to gain knowledge in all aspects of the collision industry. Specific duties to be performed on the job will be arranged by the repair facility, instructor, and the student.

Student Learning Outcomes:

- * Demonstrate problem solving skills
 - * Repair vehicles using an estimate as a guide of repairs needed.
 - * Complete project vehicles to customer satisfaction.
 - * Identify and Comply with personal safety practices.
 - * Use and follow shop reference material to complete projects.
 - * Use time management skills.
 - * Demonstrate team work.
 - * Comply with all facilities policies.
 - * Demonstrate customer service practices in a equitable and inclusive manner.
 - * Maintain daily log.
 - * Use SOP's (standard operation procedures) Demonstrate honesty, integrity, and reliability.
- (C: 0 lect/pres, 0 lab, 0 other)

ABCT 2545 - Collision Refinishing

The refinish process includes many procedures and products. This course will look at the steps necessary to complete a variety of refinish practices. Single stage and multistage paints will be used to perform a variety of refinishing task. From abrasives to undercoats and topcoats, students will cover a variety of subjects related to the refinish process. The latest industry practices will be use to tint, and blend paint for matching the high tech paints being used on todays vehicles. From prepping vehicles, masking, spray gun setup, spray techniques, product application and final sanding and buffing all aspects of the refinish process will be addressed.

Student Learning Outcomes:

- * Identify refinishing safety practices.
 - * Identify appropriate refinishing process.
 - * Select appropriate materials according to the technical data sheets.
 - * Demonstrate surface preparation techniques according to materials being applied.
 - * Show proper paint gun set-up.
 - * Perform proper mixing of refinish materials according to the technical data sheets.
 - * Apply single and multistage paint according to manufacturer's standards.
 - * Comprehend refinish material safety and environmental hazards (SDS).
 - * Prepare plastic substrate for the refinish process in accordance with technical data sheets.
 - * Identify differences between solvent and waterborne refinish materials.
 - * Demonstrate safe shop operation practices.(PPE)Explore different masking materials and practices.
 - * Perform masking techniques.
 - * Use manufacturer's information to plot and tint colors.
 - * Blend paint using manufactures recommendations.
- (4 C: 2 lect/pres, 2 lab, 0 other)

ABCT 2550 - Auto Body Mechanics

Electrical, air conditioning and other mechanical parts often become damaged as a result of an accident. Collision technicians must be able to identify and possibly repair this damage. In this course students will perform minor repairs to all types of mechanical systems. Students will perform repairs to supplemental restraint systems. Environmental concerns and other topics pertaining to mechanical repairs will be addressed.

Student Learning Outcomes:

- * Identify cooling system components.
 - * Inspect and repair cooling system.
 - * Create a system of inspecting, planning and performing brake, suspension and alignment repairs.
 - * Comply with all manufacturer's procedures when servicing, inspecting, and working around supplemental restraint systems.
 - * Comply with all safety and shop operations as outlined in the program requirements.
 - * Demonstrate use of wire diagrams to service interior and exterior wiring systems.
 - * Test, clean, inspect and recharge batteries.
 - * Aim lamps using manual and computer aided equipment to meet MN DOT requirements.
 - * Use electrical test equipment to test voltage, resistance, and amperage in an electrical circuit.
 - * Perform pre and post scans using scan tools.
 - * Observe all EPA regulations and perform A.C. service in compliance to these regulations.
 - * Perform refrigerant reclaiming and recharging procedures.
 - * Follow technical data sheets to perform repairs.
- (4 C: 2 lect/pres, 2 lab, 0 other)

ABCT 2560 - Structural Repair and Analysis

With high strength steel, lighter sheet metal, and glass being used for structural support, today's technicians must fully understand how the automobile functions as a complete unit. Students will identify and perform repairs on structural components in accordance with industry standards. Students will set vehicles on the frame rack, measure and pull damage to vehicle maker's specifications.

Student Learning Outcomes:

- * Complete welds using MIG, STRSW and Aluminum welding equipment according to manufacturer's recommendations.
- * Locate and utilize I-CAR or manufacturer's repair recommendations for full or partial panel replacement.
- * Analyze and perform structural and non-structural repairs to damaged vehicles.
- * Install stationary glass using manufacturer's or I-CAR installation procedures.
- * Complete structural repairs using weld-bond techniques.
- * Use structural and non-structural foams.
- * Measure and pull unibody and frame vehicles.
- * Perform shop safety and operations as outlined in the program requirements.
- * Interpret measuring system diagrams
- * Follow technical data sheets to make structural repairs.

- * Use SOP's to complete repairs.
 - * Write repair orders.
 - * Utilize manual and electronic measuring devices to accurately preform repairs.
- (4 C: 2 lect/pres, 2 lab, 0 other)

ACCT 1215 - Accounting Principles I

This course is an introduction to financial accounting concepts as they apply to business transactions. Students will explore accounting as an information system providing useful information to company stakeholders. Emphasis is on the recording, reporting, and analyzing of a variety of business transactions as they relate to content of the course. Both the preparer and user requirements and expectations are emphasized.

Student Learning Outcomes:

- * Comprehend the role of accounting in business, including the types of business organizations, business stakeholders, ethics in business and the overall profession of accounting.
 - * Journalize business transactions in accordance with Generally Accepted Accounting Principles (GAAP).
 - * Prepare the three basic financial statements.
 - * Create adjusting journal entries required under the accrual method of accounting to properly update accounts at year end.
 - * Define inventory systems.
 - * Apply perpetual and periodic inventory within the accounting system.
 - * Compare the direct write-off and allowance methods to account for uncollectible accounts and their affect on the financial statements.
 - * Account for the purchase, maintenance (depreciation, amortization, depletion) and sale of long-term assets.
 - * Differentiate between current and long-term liabilities.
 - * Explain how to account for contingent and estimated liabilities.
 - * Apply the concept of the time value of money.
 - * Describe the corporate form of business organization, including the sources of equity, characteristics and classes of stock, and effects of dividends.
 - * Account for the issuance of bonds as a method of financing a business.
 - * Account for the investment in debt and equity instruments.
- (4 C: 3 lect/pres, 1 lab, 0 other)

ACCT 1216 - Accounting Principles II

This course covers the analysis, from the preparer and user perspective, of business transactions related to partnerships and corporations. Topics include but are not limited to cash and cash flows, internal control, organization, capital structure, stockholder's equity, earnings, dividends, fair value accounting and retained earnings statement. Also included is the related statistical financial analysis.

Student Learning Outcomes:

- * Analyze financial accounting internal controls for strengths and weaknesses.
- * Prepare bank reconciliations and record the adjustments in the financial records.
- * Apply basic accounting concepts and principles in an ethical way to business transactions.
- * Complete accounting transactions and calculations related to partnerships and limited liability companies.
- * Prepare a properly classified statement of cash flows.
- * Perform basic solvency and profitability analysis on corporate financial statements.
- * Complete an accounting cycle for a business.
- * Journalize financial transactions using special journals.
- * Post journal entries from the general journal and special journals to the general ledger and subsidiary ledgers.
- * Report equity changes in the capital structure of a company resulting from fair value accounting.

Prerequisite(s): ACCT1215

(4 C: 3 lect/pres, 1 lab, 0 other)

ACCT 1217 - Cost Accounting

This course will cover the fundamentals of cost accounting. The course examines accounting practices to record, plan and control material, labor, and overhead costs. The course includes study of job-order, process cost and standard cost systems for manufacturing and service firms. Students will practically apply knowledge to real world scenarios and learn to analyze costs related to the manufacturing process.

Student Learning Outcomes:

- * Describe the cost concepts, cost behaviors, and cost accounting techniques that are applied to manufacturing and service businesses.
- * Apply cost concepts and cost behavior to the solving of management decisions.
- * Determine the costs of products and services.
- * Analyze the profitability of a product or service.
- * Differentiate between job order and process costing methods.
- * Explain standard cost accounting systems.
- * Apply overhead costs using an overhead rate system.
- * Prepare an operating budget for a manufacturer.
- * Prepare common reports used for cost accounting including: cost of good manufactured; job cost sheets; departmental overhead analysis sheets and cost of production reports.
- * Apply departmentalization concepts to increase accountability and accuracy.

Prerequisite(s): ACCT1215

(4 C: 3 lect/pres, 1 lab, 0 other)

ACCT 1219 - Spreadsheets-Microsoft Excel

This course builds knowledge of Microsoft Excel with a concentration on the accounting and finance process. Foundational knowledge is built by introducing the basics of creating and modifying formats to expand depth in the functions of formulas, charts, styles, and conditional formatting. Advanced applications teach students how to create pivot tables to consolidate data, conduct data analysis using software tools, and automate repetitive tasks with macros. Students solve real world problems by applying course concepts.

Student Learning Outcomes:

- * Perform calculations using mathematical, statistical, financial, lookup and logical functions.
- * Develop formulas containing relative and absolute cell references.
- * Create conditional formatting to highlight pertinent information.
- * Learn to manage documents, files and folders to organize spreadsheets.
- * Consolidate data from multiple spreadsheet/workbooks to generate information.
- * Create various chart types using spreadsheet data with attention-getters to pinpoint outliers.
- * Employ data management tools such as filters, hide columns, split screen, and freeze pane on large spreadsheets to to produce information.
- * Employ what-if-analysis to forecast future scenarios.
- * Use Microsoft online help feature to solve unexpected problems in real-world situations.

Prerequisite(s): CPTR1210

(2 C: 1 lect/pres, 1 lab, 0 other)

ACCT 1220 - Payroll Accounting

This course covers the preparation of payroll in compliance with all federal and state payroll and employment laws. By learning federal and state labor laws, students will be able to effectively calculate employee paychecks, maintain payroll records and prepare relevant tax forms. The recording of payroll into the general ledger is reviewed. A comprehensive hands on quarter and year end project is completed to demonstrate practical application of topics covered in the course.

Student Learning Outcomes:

- * Calculate wages and salaries in compliance the Fair Labor Standards Act.
- * Compute federal, state, local withholdings and employee deductions and benefits.
- * Demonstrate an understanding of the payroll impact of federal and state labor laws.
- * Demonstrate an understanding of the calculation, timing and payment responsibilities of employer payroll liabilities.
- * Develop practical working knowledge of proper payroll record keeping requirements utilizing a computerized payroll accounting system.
- * Complete federal and state payroll tax reports.
- * Prepare payroll journal entries.
- * Complete a comprehensive quarter and year end payroll project that meets federal and state regulations.

Corequisite(s): ACCT1215

(2 C: 1 lect/pres, 1 lab, 0 other)

ACCT 1225 - QuickBooks Online

This course is an introduction to computerized accounting software (QuickBooks Online) applications used in maintaining accounting records, generating

management reports, and processing common business transactions with primary emphasis on the general ledger package. Students will further develop skills in maintaining accounting records and have exposure to the accounts receivable, accounts payable, banking, payroll, and inventory modules. A student will be able to maintain an organization's complete accounting system in QuickBooks.

Student Learning Outcomes:

- * Apply Generally Accepted Accounting Principles to business transactions to create and edit purchases, sales, cash disbursements, cash receipts and general journal transactions in a computerized environment.
- * Create subsidiary and general ledger accounts, chart of accounts, and inventory items.
- * Record payroll related transactions.
- * Create accurate paychecks for hourly and salaried employees.
- * Produce financial statements and business reports for management use.
- * Utilize slips and software to record business related banking situations.
- * Reconcile banking transactions.
- * Analyze computerized accounting records for errors.
- * Set up a new company for a service or merchandising business in a computerized environment.
- * Complete the company's accounting cycle.

Prerequisite(s): CPTR1210 or ACCT1215

(3 C: 2 lect/pres, 1 lab, 0 other)

ACCT 2226 - Intermediate Accounting I

This course introduces students to a more in depth analysis of the generally accepted accounting principles. Emphasis will be on the accounting cycle, financial accounting assumptions, the financial statements, and the revenue/cash cycle. Additional focus on the preparation and analysis of business information relevant and useful to external users of financial reports. This also includes a study of the unique characteristics of various elements of the financial statements.

Student Learning Outcomes:

- * Illustrate the basic steps in the accounting cycle.
- * Prepare a properly classified balance sheet in accordance with generally accepted accounting principles.
- * Prepare a single-step and a multi-step income statement in accordance with generally accepted accounting principles.
- * Prepare a properly classified statement of cash flows using both the direct method and the indirect method in accordance with generally accepted accounting principles.
- * Record revenue using various revenue recognition standards.
- * Account for transactions and events within the revenue, receivable, and cash cycles of a business.
- * Apply ratio analysis on financial information to determine the financial strength of a company.
- * Apply ethical standards to accounting principles and procedures.

Prerequisite(s): ACCT1216

(4 C: 3 lect/pres, 1 lab, 0 other)

ACCT 2227 - Intermediate Accounting II

This course is designed to further develop knowledge of financial accounting theory, concepts, practice and procedures related to inventory, debt and equity financing, fixed asset acquisition and utilization and leases. This course also incorporates financial statement analysis to develop students ability to identify key performance areas within the financial statements or possible errors/irregularities within the financial statements. Continued study of generally accepted accounting principles is also included.

Student Learning Outcomes:

- * Account for inventories.
- * Account for debt obligations.
- * Prepare a statement of stockholders' equity.
- * Account for non-current operating assets throughout their life cycle.
- * Account for investments in the various types of debt and equity securities throughout their life cycle.
- * Account for the various types of leases from both the lessee's and the lessor's perspective
- * Apply ratio analysis on financial information to determine the financial strength of a company.
- * Interpret financial statement analysis for possible errors or irregularities.
- * Demonstrate ethical behavior when applying accounting principles and procedures

Prerequisite(s): ACCT2226

(4 C: 3 lect/pres, 1 lab, 0 other)

ACCT 2229 - Managerial Accounting

This course introduces students to the concepts and applications of managerial accounting. Managerial accounting is the process of producing financial and operating information for managers and other internal users to assist in making sound business decisions in managing the firm. The process is driven by the informational needs of management with an emphasis on cost systems, pricing decisions, budgeting, planning and controlling. This course will build students understanding in planning operations, controlling activities, and decision making using a wide variety of practical applications.

Student Learning Outcomes:

- * Distinguish between managerial and financial accounting.
- * Explain the use of a standard manufacturing cost system for planning and control purposes.
- * Apply activity based costing methods.
- * Analyze budgets using variance analysis.
- * Compare the concepts of absorption costing and direct costing.
- * Describe fixed, variable, and mixed cost behavior.
- * Analyze accounting data using cost-volume-profit (CVP) analysis and CVP graphing.
- * Interpret the uses of break-even point (BEP) and changes in BEP.
- * Interpret differential analysis reports to meet various financial objectives.
- * Analyze capital investment decisions.
- * Prepare a statement of cash flows.
- * Differentiate between cost, profit, and investment centers.
- * Calculate return-on-investment including potential residual income.

Prerequisite(s): ACCT1215

(4 C: 3 lect/pres, 1 lab, 0 other)

ACCT 2230 - Income Tax I

This course focuses on United States federal individual income tax. The emphasis is primarily on the interpretation of the Internal Revenue Code. Students will learn to apply the code to determine revenue items that make up gross income, deductions for adjusted gross income, itemized deductions, exemptions, and credits. Using this knowledge, students will analyze tax planning strategies.

Student Learning Outcomes:

- * Use tax-related terminology.
- * Interpret Internal Revenue code sections as they apply to individual income taxes.
- * Identify differences between individual income taxes and other types of taxes.
- * Determine federal individual income, deductions, tax, and credits.
- * Prepare form 1040 and accompanying schedules.
- * Apply knowledge of the Internal Revenue Code to tax planning.
- * Relate federal individual income taxes to other business and individual financial matters.
- * Apply ethical tax practices in tax preparation.

(4 C: 3 lect/pres, 1 lab, 0 other)

ACCT 2231 - Income Tax II

Income Tax II covers a variety of income tax issues. Students will focus on the federal Internal Revenue Code as it applies to corporations and partnerships and learn the similarities, differences, and relationships between individual, corporate, and partnership taxation. Forms, 1120, 1120-S, and 1065 will be used to prepare basic corporate and partnership returns. The course will use the knowledge and skills learned from Income Tax I to prepare individual federal income tax returns using computerized tax preparation software. Students will also learn the Minnesota tax statutes, and how to apply those statutes in preparing individual Minnesota income tax returns.

Student Learning Outcomes:

- * Apply knowledge of the federal and state individual income tax laws.
- * Apply tax law to prepare partnership tax returns.
- * Appraise the tax ramifications of partnership formation and dissolution.
- * Apply corporation tax law to prepare corporation tax returns.
- * Analyze tax scenarios to determine the appropriate tax advice is given to clients.
- * Contrast tax planning under federal and state tax laws.
- * Interpret state tax deductions, credits, additions, and subtractions.
- * Prepare state income tax returns.

Prerequisite(s): ACCT2230
(2 C: 2 lect/pres, 0 lab, 0 other)

ACCT 2234 - Auditing

An audit is an examination of financial statements to determine the accuracy and add credibility to the financial statements. This course is designed to provide students with an understanding of audit objectives and standards. Standards, ethics, and legal responsibilities of the public accounting profession, as well as preparation of audit reports and a simulated audit project are emphasized.

Student Learning Outcomes:

- * Differentiate between the professional, ethical and legal responsibilities of a public accountant.
- * Explain the process involved in evaluating and selecting audit clients.
- * Apply the generally accepted auditing standards that are required to perform a successful audit.
- * Prepare various audit reports that may be filed after the audit based on the audit findings.
- * Perform specific audit procedures on financial statements within a simulated audit project.

Prerequisite(s): ACCT2226
(3 C: 2 lect/pres, 1 lab, 0 other)

ACCT 2235 - Accounting Comprehensive Review

This course serves as a capstone course for graduating students. Topics covered include financial accounting, ethics, business consulting, managerial accounting, business law and taxation. It is also designed to prepare the student for the Comprehensive Examination for Accreditation in Accountancy, as offered by the Accreditation Council for Accountancy and Taxation.

Student Learning Outcomes:

- * Demonstrate the recording of financial information, financial statement preparation, presentation, and reporting.
- * Describe accounting compilation standards.
- * Describe professional ethics as they relate to the accounting profession.
- * Describe business law concepts.
- * Explain the factors involved in business consulting.
- * Apply the rules of federal taxation.
- * Prepare to complete the comprehensive examination for accreditation in accountancy

Prerequisite(s): ACCT2226, ACCT2230
(2 C: 2 lect/pres, 0 lab, 0 other)

ACCT 2236 - Government and Nonprofit Accounting

In the United States, there are over 1.9 million nonprofit organizations and 22,000 state and local governments employing accountants. This course covers the unique fund accounting principles and procedures that apply to these entities, as well as the various financial reporting statements used that differ from those in business organizations. An emphasis is given to the application of recording and reporting the economic information of these organizations, as well as understanding the differences in accounting standards and procedures between nonprofits, state and local governments, and business organizations.

Student Learning Outcomes:

- * Describe the implications of no ownership interest or profit motive on accounting procedures for nonprofit entities.
- * Compare the results and requirements of resource flow versus profit-based financial statements.
- * Identify how different transactions impact the assets of an organization.
- * Record nonprofit and governmental accounting transactions.
- * Prepare basic nonprofit and government financial statements.
- * Classify financial transactions using different nonprofit and governmental accounting funds.
- * Record government transactions for appropriations, encumbrances, expenditures, estimated revenues, and actual revenues.
- * Determine correct basis of accounting by classifying government funds as governmental, fiduciary, or proprietary.
- * Classify government fund balances as nonspendable, restricted, committed, assigned, and unassigned.

Prerequisite(s): ACCT1215
(2 C: 1 lect/pres, 1 lab, 0 other)

ACCT 2280 - Accounting Internship

This internship will be available to students who have demonstrated a readiness and willingness to work in an on-the-job environment. The internship is for the mutual benefit of the student and the host site. All tasks are designed to supplement the SCTCC classroom/lab education. Actual tasks/assignments are determined by the host site as well as the internship advisor.

Student Learning Outcomes:

- * Integrate written and verbal communication skills into the workplace environment.
- * Display critical thinking skills by analysis and application of accounting standards.
- * Apply internship site policies and procedures to daily tasks.
- * Practice professional and ethical business behavior according to internship site standards.
- * Display technical competence in Accounting.
- * Adhere to confidentiality policies and procedures per internship site standards.
- * Complete reports and required documentation for internship advisor.

(C: 0 lect/pres, 0 lab, 0 other)

ANTH 1300 - Introduction to Cultural Anthropology

Meets MN Transfer Goals 5 and 8 - History/Social, Behavioral Sciences and Global Perspective. Students will be introduced to Anthropology as a social science with a particular focus on the subfield of Cultural Anthropology and the diversity of the human experience. They will apply methods and concepts from Cultural Anthropology in analysis of their own culture, specific cultures new to our country and other world cultures using ethnographic accounts. An emphasis will be placed on ways this knowledge and the related skills that are learned in this course are useful for self-understanding and for addressing social issues.

Student Learning Outcomes:

- * Use anthropological methods to describe students' own and other cultures.
- * Accurately apply course concepts in analysis and description of students' own and other cultures.
- * Explain the usefulness of anthropological knowledge and methods for resolving social problems.
- * Compare and contrast different cultural patterns of subsistence and economics, marriage and family, gender and social stratification, social control, religion and art.
- * Describe different aspects of culture and the ways cultures are affected by change.
- * Identify connections between various aspects of culture.
- * Illustrate the integrated nature of culture using specific examples from students' own and other cultures.

Prerequisite(s): ENGL1308, and one of the following: READ0900, READ1308 or ESOL1120, or the appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ARCH 1503 - Introduction to Architectural Drafting

This course introduces the fundamentals of the Architectural Drafting process. It explores the importance of drafting, the required tools and equipment, and the production of orthographic and isometric drawings.

Student Learning Outcomes:

- * Explore building materials and construction methods
- * Apply architectural drafting skills including plans, elevations and sections
- * Illustrate techniques of architectural drafting including line quality, lettering, dimensioning and symbols.
- * Produce plans, sections, and elevations of a simple building.
- * Explore building codes and construction methods
- * Develop drafting skills through projects utilizing basic residential construction methods and their graphical representation.

Corequisite(s): ARCH1522, CNST1502
(2 C: 1 lect/pres, 1 lab, 0 other)

ARCH 1506 - Intro to Architectural CAD

This course will introduce AutoCAD software as a design and drafting tool for Architecture. The student will work with AutoCAD software to create drawings and learn the tools of cad. Concepts include organizing, editing, drawing skills, printing/plotting, adding text and dimensions.

Student Learning Outcomes:

- * Demonstrate AutoCAD basic commands

- * Perform multiple draw functions
 - * Implement modify commands
 - * Apply annotation and dimensioning
 - * Manipulate documents to perform printing and plotting functions
- (3 C: 1 lect/pres, 2 lab, 0 other)

ARCH 1508 - Building Materials and Methods for Architectural Design

This course introduces students to the array of materials used in architectural design and construction, including lumber, panel materials, engineered products, concrete, and metals. The role of adhesives, fasteners and fastening techniques to ensure structural integrity will be studied. This course will also provide students with an understanding of construction practices, techniques, and construction problem solving.

Student Learning Outcomes:

- * Understand the properties and applications of a wide range of materials used within construction projects.
- * Employ industry terminology to identify and analyze structural elements of buildings.
- * Describe the various components of building systems, including foundations, structural systems, thermal and moisture protection systems, finish systems, mechanical systems.
- * Choose materials based on compliance with applicable building codes and architectural design standards.
- * Evaluate various methods of construction used currently and in the past.

Corequisite(s): ARCH1503

(3 C: 3 lect/pres, 0 lab, 0 other)

ARCH 1510 - CAD and Design Studio

This course will prepare the students to use drafting systems to develop presentations, details, sections and construction plans for a multi-story house and a large custom residential project.

Student Learning Outcomes:

- * Determine space requirements for a 2-story house based on project guide lines.
- * Prepare working drawings for a 2-story house (floor plan, foundation plan, elevations, sections, misc. details, site plan and appropriate construction notes) using AutoCAD software.
- * Develop preliminary floor plans for a large custom residential project based on guide lines.
- * Construct working drawings for a large custom residential project (floor plan, foundation plan, elevations, door and window schedules, sections, misc. details, site plan and appropriate construction notes) using AutoCAD software.
- * Create presentation and sales drawings for a large custom residential project.
- * Print and/or plot working drawings using appropriate scale, line weights and paper size.

Corequisite(s): ARCH1534

Prerequisite(s): ARCH1506

(6 C: 2 lect/pres, 4 lab, 0 other)

ARCH 1522 - Residential Design Principles

Study of residential spaces including identification of client needs, industry standards, and space planning concepts.

Student Learning Outcomes:

- * Examine and identify the living, sleeping and service areas of a home
- * Analyze traffic flow
- * Recognize styles of kitchen design
- * Create individual kitchen designs based on project criteria
- * Recognize elements of bathroom layout
- * Create individual bathroom designs based on project criteria
- * Identify the space requirements for living and dining areas
- * Outline the space requirements for bedrooms and closets
- * Analyze the space requirements for garages and exterior living spaces.

(2 C: 2 lect/pres, 0 lab, 0 other)

ARCH 1525 - Estimating for Residential Construction

This course will provide students with insight into the concepts and methodologies required for estimating residential construction projects. Students will become familiar with how materials (metals, concrete, masonry, wood, engineered wood products, plastics, thermal and waterproofing products), methods of installation, and quantity impact the calculation of estimates in a residential construction setting. The application of linear, square, and cubic measurements will be

studied along with the various Minnesota Codes used in residential construction.

Student Learning Outcomes:

- * Employ industry terminology utilized within the estimating process.
- * Analyze differing types of construction methodologies utilized during residential construction.
- * Utilize the principles of estimating informed by plans and specifications of residential construction projects.
- * Organize material takeoffs for building plans.
- * Describe properties of various building materials.
- * Interpret applicable codes and apply them to residential construction estimating.
- * Estimate costs using industry cost sources.
- * Demonstrate consistency in the estimating process.

Prerequisite(s): ARCH1508

(3 C: 2 lect/pres, 1 lab, 0 other)

ARCH 1534 - Residential Design and Presentation

Students will explore architectural history and various American historical house styles. In addition, the students will learn how to professionally prepare color renderings of elevations and floor plans.

Student Learning Outcomes:

- * Identify historical architectural periods and their contributions to current architectural design.
- * Identify exterior design characteristics of various house styles.
- * Examine various types of presentation drawings and rendering styles.
- * Prepare color renderings of enhanced front elevations and floor plans.

Prerequisite(s): ARCH1522

(2 C: 2 lect/pres, 0 lab, 0 other)

ARCH 2506 - Architectural Design Studio I

This course will introduce Revit Architecture software as a design tool for Architecture. Students will develop presentation and working drawings for an affordable housing project. An introduction to light commercial construction techniques will be studied. Students will develop working drawings for a small commercial building utilizing commercial construction standards.

Student Learning Outcomes:

- * Determine and list preliminary design solutions for an affordable single family residence.
- * Draw working and presentation drawings (floor plan, foundation plan, elevations, sections, door and window schedules, site plan and appropriate construction notes) for an affordable single family residence using Revit Architecture Software.
- * Determine and list preliminary design solutions for a small convenience store.
- * Create working drawings (floor plan, elevations, sections, misc details, site plan and appropriate construction notes) for a convenience store using Revit Architecture software.
- * Print and/or plot working drawings using appropriate scale, line weights and paper size.

Prerequisite(s): ARCH1503

(3 C: 1 lect/pres, 2 lab, 0 other)

ARCH 2510 - Architectural CAD II

This course will enable students to use their knowledge of construction materials, systems and practices by drafting the working drawings of a split-level home or twin home. Students will use AutoCAD software to produce the documents necessary for industry standard communication and construction.

Student Learning Outcomes:

- * Determine space requirements for a split-level duplex based on project requirements
- * Develop preliminary floor plans for a split-level duplex building based on project requirements
- * Select appropriate materials and structural systems for a split-level house
- * Draw working drawings for a split-level duplex (floor plan, fdn. plan, elevations, sections, door and window schedules, misc. details, site plan and appropriate construction notes) using AutoCad software
- * Print and/or plot working drawings using appropriate scale, line weights and paper size

Prerequisite(s): ARCH1506

(3 C: 1 lect/pres, 2 lab, 0 other)

ARCH 2518 - Architectural CAD III

This course enables the student to draft the complete working drawings of a commercial remodeling project and a small commercial building using AutoCAD software. The student will select the appropriate building materials and systems to demonstrate their construction knowledge and understanding of project design requirements.

Student Learning Outcomes:

- * Determine demolition and remodeled space requirements based on existing floor plans and project requirements
- * Draw remodeled floor plans, elevations and details using AutoCad software
- * Develop preliminary floor plans for a small commercial building based on project requirements
- * Select appropriate materials and structural systems for a small commercial building
- * Draw working drawings for a small commercial building (floor plan, fdn. plan, elevations, sections, door and window schedules, misc details, site plan and appropriate construction notes) using AutoCad software
- * Print and/or plot working drawings using appropriate scale, line weights and paper size

Prerequisite(s): ARCH2506, ARCH2510

(3 C: 1 lect/pres, 2 lab, 0 other)

ARCH 2522 - Commercial Design Principles and Practice

This course is designed to provide students the principles of design as they apply to multi-family housing and light commercial construction. Topics of study will include aesthetics, building accessibility requirements for ADA (Americans with Disabilities Act), system selections, durability and selected fire and life-safety provisions of the IBC and IRC building codes. Students will study commercial design by reading and analyzing blueprints, specifications and bidding documents from actual commercial projects. Emphasis is placed on reading and understanding commercial working drawings.

Student Learning Outcomes:

- * Access and analyze accessibility requirements of the Americans with Disability Act
- * Apply ADA to commercial building design.
- * Draw details for commercial toilet rooms that meet Minnesota Code and ADA requirements.
- * Develop and draw basic layouts for units in multi-family construction utilizing fire, sound, and other building code requirements.
- * Define and analyze basic design requirements for merchandising facilities.
- * Identify and interpret structural, architectural, mechanical and civil drawings for commercial projects
- * Analyze project manuals for small commercial buildings.
- * Demonstrate an understanding of the CSI format.

Prerequisite(s): CNST1502

(2 C: 1 lect/pres, 1 lab, 0 other)

ARCH 2530 - Sustainable Building Systems

This course will introduce students to the concepts and applications of sustainable building design and construction. Specific areas of study include principles of thermal-dynamics as they apply to building envelopes and the utilization of solar, wind, bio-mass, geo-thermal and fossil fuels to create energy for buildings. Historic and current approaches to sustainable building design will be reviewed as well as systems used to evaluate environmentally appropriate structures.

Student Learning Outcomes:

- * Identify selected models for sustainable design.
- * Develop a definition of sustainable design based on established models.
- * Demonstrate an understanding of thermal dynamics by utilizing software to measure building energy efficiency.
- * Specify R-values for fiberglass, loose fill and rigid insulation types for various building applications.
- * List current applications of solar, wind, bio-mass, geo-thermal and fossil fuels used in buildings.
- * Identify basic mechanical building systems on commercial plans.
- * Develop a sustainable design vocabulary based on industry terminology.
- * Evaluate projects using the LEED Rating system.

(2 C: 2 lect/pres, 0 lab, 0 other)

ARCH 2542 - Structural Building Systems

Statics and strengths of construction materials are presented. Structural and

architectural elements in soil mechanics, structural wood, concrete, steel, pre-stressed and post tensioned concrete are the primary emphasis. Students will develop skills in using basic structural formulae and procedures. Students will also learn procedures for producing shop drawings for various materials.

Student Learning Outcomes:

- * Calculate footing sizes using building loads and soil bearing data.
- * Identify details for pre-cast, pre-stressed concrete products.
- * Create construction details for various methods of commercial construction projects
- * Identify procedures used in Cast-in-place concrete.
- * Recognize basic steel shapes and calculate W and S shaped beam sizes using building loads and load charts.
- * Classify solid sawn lumber sizes and calculate beam sizes using building loads and WPA span calculator.
- * Identify engineered wood products (I-joist, LVL, PSL, roof and floor trusses.)
- * Calculate sizes for various engineered lumber products using building loads.

Prerequisite(s): CNST1506

(3 C: 1 lect/pres, 2 lab, 0 other)

ARCH 2551 - Professional Constructor Seminar

This course will enable students to prepare a resume, letters of application, and a personal portfolio. Students will study interviewing techniques and job seeking skills.

Student Learning Outcomes:

A student successfully completing this course will:

- * Assess career opportunities and determine employment objectives.
- * Select a resume format and prepare a personal resume
- * Prepare a job application letter.
- * Identify and present interviewing techniques.
- * Identify and assemble a personal portfolio of student work.

(1 C: 1 lect/pres, 0 lab, 0 other)

ART 1300 - Art Appreciation

Meets MN Transfer Curriculum Goal Area 6 Humanities- This course is an introduction to the visual arts. Students will be introduced to the processes, principles, and purposes of visual art. Students will explore the visual elements and principles of design, will learn about the media of the visual arts, will learn about the history of the visual arts, and will learn to evaluate artists' work. Activities will include text reading, slide lectures, films, and museum/gallery tours.

Student Learning Outcomes:

- * Demonstrate an awareness of the variety of visual art forms and art works.
- * Identify major artworks and monuments from western and non-western origins.
- * Describe artworks and analyze artists' choices using the formal language of the visual arts.
- * Compare and contrast works of art using the language of the visual arts.
- * Demonstrate an understanding that artworks are expressions of values within a historical, social, and cultural context.
- * Demonstrate the ability to respond critically to works of visual art.
- * Articulate informed responses to works of visual arts using the language of the visual arts.

Prerequisite(s): ENGL1308, and one of the following: READ0900, READ1308 or ESOL1120, or the Appropriate Placement Score.

(3 C: 3 lect/pres, 0 lab, 0 other)

ART 1301 - Introduction to Studio Art

Meets MN Transfer Curriculum Goal Area 6 Humanities and Fine Arts. This course introduces students to techniques, materials and concepts used in the visual arts. Students will explore and produce works in various traditional and contemporary media. Course activities will promote an understanding of the nature of art, the elements and principles of a visual language, and different perspectives on art. This course is intended for students with little or not experience in studio art, as well as students interested in trying a variety of media. Drawing, painting, printmaking, sculpture, and/or photography may be explored.

Student Learning Outcomes:

- * Recognize a variety of visual art forms and artworks.
- * Respond to works of art utilizing the vocabulary of the visual arts.
- * Demonstrate skills in using a variety of materials and techniques.
- * Create original works of art that use unique solutions to formal and conceptual

problems.

- * Identify and apply elements of art and principles of design as a means to communicate visual ideas.
- * Explain and evaluate personal artwork and the work of others through the process of critique.

Prerequisite(s): ENGL1308, and one of the following: READ0900, READ1308 or ESOL1120, or the appropriate placement score. .
(3 C: 3 lect/pres, 0 lab, 0 other)

ART 1310 - Foundation 2D Design and Materials

Meets MN Transfer Curriculum Goal Area 6 - Humanities. This course introduces the vocabulary and tools essential for two-dimensional image creation. This course develops a working knowledge of the use of the basic elements and principles of two-dimensional design. Students will explore creative problem solving by producing design projects in a variety of tools, techniques, and materials. This course emphasizes the elements, principles, and ideas that constitute the shared language of all visual arts. Production and research will be an integral part of the course as students learn to apply the elements and principles of design to artistic projects.

Student Learning Outcomes:

- * Identify and explain the elements and principles of two-dimensional design.
- * Apply the elements and principles of two-dimensional design in a variety of assigned creative projects, including non-objective, abstract, representational, and typographic compositions.
- * Create and explain original designs that solve a variety of formal problems.
- * Show basic technical proficiency in the media introduced in class.
- * Respond critically to works of visual arts and design using the language of art and design, both verbally and in writing.
- * Evaluate works of art and design, both formally and conceptually.
- * Explore form and content and their relationship via hands-on creative projects.

Prerequisite(s): ENGL1308, and one of the following: READ0900, READ1308 or ESOL1120, or the appropriate placement score. .
(4 C: 3 lect/pres, 1 lab, 0 other)

ART 1321 - Foundation Drawing I

Meets MN Transfer Curriculum Goal Area 6 Humanities and Fine Arts. This course introduces students to the basic ideas, materials, and methods of drawing. Students will work primarily from observation to explore line, shape, form, space, texture, and value on a two-dimensional surface. Students will engage in the creative process through a variety of techniques, styles and media. Students will develop perceptual awareness, eye/hand coordination, and an increased appreciation for and knowledge of contemporary and historical drawing concerns.

Student Learning Outcomes:

The student will:

- * Demonstrate the ability to render form and space from observation onto the two-dimensional surface.
- * Develop technical skills and proficiencies necessary to those working with drawing media.
- * Examine and explain technical, aesthetic, and design issues inherent in drawing.
- * Demonstrate engagement in the creative process by creating drawings.
- * Develop an appreciation for the aesthetic principles governing works in drawing.
- * Make aesthetic judgments appropriate to drawing, respond critically to works, and articulate informed personal reactions to works in the arts.
- * Develop strategies to express ideas through drawing.
- * Employ drawing as a means of personal expression.

Prerequisite(s): ENGL1308, and one of the following: READ0900, READ1308 or ESOL1120, or the appropriate placement score. .
(4 C: 3 lect/pres, 1 lab, 0 other)

ART 1330 - Introduction to Painting

Meets Mn Transfer Curriculum Goal Area 6 Humanities - This course introduces the technical, conceptual, and aesthetic aspects of painting using acrylic paints. Students will explore basic problems of color, form, and composition using traditional and contemporary methods. Students will engage in the creative process and informed personal reaction and critical response to both historical and class works will be fostered.

Student Learning Outcomes:

- * Demonstrate the ability to render forms and space from observation onto the

two-dimensional surface.

- * Show basic technical proficiency in the use of acrylic painting media.
- * Solve visual problems creatively while demonstrating an awareness of cultural and/or historical precedent.
- * Show proficiency with diverse painting styles.
- * Demonstrate an awareness of composition, value, color, mark-making, and texture.
- * Employ painting as a means of personal expression while developing ability with the media.
- * Critically respond verbally and in writing to both the paintings of their peers and to works drawn from the history of art.
- * Evaluate their own artworks, both formally and conceptually.

Prerequisite(s): ENGL1308, and one of the following: READ0900, READ1308 or ESOL1120, or the appropriate placement score.
(4 C: 3 lect/pres, 1 lab, 0 other)

ART 1340 - Foundation Digital Photography

Meets MN Transfer Curriculum Goal Area 6 - Humanities and Fine Arts. This course is an introduction to photography as a creative medium and focuses on the production of photographs. The digital camera is used as a means for individual creative expression. The emphasis in this course is on aesthetic, technical, conceptual, and historical concerns in photography. A wide range of topics will be covered including creative expression, visual composition, and the history of photography as a creative medium. Production and research will be an integral part of the course as students learn to apply artistic principles to photography.

Student Learning Outcomes:

- * Identify, explain, and demonstrate the ability to perform basic camera and computer functions.
- * Show basic technical proficiency in the digital photographic medium.
- * Apply the elements and principles of art, design, and photographic structure in a variety of assigned creative projects including portraiture, landscape, and still life.
- * Create original photographs that address a variety of formal and conceptual problems and photographic applications.
- * Explain one's own aesthetic, conceptual, and technical decision making processes as they relate to creative projects in digital photography.

Prerequisite(s): ENGL1308, and one of the following: READ0900, READ1308 or ESOL1120, or the appropriate placement score.
(4 C: 3 lect/pres, 1 lab, 0 other)

ART 1350 - Foundation Art History 1: Ancient to Pre-Renaissance

Meets MN Transfer Curriculum Goal Area 6 and Goal Area 8. This course examines painting, sculpture and architecture of cultures from prehistory to the end of the 14th Century. Through slide lectures, discussions, videos, and/or museum/gallery visits, students will explore the history of the world through visual art and material culture with a global perspective.

Student Learning Outcomes:

- * Analyze major art movements from prehistory to the 14th century, and the stylistic characteristics which differentiate them.
- * Identify key examples of art works of different styles created around the world during this period.
- * Explain the basic visual elements and principles of design present in art work of this period.
- * Describe works of art in terms of visual elements and principles of design.
- * Describe political, economic, and cultural factors that contribute to the differences and similarities in artistic trends throughout the world.
- * Analyze the work of artists as expressions of human values within an historical, cultural, and social context.
- * Formulate informed responses to works of visual arts produced worldwide.
- * Compare art historical periods by writing critical and analytical essays using academic research and scholarship.

Prerequisite(s): ENGL1308, and one of the following: READ0900, READ1308 or ESOL1120, or the appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ART 1351 - Foundation Art History 2: Renaissance to Contemporary

Meets MN Transfer Curriculum Goal Area 5 and Goal Area 6. This course examines painting, sculpture, architecture, crafts and other art forms and the context that informed their creation from the 15th century through present day. Through slide lectures, discussions, videos, and/or museum/gallery visits, students will

gain a historical perspective of the world through visual art and material culture.

Student Learning Outcomes:

- * Analyze major art movements from the 15th century to present day, and the stylistic characteristics which differentiate them.
- * Identify key examples of art works of different styles created around the world during this time period.
- * Explain the basic visual elements and principles of design present in art work of this period.
- * Describe works of art in terms of visual elements and principles of design.
- * Describe political, economic, and cultural factors that contribute to the differences and similarities in artistic trends throughout the world.
- * Analyze the work of artists as expressions of human values as well as reflections of the historical, cultural, and social context.
- * Formulate informed responses to works of visual arts produced worldwide.
- * Compare art historical periods by writing critical and analytical essays using academic research and scholarship.

Prerequisite(s): ENGL1308, and one of the following: READ0900, READ1308 or ESOL1120, or the appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ART 1370 - Introduction to Printmaking

Meets Mn Transfer Curriculum Goal Area 6 Humanities and Fine Arts. This course introduces the technical, conceptual, and aesthetic aspects of printmaking. Students will explore relief printmaking, collagraphy, monoprint, monotype, and/or etching. Students will engage in the creative process through a variety of printmaking techniques, styles and media. A range of historical and contemporary prints and printmaking processes will be explored.

Student Learning Outcomes:

- * Show proficiency with diverse printmaking processes and be able to identify prints made through different printmaking methods.
- * Examine and explain technical, aesthetic, and design issues inherent in printmaking.
- * Implement the elements of art and the principles of design in printmaking.
- * Demonstrate engagement in the creative process by creating prints.
- * Analyze the aesthetic principles governing works in printmaking.
- * Make aesthetic judgements appropriate to printmaking, respond critically to works, and articulate informed personal reactions to works in the arts.
- * Develop strategies to express ideas through printmaking and as a means of personal expression.
- * Understand the health and safety practices in the field of printmaking.

Prerequisite(s): ENGL1308, and one of the following: READ0900, READ1308 or ESOL1120, or the appropriate placement score.
(4 C: 3 lect/pres, 1 lab, 0 other)

ART 1380 - Foundation 3D Design and Sculpture

Meets Mn Transfer Curriculum Goal Area 6. This course introduces students to the application of design principles to artwork in three dimensions. The course includes lectures, critiques and studio time. Student will explore sculptural methods as a means of studying design concepts.

Student Learning Outcomes:

- * Develop proficiency with creating three dimensional artwork using a variety of material and techniques.
- * Demonstrate creative solutions to formal and conceptual problems through artistic production.
- * Apply elements of art and principles of design as a means to communicate visual ideas
- * Compare historic and contemporary styles, techniques, and materials for three dimensional design.
- * Assess three dimensional work according to aesthetic and formal concerns, as well as an expression of historical and societal context.
- * Articulate an understanding of the basic study of symbolism and iconography as elements of visual communication.
- * Evaluate personal artwork and the work of others through the process of critique.
- * Demonstrate an understanding of health and safety issues within the discipline.

Prerequisite(s): ENGL1308, and one of the following: READ0900, READ1308 or ESOL1120, or the appropriate placement score.
(4 C: 3 lect/pres, 1 lab, 0 other)

ASTR 1300 - Astronomy

Meets MN Transfer Goal 3 - Natural Sciences. This is an introductory astronomy course designed for non-science majors students. It emphasizes the physical sciences of astronomy and covers the history of astronomy, properties of light, telescopes, formation of the solar systems, Stellar configuration, Stellar evolution, quasars, dark matter, galactic structure, and galactic evolution.

Student Learning Outcomes:

- * Describe fundamental physical principles and laws of astronomy.
- * Demonstrate knowledge of measurement techniques used in contemporary astronomy.
- * Define various astronomical objects including planets, dwarf planets, plutinos, plutoids, nebula, asteroids, comets, and black holes.
- * Describe lunar phases, eclipses, and the reasons for the seasons.
- * Label various positions of planets in planetary configuration.
- * Explain three Kepler's laws of planetary motion.
- * Outline the different portion of electromagnetic spectrum based on wavelength, frequency, and energy.
- * Demonstrate the understanding of the theory of solar system and stellar system formation and evolution.
- * Distinguish the physical properties of the planets of our solar systems.
- * Identify different segments of star classification on Hertzsprung - Russel (H-R) diagram.
- * Distinguish between planets and dwarf planets, reflection telescopes and refraction telescopes, plutinos and plutoids and retrograde motion and prograde motion.
- * Explain the importance of Hubble's Law.

Prerequisite(s): ENGL1308, and one of the following: READ0900, READ1308 or ESOL1120, or the appropriate placement score .
(3 C: 3 lect/pres, 0 lab, 0 other)

ASTR 1301 - Astronomy Lab

Meets MN Transfer Goal 3 - Natural Sciences. This is an introductory astronomy lab course designed for non-science majors. It can be taken by itself as a stand-alone course or in conjunction with an Astronomy course. In this course students will learn about the constellations, stars, telescopes, instruments and measurements astronomers make to determine the distances to the stars and planetary bodies. This laboratory course will focus on gaining an understanding of the instruments, observations, measurements, and calculations used by astronomers to determine the properties of astronomical objects and the distances to these astronomical objects.

Student Learning Outcomes:

- * Conduct experiments to test hypotheses and mathematical formulas.
- * Use appropriate computer technology and software to perform experiments, perform analysis, and prepare reports.
- * Identify diverse asterisms, planets, and stars and learn how to discover astronomical objects in the sky.
- * Verify theoretical astronomical concepts through practical investigation.
- * Communicate astronomical theory, experimental results and real-world applications of astronomical concepts and laws.
- * Demonstrate cooperative learning skills.

Prerequisite(s): ENGL1308, and one of the following: READ0900, READ1308 or ESOL1120, or the appropriate placement score.
(1 C: 0 lect/pres, 1 lab, 0 other)

ASTR 1305 - Introduction to Astronomy

Meets Mn Transfer Curriculum Goal Area 3 - This course introduces the science of modern astronomy and it is intended for non-science major students. It emphasizes physical sciences of astronomy and it covers the history of astronomy, properties of light, telescopes, formation of the solar systems, Stellar configuration, Stellar evolution, and galactic structure and evolution. This course encompasses a lab component and it acquaints students acquainted with general methods and techniques of astronomy. The lab component aids students with comprehending difficult astronomy concepts. It satisfies necessity of natural sciences lab course under Goal Area 3 of Minnesota Transfer Curriculum.

Student Learning Outcomes:

- * Describe fundamental physical principles and laws of astronomy.
- * Demonstrate knowledge of measurement techniques used in contemporary astronomy.
- * Define various astronomical objects including planets, dwarf planets, plutinos, plutoids, nebula, asteroids, comets, and black holes.

- * Describe lunar phases, eclipses, and the reasons for seasons.
- * Label various positions of planets in planetary configuration.
- * Explain three Kepler's laws of planetary motion.
- * Outline the different portion of electromagnetic spectrum based on wavelength, frequency, and energy.
- * Demonstrate the understanding of the theory of solar system and stellar system formation and evolution.
- * Distinguish the physical properties of the planets of our solar systems.
- * Identify different segments of star classification on Hertzsprung - Russell (H-R) diagram.
- * Distinguish between planets and dwarf planets, reflection telescope and refraction telescope, plutinos and plutoids and retrograde motion and prograde motion.
- * Explain the importance of Hubble's Law.
- * Conduct experiments to test hypothesis and mathematical formula.
- * Use appropriate computer technology and software to perform experiments, perform analysis, and prepare reports.
- * Identify diverse asteroids, planets, and stars and learn how to discover astronomical objects in the sky.
- * Verify theoretical astronomical concepts through practical investigation.
- * Prepare presentation about assigned projects for night sky observations and present it to the peers and faculty.
- * Communicate astronomical theory, experimental results and real-world applications of astronomical concepts and laws.
- * Demonstrate cooperative learning skills.

Prerequisite(s): ENGL1308, and one of the following: READ0900, READ1308 or ESOL1120, or the appropriate placement score.
(4 C: 3 lect/pres, 1 lab, 0 other)

AUTO 1508 - Automotive Suspension and Alignment

Everyone wants to have a smooth comfortable ride in their cars and light trucks, and to maximize the most life out of their tires. To achieve this we need to start with a good steering and suspension system, and an alignment of the vehicle's tires. In this course students will have the opportunity to study steering and suspension system terminology, and theory of operation. To diagnosis, and repair the effects of abnormal tire wear, undesirable handling characteristics, noises, sags and other steering, suspension and alignment problems. To apply, specific geometric angles, and terms, as used in the inspection and repair of vehicle suspensions and four-wheel alignments. The course will also provide and introduced to some of the latest technologies and equipment used to measure and correct these alignment angles. How to diagnosis and repair Tire Pressure Monitoring System (TPMS) concerns. Along with developing the skills necessary to perform at an entry level technician position.

Student Learning Outcomes:

- * Identify and perform safety procedures
- * Develop pollution preventive procedures involving lubricants, parts and components, and disposal or recycling of tires.
- * Diagnose and repair abnormal tire wear, undesirable handling characteristics, noises, sags and other steering and suspension problems using processes, tools and equipment consistent with the automotive industry.
- * Inspect and maintain all steering and suspension components and systems.
- * Diagnose and repair steering and suspension system problems using processes, tools and equipment consistent with automotive industry.
- * Introduced or proficient with the latest technologies and equipment used to measure and correct wheel alignment angles.
- * Diagnose TPMS related concerns
- * Relearn/reprogram TPMS sensors after service/repairs

Prerequisite(s): TRAN1503.

(4 C: 2 lect/pres, 2 lab, 0 other)

AUTO 1510 - Chassis Electrical

This is an introductory course to the chassis electrical circuits and components, such as the battery, starting, charging system operations, diagnosis, and replacement procedures. Students will develop skills in reading electrical wiring diagrams, using trouble shooting flow charts, and diagnostic testing equipment such as test lights, digital multi meter, and scan tools. Students will apply these skills in a real world hands-on lab experience to diagnose, locate, and repair all electrical failures throughout the entire vehicle. Students will be introduced to many different highly technical accessories and their functions, such as navigation, adaptive cruise control, lighting systems, lane departure systems, autonomous, and hybrid vehicles, along with their connection to each other through a number

of different modules.

Student Learning Outcomes:

- * Interpret the basic elements of reading electrical wiring diagrams.
- * Organize a troubleshooting plan for electrical circuit failures.
- * Describe and practice the use of electrical diagnostic testing equipment to located failed electrical circuits.
- * List and explain the internal components of the starter and its effects on the electrical system.
- * List and explain the internal components of the ac generator and its effects on the electrical system.
- * Analyze the battery, starting, and charging system through performance monitoring to determine a failure of these three main electrical systems.
- * Remove and install the battery, starter and ac generator using the correct procedures to bring the vehicle back to normal operation.
- * Identify and preform preferred processes to complete electrical wiring repairs.
- * Analyze multiple accessory systems through performance monitoring to determine a failure in these high technical interconnected electrical features.

Corequisite(s): TRAN1503, TRAN1504.

(4 C: 2 lect/pres, 2 lab, 0 other)

AUTO 1512 - Engine Repair Theory

This introductory course covers the principle operation and component failure diagnostic procedures of internal combustion engines. Topics include mechanical components and structural composition, parts identification, engine disassembly and re-assembly procedures as well as turbo, super charger and diesel engine construction and operation. Maintenance schedules and procedures for oil, coolant, water pump, timing belt and serpentine belt will be covered. Students will also utilize real-world shop procedures by filling out electronically formatted repair orders, verifying customer concerns, diagnosing the failure and cause, and planning how to perform the correction.

Student Learning Outcomes:

- * Describe procedures for removing and reinstalling engines.
- * Identify engine components, including their structural composition and function relative to other components.
- * Describe how to assemble an engine including the importance of cleaning gasket material from mating surfaces using correct tools and techniques.
- * Utilize industry-standard inspection tools and techniques to identify abnormal wear and potential preventative actions.
- * Utilize customer concerns to diagnose probable failures.
- * Prepare a repair estimate, including costs and a detailed list of parts materials needed to complete the repair.
- * Develop a plan of action to remove, repair, or replace worn engine components.
- * Develop a repair plan that utilizes manufacturer specific instructions and specifications.
- * Explain the importance of successful vehicle repair and customer satisfaction.

(2 C: 2 lect/pres, 0 lab, 0 other)

AUTO 1514 - Engine Repair Lab

This course gives students hands-on experience in diagnosing engine mechanical failures through disassembling and reassembling an engine block and cylinder heads. They will identify internal engine parts and perform wear measurements. Students will also diagnose customer concerns on engine mechanical failures such as low compression, abnormal engine noise, and coolant and oil loss on both internal and external components of the engine. Multiple diagnostic methods, tools and equipment will be used. Students will perform many different levels of maintenance to the engine such as oil and coolant flushes, water pump, timing belt, and serpentine belt replacements. Students will also utilize real-world shop procedures by filling out electronically formatted repair orders, verifying customer vehicle concerns, diagnosing the failure, performing the repair, and confirming with the customer that their concern has been addressed.

Student Learning Outcomes:

- * Remove and reinstall an engine from either a front or rear wheel drive vehicle.
- * Disassemble and reassemble an engine using industry-standard tools, materials, and techniques.
- * Examine internal engine parts for mechanical wear, cause of failure, and potential prevention of failure.
- * Prepare a repair estimate, including costs and a detailed list of parts and materials needed to complete the repair.
- * Develop a repair plan that utilizes manufacturer-specific instructions and

specifications.

- * Use manufacturer-specific guidelines and procedures for engine installation and repairs.
- * Confirm the customer's concerns were corrected by the repair.

Prerequisite(s): TRAN1503, TRAN1504.

(4 C: 0 lect/pres, 4 lab, 0 other)

AUTO 1516 - Brakes

Did you know that every car, truck, and factory production vehicle on the road has more brake horsepower than engine horsepower? In this course we shall examine the theory and operation of the hydraulic brake system. How to effectively diagnosis and repair disc, drum, and parking brakes. We will also cover the operation and repair of anti-lock brakes and how it works with our foundation brake system.

Student Learning Outcomes:

- * Use appropriate asbestos collection equipment.
- * Discuss the different types and disposal of brake fluids, and where the appropriate fluids should be used.
- * Perform brake inspections and determine condition of the brake friction material and hardware.
- * Inspect the condition of brake hoses and lines.
- * Identify the different types of flares and unions that are used in hydraulic brake systems.
- * Perform brake service as needed to restore the brake system to proper operating condition.
- * Diagnose brake problems related to noise, handling, or improper function of brake components.
- * Discuss the theory, operation and repair of anti-lock brakes and traction control systems.

Prerequisite(s): TRAN1503.

(4 C: 2 lect/pres, 2 lab, 0 other)

AUTO 2502 - Engine Ignition and Emission Systems

Students will develop skills in engine performance on gasoline four stroke engines. Lab work consists of diagnosis and repair procedures on ignition, emissions and related electrical systems on late model vehicles. Students will learn ignition, emission, turbo and supercharging systems operation and perform engine performance service in accordance with manufacturer's standards.

Student Learning Outcomes:

- * Demonstrate job entry skill development when performing basic diagnosis of engine systems.
- * Assess auto computer systems using proper test equipment.
- * Demonstrate ethical practices as it relates to engine performance service procedures.
- * Show technician/mechanic professionalism.
- * Perform inspection and repair procedures of primary and secondary ignition systems.
- * Perform engine diagnostic procedures including compression and cylinder leakage tests.
- * Perform tests of crankshaft and camshaft sensors.
- * Perform tests of catalytic converter systems.
- * Demonstrate the ability to clean, adjust the throttle body and test the Idle Air Control (IAC) system.
- * Diagnose and repair turbo charging and supercharging systems.
- * Diagnose and repair engine oil and coolant leaks.
- * Document vehicle data and work performed on repair orders.

Prerequisite(s): TRAN1503, TRAN1504, and TRAN1517.

(4 C: 2 lect/pres, 2 lab, 0 other)

AUTO 2505 - Engine Fuel and Emission Systems

Students will develop skills servicing fuel and emission systems. Lab work consists of diagnosis and repair procedures on fuel, computer, and emission systems on late model vehicles. Students should be able to describe system operation and perform fuel system service in accordance with manufacturer's standards. Students will learn to describe computer and sensor operation and perform computer system service in accordance with manufacturer's procedures. Students will also need to accurately document vehicle information and work performed on repair orders.

Student Learning Outcomes:

- * Demonstrate job entry skill development when performing basic diagnosis of

engine systems.

- * Demonstrate use of a 4/5 exhaust gas analyzer.
- * Perform computer component service and repairs using scan data.
- * Perform inspection and repair procedures on fuel systems.
- * Perform inspection and repair procedures of engine control sensors.
- * Perform diagnosis and repair of Evaporative Emission Control (EVAP) systems in accordance with manufacture's standards.
- * Perform diagnosis and repair of Exhaust Gas Recirculation (EGR) systems in accordance with manufacture's standards.
- * Perform diagnosis and repair of AIR and Positive Crankcase Ventilation (PCV) systems in accordance with manufacture's standards.
- * Document vehicle data and work performed on repair order.

Prerequisite(s): TRAN1503, TRAN1504, and TRAN1517.

(5 C: 3 lect/pres, 2 lab, 0 other)

AUTO 2506 - Principles of Torque Transfer

How engine torque is transferred to the wheels is the focus of this comprehensive drive train course. Students will learn the theory of torque multiplication and division, applying it to all automotive and light truck applications. Operation, diagnosis and repair of manual transmissions and transaxles, transfer cases, differentials, propeller shafts and front driving axles will be the main topic. This course includes All Wheel Drive and Four Wheel Drive applications. All aspects of driveline repair on automotive and light truck applications will be practiced, with the exception of automatic transmission and transaxle overhaul.

Student Learning Outcomes:

- * Implement safety procedures in accordance with automotive repair industry standards.
- * Apply basic principles of torque multiplication and division using gears to the operation and design of manual transmission/transaxles, transfer cases and differentials.
- * Analyze mechanical and electrical synchronization of two or more components and transfer of torque through constant or variable velocity conveyors.
- * Diagnose and repair driveline component failures in automotive and light truck applications, including locking hubs and AWD/4WD electronic control systems using processes, tools and equipment consistent with our industry while working at the performance level of an entry level technician.
- * Perform driveline maintenance procedures on automotive and light truck applications.
- * Remove, rebuild and replace a manual transmission/transaxle and transfer case. Overhaul a differential.
- * Practice pollution prevention procedures involving storage, disposal or recycling of fluids and parts.

Prerequisite(s): AUTO1510, TRAN1503, and TRAN1504.

(7 C: 2 lect/pres, 5 lab, 0 other)

AUTO 2512 - Driveline Repair

This lab course offers the opportunity for students to advance their abilities in the techniques and procedures of diagnosing and repairing driveline failures including automatic transmission and transaxle overhaul.

Student Learning Outcomes:

- * Identify and perform safety procedures relating to the automotive repair industry.
- * Service and adjust automatic transmissions/transaxles repairing leaks and minor malfunctions including related cooler and electrical circuits using processes, tools and equipment consistent with our industry standards.
- * Access and synthesize information in a timely manner, using pressure gauges, Digital Volt-Ohm Meter (DVOM) and scan tools, air tests, road tests and reference material to accurately diagnose transmission/transaxle failures or problems consistent with industry standards.
- * Remove, repair or rebuild and install an automatic transmission and transaxle consistent with industry standards.
- * Diagnose and repair driveline component failures in automotive and light truck applications, including locking hubs and AWD/4WD electronic control systems using processes, tools and equipment consistent with industry standards.
- * Remove, rebuild and replace a manual transmission/transaxle and transfer case consistent with industry standards.
- * Overhaul a differential consistent with industry standards.
- * Practice pollution preventive procedures involving storage, disposal or recycling of fluids and parts.

Prerequisite(s): AUTO1510, AUTO2506, TRAN1503, and TRAN1504.

AUTO 2513 - Automatic Transmission and Transaxle Overhaul

Advancements in the electronic control of automatic transmissions and transaxles require a good understanding of the hydraulic, mechanical, and electronic functions of these units in order to accurately diagnose problems. Students will study and apply the operation, repair, diagnosis and overhaul of automatic transmissions and transaxles. Students will learn automatic transmission internal mechanical and hydraulic components and overhaul procedures as well as the scan tools needed to diagnose them.

Student Learning Outcomes:

- * Implement safety procedures in accordance with automotive repair industry standards.
- * Apply basic hydraulic and electric/electronic theory to the principles of torque multiplication and division using gear systems in automatic transmissions and transaxle operation.
- * Service and adjust automatic transmissions/transaxles.
- * Test, diagnose, and repair shift, pressure control, and lockup control solenoids.
- * Access and synthesize information using pressure gauges, Digital Vol-Ohm Meter (DVOM) and scan tools, air tests, road tests and reference material to accurately diagnose transmission/transaxle failures or problems.
- * Remove, remanufacture and replace an automatic transmission and transaxle.
- * Practice pollution prevention procedures involving storage, disposal or recycling of fluids and parts.

Corequisite(s): AUTO2512

Prerequisite(s): AUTO1510, AUTO2506, TRAN1503, and TRAN1504.

(4 C: 2 lect/pres, 2 lab, 0 other)

AUTO 2514 - Heating and Air Conditioning

This course covers the principles of automotive heating and air conditioning systems. Students will learn about the various types of systems used, how to diagnose malfunctions, and use the proper legal procedures for handling refrigerants. Students will learn to test and repair heating and air conditioning systems. The lab portion gives hands on experience, diagnosing, evacuating, replacing of defective components, charging, and performance testing of heating and air conditioning systems.

Student Learning Outcomes:

- * Examine Environmental Protection Agency (EPA) regulations and perform AC service in compliance to these regulations.
- * Perform partial recharge or complete recharge and performance tests.
- * Demonstrate refrigerant reclaiming and recycling procedures.
- * Perform refrigerant leak detection using electronic or dye methods.
- * Disassemble and reassemble heating and air conditioning components using correct tools and procedures.
- * Identify heating and cooling system components and operation.
- * Perform heating and cooling system repairs.

Prerequisite(s): TRAN1502, TRAN1503, TRAN1504.

(3 C: 1 lect/pres, 2 lab, 0 other)

AUTO 2520 - Engine Driveability

Students will learn advanced diagnostic procedures concerning engine performance problems. Lab work consists of using oscilloscopes, lab scopes, Digital Volt-Ohm Meter (DVOM) meters and scan tool usage when repairing engine performance problems on today's vehicles. Students will learn to perform engine performance service in accordance with manufacturer's procedures.

Student Learning Outcomes:

- * Demonstrate job entry skill development when performing basic vehicle diagnosis.
- * Assess driveability symptoms using a developed system approach.
- * Demonstrate ethical practices as it relates to engine performance service procedures.
- * Perform service module reflashing procedures in accordance with manufacturer's specifications.
- * Assess cam phasing and how it affects air flow through an internal combustion engine.
- * Demonstrate use of diagnostic procedures using a lab scope.
- * Demonstrate automotive technician professionalism.
- * Document vehicle data and work performed on repair orders.

Prerequisite(s): AUTO2502, AUTO2505.

(3 C: 1 lect/pres, 2 lab, 0 other)

AUTO 2524 - Advanced Electronic Systems

This course is designed to equip students with knowledge and practical skills in handling hybrid, electric, and self-driving vehicles, along with a focus on data lines and anti-theft systems. Through a combination of theoretical instruction and hands-on lab work, students will explore modern automotive technology, preparing them for the evolving landscape of the automotive industry. In the lab component of the course, students will utilize scan tools for the diagnosis and repair of electronic and mechanical systems found in late-model vehicles. Through this process, students will develop proficiency in communicating system operations and performance service in accordance with manufacturer specifications.

Student Learning Outcomes:

- * Conduct inspection and repair procedures for data line communication systems.
- * Understand the importance of wearing (PPE) personal protection equipment while diagnosing and repairing electric and hybrid vehicles.
- * Understand inspection and repair procedures on self-driving vehicles.
- * Analyze transmission and body diagnostic trouble codes using generic and factory scanners.
- * Execute diagnostic and repair tasks related to vehicle anti-theft systems on late-model vehicles.
- * Document vehicle data and work performed on repair orders.
- * Conduct inspection and repair procedures on hybrid and Electric vehicles.

Prerequisite(s): TRAN1504, TRAN1517.

(3 C: 2 lect/pres, 1 lab, 0 other)

AUTO 2530 - Automotive High Performance Systems

In this course, students will engage with entry-level aspects of high performance vehicles and dirt track operations. Attention to safety in the racing industry will be woven into all parts of the course. In addition, students will learn about fuel and ignition systems and carburetors. The lab work will consist of engine and automotive upgrades to high performance vehicles.

Student Learning Outcomes:

- * Identify safety systems in the racing industry.
- * Diagnose and repair high performance fuel systems
- * Diagnose and repair high performance ignition systems.
- * Recognize basic principles of carburetor theory and operation.
- * Identify and understand racing suspension and chassis systems.
- * List different types of cars and karts.
- * Diagnose and perform tire maintenance procedures.
- * Identify dirt track conditions and operations.

Prerequisite(s): AUTO2505, AUTO1512.

(3 C: 1 lect/pres, 2 lab, 0 other)

AUTO 2540 - Light Duty Diesel

With the increased popularity and growing demand, light duty diesel engines have become a big influence in today's automotive and light duty truck market. This course is designed to give students the opportunity to identify and service components found on light duty diesel vehicles. This course will give students the opportunity to learn more of the basic operation's, controls, regulations and fuels that make today's diesel engine a large part of our transportation technology. Also to provide the opportunity to have some basic hands-on skills as an intern/apprentice technician in an auto/light duty repair facility.

Student Learning Outcomes:

- * Locate appropriate service information related to diesel engine operation
- * Identify diesel fuel system components
- * Identify timing fired injection vs. common rail fuel injection
- * Locate and identify fuel system components
- * Service fuel filters and bleed air from the supply lines
- * Differentiate why supercharging and turbo charging produces more horsepower on a diesel engine.
- * Identify the differences between diesel fuels (#1, #2, and biodiesel)

Prerequisite(s): AUTO1512, AUTO2502, and TRAN1503.

(2 C: 1 lect/pres, 1 lab, 0 other)

BLGY 1321 - Human Biology

Meets MN Transfer Curriculum Goal Area 3 - Natural Sciences. The human body is a complex network of cells, tissues, and organs whose function or dysfunction impacts overall health. This course introduces students to the fundamental structures and functions of the human body. Students will explore all major human organ systems, as well as explore basic principles of all life including

homeostasis, organization, and basic biochemical processes. This course includes a laboratory (Lab) component.

Student Learning Outcomes:

- * Identify anatomical structures and functions of the human body.
- * Identify organelles and their functions in human cells.
- * Describe the fundamental characteristics and processes of living systems.
- * Describe how organ systems work cooperatively to maintain homeostasis.
- * Explain how changes to structure and/or function of major organ systems are related to disease.
- * Describe the basic anatomy and physiology of major human organ systems.
- * Contrast the impacts of age and disease on human organ systems.
- * Use the scientific method to formulate and conduct experiments, simulations, and dissections.
- * Create laboratory reports based on experimentation, dissection, and simulation.
- * Describe the impacts of cancer and cardiovascular disease on human cells and organ systems.
- * Assess how diet and exercise affects the over-all function of human body.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(4 C: 2 lect/pres, 2 lab, 0 other)

BLGY 1325 - Nutrition

Meets MN Transfer Curriculum Goal Area 3 - Natural Sciences. Students will learn about nutritional requirements and how humans digest, absorb and metabolize nutrients. Nutrition is a science that is a part of a holistic wellness approach to health. This course studies the chemistry and physiology involved in nutrition, and how life choices impact nutritional wellbeing. Students will not only learn what and how much to eat, they will learn what influences their dietary intake, how manufacturing and growing processes influence their food supply and how these influences effect their wellness and the science behind their nutritional needs, becoming informed consumers and valuable care givers for their families and for those with nutritional concerns. This class does not include a laboratory (lab) component.

Student Learning Outcomes:

- * Distinguish what influences one's dietary intake including cultural, emotional, financial, health, physical, and societal impacts.
- * Explain the functions and recommended dietary intake guidelines of nutrients.
- * Calculate energy requirements and plan a healthy energy balance for life.
- * Analyze food labels to determine the quality and quantity of food products.
- * Describe digestion, absorption, transport, elimination, and metabolism of nutrients in the human body.
- * Compare health benefits and consequences of specific foods.
- * Describe steps used to ensure food safety.
- * Differentiate between whole and processed foods, and organic and conventional growing techniques.
- * Describe how food growing techniques and manufacturing practices influence health.
- * Plan, record and analyze nutrient and dietary intake.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

BLGY 1351 - General Biology I

Meets Mn Transfer Curriculum Goal Areas 3 and 10 - Natural Sciences, People and the Environment. The focus of this course is cellular biology and how cellular characteristics determine the characteristics of all life. This class builds the needed foundation for any student moving forward in the field of biology or health care. It is also of use to general education students seeking to understand life around them and its impact on the world. Students will gain valuable experience using the scientific method, experimentation and literature study to help in their journeys as lifelong learners. This class includes a laboratory (lab) component.

Student Learning Outcomes:

- * Apply the scientific method to test hypotheses by performing laboratory experiments or simulations.
- * Explain the interactions of humans and the environment with regard to levels of biological organization ranging from the atom to the biosphere.
- * Compare living and non-living entities.
- * Identify pre and post Darwin era evolution findings.
- * Deconstruct organic and inorganic chemistry, showing patterns and interrelationships of biophysical systems.

relationships of biophysical systems.

- * Recognize names and functions of cellular structures including organelles, membranes and membrane proteins.
- * Determine how osmosis, diffusion, and active transport relate to cellular function.
- * Deconstruct cellular respiration, photosynthesis, mitosis and meiosis.
- * Apply the laws and tools of Mendelian genetics to determine pedigree, and genotype/phenotype probability.
- * Summarize the impact of biotechnology on society and the environment.
- * Relate basic biological concepts to everyday observations and problems.
- * Discover the influence of cell and molecular biology on institutions, the environment, and natural resource challenges.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(4 C: 2 lect/pres, 2 lab, 0 other)

BLGY 1355 - General Biology II

Meets MN Transfer Curriculum Goal Area 3 Natural Sciences. This course covers biological processes, including a survey of life forms (viruses, bacteria, protists, fungi, plants, and animals), their evolution, and ecology. The laboratory focuses on organism taxonomy, classification, and mammalian systems including comparative anatomy, organism dissections, ecological interrelationships of organisms and their environment. This standard science course design is 2 hours face-to-face lecture and an accompanying 4 hours hands-on laboratory application of major scientific concepts which include some dissection of preserved animals and animal organs. This course meets the General Biology II requirement component of the MN State ASP, Biology.

Student Learning Outcomes:

- * Understand and apply knowledge of plant biology, animal biology, evolution and diversity, and ecology.
- * Recall, explain, and apply concepts, knowledge, and vocabulary of biology at the level necessary for success in subsequent biology courses for science majors.
- * Demonstrate understanding of the scientific theories in biology.
- * Demonstrate quantitative reasoning skills at a level appropriate for subsequent course in biology for science majors.
- * Distinguish between and demonstrate appropriate use of primary and secondary scientific literature.
- * Formulate and test hypotheses by performing laboratory experiments in biology that include the collection of data, statistical analysis, graphical presentation of results and interpretation of sources of error and uncertainty.
- * Communicate experimental findings both orally and in writing.
- * Understand and apply knowledge of use of the microscope and other biological laboratory equipment, and apply that knowledge in the proper conduct and interpretation of laboratory investigations.
- * Interpret how the history of life over the geologic time scale explains patterns and interrelationships of bio-physical and socio-cultural system.
- * Diagram major taxa of organisms by morphology.
- * Examine the effect of humans on the environment.
- * Evaluate the major threats to biodiversity.
- * Summarize how organisms interact with each other and their environment.

Prerequisite(s): BLGY1351.

(4 C: 2 lect/pres, 2 lab, 0 other)

BLGY 2310 - Human Anatomy/Physiology I

Meets Mn Transfer Curriculum Goal Area 3 - Natural Sciences. Human anatomy and physiology is the study of the structure and function of the human body. Utilizing a solid base of general biological knowledge students will study the integumentary, skeletal, muscular, nervous systems and special senses. In addition to these basic areas of study, histology will be covered in general and in detail as it relates to each of the above organ systems. This class includes a laboratory (lab) component.

Student Learning Outcomes:

- * Demonstrate proficiency with standard anatomical terminology.
- * Identify anatomical structures of the integumentary, skeletal, muscular, nervous, and sensory systems.
- * Explain functions of the integumentary, skeletal, muscular, nervous, and sensory systems from the molecular through the systemic levels of complexity.
- * Describe the relationship between the anatomy and physiology of organ systems.

- * Classify tissue types by structure, function, and location.
- * Describe homeostatic mechanisms.
- * Identify common pathophysiology within each organ system.
- * Summarize the effect of aging on the systems covered in class.
- * Apply the scientific method to the study of human anatomy and physiology.
- * Communicate experimental findings.

Prerequisite(s): BLGY1351.

(4 C: 2 lect/pres, 2 lab, 0 other)

BLGY 2320 - Human Anatomy/Physiology II

Meets Mn Transfer Curriculum Goal Area 3 - Natural Sciences. Human anatomy and physiology is the study of the structure and function of the human body in health and disease. It is a continuation of Human Anatomy and Physiology I, BLGY 2310. In this class students will study the endocrine, cardiovascular, lymphatic, immune, urinary, respiratory, digestive, and reproductive systems. In addition to these organ systems students will study fluids and electrolytes, nutrition and metabolism, development, pregnancy and heredity. This class includes a laboratory (lab) component.

Student Learning Outcomes:

- * Name the relevant structures of each organ system covered in the class.
- * Relate physiological significance to anatomical structures.
- * Classify tissue types by function and location.
- * Deconstruct the hypothalamic pituitary axis of the endocrine system.
- * Deconstruct blood pressure, fluid, electrolyte and gas regulation, the immune response, juxtaglomerular and nephron function.
- * Compare and contrast the components of the digestive system.
- * Compare and contrast the male and female reproductive systems including homologous structures.
- * Classify the stages of pregnancy along with the fetal and maternal changes related to each stage.
- * Recognize the effects of aging on the systems covered.
- * Construct relationships between organ systems required of an organism "holistic theme".

Prerequisite(s): BLGY2310.

(4 C: 2 lect/pres, 2 lab, 0 other)

BLGY 2330 - Microbiology

Meets Mn Transfer Curriculum Goal Area 3 - Natural Sciences. Microbiology is the study of microscopic organisms including bacteria, fungi, protozoa, algae, helminths, and viruses. Students will explore fundamental microbial structure, function, lab practices, biotechnologies and taxonomy. This course also explores the impact of microbes on their surrounding environment, including their impact on humans and other organisms. This course includes a laboratory (lab) component.

Student Learning Outcomes:

- * Summarize major groups of microorganisms with respect to the impact they have in the world.
- * Discuss the use of microorganisms as model species for understanding life processes.
- * Describe microbial structures and functions at the molecular, cellular, and organismal level.
- * Demonstrate microbiology laboratory techniques including microscopy, culture, identification, and staining of microbes.
- * Apply the scientific method in a microbiology laboratory.
- * Summarize microbial genetics including variations and manipulations of microbial genomes.
- * Summarize the metabolic and energy production pathways in microorganisms.
- * Predict the effectiveness of various microbial control methods on microorganisms.
- * Illustrate the complex interactions that occur between a microorganism and a host.
- * Summarize the pathogenesis of microbial diseases in humans.
- * Apply principles of written scientific communication including formal organizational strategies and citation of primary literature.

Prerequisite(s): BLGY1351.

(4 C: 2 lect/pres, 2 lab, 0 other)

BLGY 2340 - Genetics

Meets Mn Transfer Curriculum Goal Area 3 Natural Sciences. This course studies the basis of heredity, combining classical Mendelian genetics with the con-

tributions of molecular biology. Students will explore genetic principles as they apply to biology from the molecular level thru the population level. This course is appropriate for all students interested in the study of heredity and genetics. It meets the genetics requirement component of the MN State Associate of Science Pathway, biology.

Student Learning Outcomes:

- * Summarize how eukaryotic and prokaryotic DNA, RNA, genes, chromosomes and proteins produce traits in organisms.
- * Apply known heredity patterns to predict offspring genotype and phenotype ratios and vice versa.
- * Predict the possible effects of a specific chromosomal change on an organism.
- * Apply basic statistical principles, such as chi square, to genetic data.
- * Use the scientific method in the formulation and conduction of genetic experimentation.
- * Apply known heredity patterns to predict offspring genotype and phenotype ratios and vice versa.
- * Use the scientific method in the formulation and conduction of genetic experimentation.
- * Create (including organization, drafting and editing) formal scientific writing using current standards of writing and citation.
- * Relate the principles of genetics to risk and development of human cancer.
- * Identify the risks and rewards offered by genetic engineering/biotechnology to humans and the world.

Prerequisite(s): BLGY1351.

(4 C: 3 lect/pres, 1 lab, 0 other)

BLGY 2350 - Cellular Biology

Meets MN Transfer Curriculum Goal Area 3 - Natural Sciences. Students will undertake a detailed investigation into microscopic cellular structure and function. This course will focus on the regulation of major aspects of cell biology including intracellular trafficking of proteins and membranes, cell signaling, cell cycle, metabolism, and organelle function. Students will also read, interpret, and discuss primary scientific literature as well as develop scientific writing skills. Laboratory investigation will enhance skills necessary for upper-level biology courses and/or careers in the biological sciences.

Student Learning Outcomes:

- * Explain and apply fundamental concepts found in General Biology I by explaining cellular life in terms of the biomolecules used by cells
- * Understand the underlying molecular and cellular mechanisms of cellular structure and function
- * Use critical thinking skills to understand, evaluate, and analyze processes of membrane structure and function, trafficking of molecules, the endomembrane system, signal transduction pathways, extracellular matrix, and the cell's cytoskeleton/motility
- * Describe cellular metabolism and energy flow in molecular terms
- * Evaluate the relationship among cell signaling pathways, gene regulatory pathways, cellular function, and cellular adaptation
- * Formulate a hypothesis, and conduct and analyze an experiment
- * Organize, draft, edit, and revise formal scientific writing
- * Read, interpret, incorporate, and cite information and ideas from primary literature into writing
- * Utilize and understand the application of selected biotechnologies
- * Interpret the impact of cell biology and biotechnology on societal issues.

Prerequisite(s): BLGY1355.

(4 C: 2 lect/pres, 2 lab, 0 other)

BLGY 2360 - Ecology

This course fulfills MN Transfer Curriculum Goal Area 3 - Natural Sciences and 10 - People and Environment. This course will examine the fundamental principles of ecological relationships between organisms and their environment. Students will investigate ecological interactions at the organismal, population, community, ecosystem, and global scales. Students will also read, interpret, and discuss primary scientific literature as well as develop scientific writing skills. Laboratory investigation will enhance skills necessary for upper-level biology courses and/or careers in the biological sciences.

Student Learning Outcomes:

- * Understand and apply knowledge of the relationships between organisms and their environment at the individual, population, community, ecosystem, and biosphere levels
- * Understand, evaluate, and analyze ecological processes and interactions using

- critical thinking skills
- * Select appropriate sampling methods/regimes and apply appropriate statistical analyses to ecological data
- * Apply the scientific method in order to conduct, analyze, and interpret ecological experiments
- * Organize, draft, edit, and revise formal scientific writing
- * Read, interpret, cite, and assess the validity of information and ideas from primary scientific literature
- * Understand and utilize ecological modeling, monitoring, and restoration practices to define and improve the interaction between humans and the environment
- * Evaluate and analyze how ecological interactions impact societal decisions and environmental issues

Prerequisite(s): BLGY1355.

(4 C: 2 lect/pres, 2 lab, 0 other)

BMET 1400 - Biomedical Technician Field Exploration

This course is designed to give students the opportunity to explore different career options in the biomedical technician field and gain exposure to the environments in which they would be working. Students will research the Hospitals, Clinics and OEM (Original Equipment Manufacture) to get a better understanding of the different field options.

Student Learning Outcomes:

- * Observe the medical work site
- * Identify the daily duties of a technician.
- * Explain safety, sanitation, and hazardous material protocols.
- * Identify medical test equipment and preventive maintenance procedures
- * Demonstrate basic workplace etiquette

Prerequisite(s): ENGL1308, ENGL0304, ESOL1120, GCOM0304, READ0304, READ0900, READ1308 or Appropriate Placement Score.

(2 C: 2 lect/pres, 0 lab, 0 other)

BMET 1405 - Administrative Functions

This course fulfills course requirements for the Biomedical Equipment Technology program. This is an introductory course to the biomedical field as it relates to healthcare technology management (HTM). This course prepares students for the requirements of regulatory agencies, introduces them to computerized maintenance management systems (CMMS), and explains the role of biomedical professionals in the management of information including work orders. This course includes a lab component that emphasizes accurate data collection and analysis. This course will also expose individuals to the many opportunities within the HTM field.

Student Learning Outcomes:

- * Identify various regulatory agencies responsible for oversight of healthcare operations.
- * Create appropriate work order documentation using a computerized maintenance management system.
- * Differentiate between subjective and objective data within the CMMS system.
- * Describe medical gas safety systems.
- * Explain patient privacy and confidentiality policies.
- * Apply appropriate safety procedures when working in the biomedical lab.
- * Identify proper personal protection equipment (PPE) for various infectious disease scenarios and isolation precautions.

Prerequisite(s): BMET1400, BMET1410.

(3 C: 1 lect/pres, 2 lab, 0 other)

BMET 1410 - Electrical Theory for Technicians

In this course we will combine AC and DC theory with a focus on safety and troubleshooting. The course will work with examples and labs based on components and concepts that relate to what would be experienced by the biomedical technician.

Student Learning Outcomes:

- * Interpret basic electrical schematics
- * Differentiate between digital and analog circuitry
- * Analyze series and parallel circuits using Ohms law.
- * Test electrical power sources for function and isolation.
- * Demonstrate troubleshooting and test equipment skills.
- * Apply electrical safety and circuit protection
- * Demonstrate a safety-first mindset for the workplace
- * Demonstrate properly measuring electrical voltage, current, and resistance.

Prerequisite(s): MATH1300.

(3 C: 1 lect/pres, 2 lab, 0 other)

BMET 2401 - Healthcare Technology Management Field Preparation

This course fulfills course requirements for the Biomedical Equipment Technology program. This course covers preparation for entering the Healthcare Technology Management field. The major topics covered are job search skills, resume, interviewing, networking with professionals, having a long-term plans. This course includes a lab component where students attend an industry educational conference where students will gain technical skills and learn about industry hot topics. Students will gain knowledge about the field they are entering. Students will also begin to build their professional portfolio for future employment.

Student Learning Outcomes:

- * Construct a completed professional resume.
- * Identify professional job searching and interviewing skills.
- * Develop the ability to interact with professionals in the biomedical field.
- * Create an outline for a portfolio that will be built throughout the biomedical technology coursework.

(1 C: 0 lect/pres, 1 lab, 0 other)

BMET 2426 - Biomedical Technology

This course fulfills course requirements for the Biomedical Equipment Technology program. This course provides students with an overview of the biomedical technology field. This course will provide a general overview of the daily operations of biomedical technicians. Coursework covers biomedical asset control, equipment tracking and control, and planned maintenance on all equipment. Students will also learn the relationships between equipment and patient care. Students will work with a diversity of equipment, and clinical staff to ensure equipment is available, calibrated and ready to help save lives.

Student Learning Outcomes:

- * Create maintenance procedures on medical equipment.
- * Maintain biomedical equipment assets on equipment.
- * Use a CMMS for predictive/preventative maintenance tasks.
- * Perform maintenance on medical equipment such as pumps and vitals machines.
- * Complete an inventory verification of medical equipment by assigned department.
- * Test electrical safety of medical equipment to National Fire Protection Agency (NFPA) standards
- * Identify proper PPE and procedures for surgical areas.

Prerequisite(s): BMET1405, BMET1410 or ETEC1507.

(3 C: 1 lect/pres, 2 lab, 0 other)

BMET 2430 - Medical Equipment Networking

This course fulfills course requirements for the Biomedical Equipment Technology program. This course covers the operation and maintenance of medical equipment network systems within the HTM realm. The major topics covered are medical networking applications, HL7, EMR, telemetry, security topics, and medical network troubleshooting. This course includes a lab component where students install, test and inspect a patient monitoring network.

Student Learning Outcomes:

- * Summarize common medical networking applications.
- * Explain the difference between hard wired and wireless monitoring network.
- * Install test and inspect a patient monitoring network.
- * Illustrate network infrastructure components.
- * Summarize how interoperability impacts medical equipment.

Prerequisite(s): ETEC1535.

(2 C: 1 lect/pres, 1 lab, 0 other)

BMET 2436 - Biomedical Instrumentation

This course fulfills course requirements for the Biomedical Equipment Technology program. This course provides continued study in the theory of operation of medical and test equipment. In addition, the theory of circuit analysis, calibration procedures, troubleshooting techniques, and safety precautions are covered. The student will become familiar with various types of test equipment associated with clinical instrumentation. Upon completion, students will be able to repair, calibrate and certify that medical equipment meets manufacture specifications.

Student Learning Outcomes:

- * Discuss blood flow in the human body and its relationship to various pump and pressure meters.

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

- * Analyze how biomedical transducers convert measured quantities into electrical signals.
- * Perform functional checks on various types of medical equipment including EKG's, ESU's, etc.
- * Perform equipment inspections and necessary maintenance on lab equipment including centrifuges and microscopes.
- * Compose and execute a capstone project relevant to the HTM industry.
- * Inspect, troubleshoot and repair various equipment including dental and general nursing items.
- * Create, write and close work orders utilizing appropriate documentation standards.
- * Analyze work order documentation

Prerequisite(s): BMET1405, BMET1410, ETEC1507.

(4 C: 2 lect/pres, 2 lab, 0 other)

BMET 2441 - Biomedical Equipment Technician Internship

Introduces the student to an on-site learning experience at an operating biomedical equipment section of a health care facility. The student will be assigned to a regional health care facility to complete the requirements of this course. Supervision of the intern is shared by a health care facility supervisor and a SCTCC faculty member. Placement will be a minimum of 8 hours per week off campus in a technical capacity until hours are met with a hospital or an employer in the biomedical field. The college and the employer will jointly evaluate the student, which will then serve as a basis for a final grade

Student Learning Outcomes:

- * Identify the basic operations of each department of a health care facility.
- * Identify equipment operations for each department of a health care facility.
- * Summarize the organization, policies and procedures of a Biomedical Equipment Technology Department.
- * Calibrate medical equipment to the correct standard as identified for the equipment.
- * Work with hospital staff in a respectful and collaborative manner.
- * Troubleshoot equipment problems.
- * Respond accordingly to instructions and concerns of superiors, co-workers and other hospital staff.
- * Adhere to applicable safety procedures.
- * Repair assigned medical equipment properly.
- * Record and report experience working as a BMET at internship site.
- * Create a portfolio of educational highlights to share with instructor and internship site.
- * Participate in at least 2 mock interviews with industry professionals.

Prerequisite(s): BMET2435, BMET2425, BMET2426, BMET2436.

(6 C: 0 lect/pres, 0 lab, 6 other)

BUSM 1260 - Applied Business Mathematics

This course covers math functions for the solution of business problems. This course emphasizes practical approaches to prepare students for careers in business with a focus on real-world application. Students in this course develop math competency in business applications of interest, financial statement analysis, discounts, merchandise inventory, inventory pricing, credit financing, fixed asset costs, future and present value, operation ratios, corporate stocks, government, and corporate bonds. Applied Business Math prepares students for the math requirement of future business courses and business careers.

Student Learning Outcomes:

- * Calculate base, rate and percentage of business transactions.
- * Measure increases and decreases in financial data and allocate overhead expenses using percents.
- * Determine the proper amount to pay on invoices utilizing cash, series, and trade discounts.
- * Demonstrate pricing procedures related to markup based on cost or selling price.
- * Calculate the correct value of ending inventory and cost of goods sold using FIFO(first in first out), LIFO(last in first out), and average cost methods.
- * Demonstrate the use of various depreciation methods as they impact assets on the financial statements.
- * Calculate the impact of simple and compound interest on various purchase decisions, installment loans and investments.
- * Determine interest earned and deposits required for business investments using future and present value concepts.

(3 C: 2 lect/pres, 1 lab, 0 other)

BUSM 1267 - Introduction to Business

This course provides fundamental knowledge of the characteristics and functions of business in our economic environment as well as how business impacts our society. Areas of study include form of ownership, economics systems, business ethics, management, motivation, leadership, marketing, finance, and components of a business plan. Through this course students gain an understanding of business operation so that employees in various positions can play an integral part of the overall success of any organization.

Student Learning Outcomes:

- * Differentiate the various forms of business ownership.
- * Develop a marketing mix.
- * Contrast different financing options for small businesses.
- * Identify the various components of online businesses.
- * Create a business plan.

(2 C: 2 lect/pres, 0 lab, 0 other)

BUSM 1290 - Job Seeking/Keeping Skills

In this course, students will take a comprehensive approach to career decisions and planning. Students will develop job-search strategies as well as the crucial attitudes and skills needed for keeping jobs and growing in their chosen career.

Student Learning Outcomes:

- * Demonstrate effective and efficient ways to search for jobs in online databases and publications.
- * Develop appropriate and personalized communications used during job search and interview processes.
- * Describe effective interview skills, dress, and behaviors.
- * Define critical practices and persona necessary for job keeping and career growth.

(1 C: 1 lect/pres, 0 lab, 0 other)

BUSM 2220 - Leadership and Strategic Planning

This course prepares students with the foundations needed to understand how companies gain and sustain competitive advantage in a fast-changing world. Students will develop skills to become successful leaders that are able to make well-reasoned formal decisions for use in day-to-day management as well for the development, communication and implementation of business strategy and vision. Students will culminate their learning by researching a local business and applying the strategy development process to the proposal of new strategies for this business.

Student Learning Outcomes:

- * Apply the criteria of formal decision making through case problems and real business examples for general business decisions in the strategic development process.
- * Implement situational leadership models in case problems and real business scenarios to determine the appropriate management approach and decision-making style.
- * Demonstrate motivational theories for business situations.
- * Execute the strategic development process by researching a local company and developing a proposal of new business strategies.
- * Distinguish between corporate and business strategies when writing a new strategy proposal.
- * Conduct an internal and external analysis of a business in order to incorporate shared value and competitive advantage into the new business strategy proposal.
- * Recognize various control mechanisms to be used in the implementation of proposed business strategies.
- * Discuss the importance of diversity in business leaders' backgrounds conducive to successful business strategies.

Prerequisite(s): SAMG1215.

(3 C: 3 lect/pres, 0 lab, 0 other)

BUSM 2230 - Intro to Operations and Supply Chain Management

Organizations must provide something of value to the customer. The operations function of any organization, be it manufacturing or a service organization, is where inputs from the supply chain get transformed into outputs for its customers. This course looks at organizations as entities that must also match the supply of what they produce with the demand for their product. Students will be introduced to a number of quantitative models and qualitative strategies, which collectively refer to 'the tools of operations management.' Students will recall components such as supply process, evaluating process capacity, estimating,

and reducing labor costs, batching, flow interruptions, learn operations, waiting time, scheduling, forecasting, and control mechanisms for management review. This course teaches students how and when to implement the tools of operations management.

Student Learning Outcomes:

- * Apply the process flow of an organization to measuring inventory, flow time, flow rate, and other performance measures.
- * Demonstrate the components of process flow by creating a process flow diagram for a business.
- * Analyze the process flow diagram to estimate and reduce labor costs and production time.
- * Explain the scheduling of the production process as it relates to the focus on meeting demand.
- * Recall examples of lean operations.
- * Apply risk-pooling strategies to reducing and hedging uncertainty.
- * Recall supply chain mitigation and coordination strategies that reduce supply chain and inventory management issues.

Prerequisite(s): SAMG1215.

(3 C: 3 lect/pres, 0 lab, 0 other)

BUSM 2275 - Legal Environment of Business

This course covers key areas of law relevant to businesses. An overview is provided of civil laws that impact businesses including constitutional law, statutory law, common law and administrative regulations. The US legal framework is studied. Case law will be an integral part of the course as students learn to apply the law to business situations. Major content areas include the US legal system, business ethics, tort and contract law, employment, consumer and environmental law.

Student Learning Outcomes:

- * Apply business law concepts to relevant business issues.
- * Evaluate the fundamentals of business law.
- * Contrast sources of law including constitutional law, statutory law, case law and administrative law.
- * Distinguish between resolving legal disputes through the court system versus alternative dispute resolution.
- * Evaluate the legal consequences of business decisions.
- * Analyze ethical issues that arise in a business environment.
- * Analyze legal issues arising in a business environment.
- * Assess alternative outcomes in legal case studies.
- * Recognize the global and cultural environment in which businesses function.

(3 C: 3 lect/pres, 0 lab, 0 other)

CADD 1502 - AutoCAD Foundations

This course provides an introduction to the creation of 2D graphics with AutoCAD software. A guided lab approach to constructing basic drawings for industry related parts, utilizing a variety of AutoCAD commands will be used. A hands-on, exercise intense process to drawing and part creation will be taken. Students will establish a basis for creating 2D, multi-view drawings that meet industry standards. Applications utilized include data storage, file maintenance and outputting drawings to printers and/or plotters.

Student Learning Outcomes:

- * Manipulate AutoCAD geometric construction commands.
- * Utilize the AutoCAD modify and layers functions.
- * Employ the use of the zoom, pan, object selection and object properties.
- * Apply dimensions, notes and text to multi-view drawings.
- * Set up drawing layout/template and create Multi-view drawings.
- * Generate completed drawing in hard copy form.
- * Store, transfer, and retrieve data in a variety of CADD formats.

(3 C: 1 lect/pres, 2 lab, 0 other)

CADD 1507 - Drawing Principles I

This is a further study of Computer-Aided Drafting. Drawing creation will be done by the use of absolute, relative and polar coordinates and will examine advanced CAD capabilities used in creating complex multi-view drawings with 2D and solid modeling software.

Student Learning Outcomes:

- * Demonstrate the use of standard dimensioning rules and terms.
- * Produce complex multi-view drawings according to industry standards.
- * Create complex detail part drawings and 3 dimensional objects.

- * Utilize dimensional notes to call out various machine element features.

Prerequisite(s): CADD1502, CADD1512 or CADD1520.

(3 C: 1 lect/pres, 2 lab, 0 other)

CADD 1512 - Inventor Foundations

This course provides an introduction to Inventor parametric modeling software. A guided lab approach is used to construct basic models, basic mechanical designs, and create multi-view drawings that conform to industry standards. A hands-on, exercise intense approach to the parametric modeling techniques and concepts will be taken. Students explore the parametric modeling process and learn about the growing field of Mechanical Design.

Student Learning Outcomes:

- * Demonstrate the setup/startup for a new model/drawing to be created.
- * Utilize the 2D sketching functions of the software.
- * Construct solid model geometry/features from 2D sketches.
- * Create placed features on a model.
- * Demonstrate the ability to modify features and 2D sketches.
- * Produce 2D multi-view drawings from a models.
- * Apply Dimensions, notes and text to drawings.
- * Use printer/plotter to create drawing hardcopies.

(3 C: 1 lect/pres, 2 lab, 0 other)

CADD 1516 - Drawing Principles II

This is an introduction to different components of engineering drawings. It also includes the creation of views needed to give greater detail for complex part drawings as well as techniques used to create unique geometric features of some parts. These components and techniques will be covered using solid modeling applications. Students will be introduced to the process used for creating assemblies in the solid model environment.

Student Learning Outcomes:

- * Create part features requiring the use of geometric construction.
- * Navigate vendor documentation and extract needed information.
- * Determine tolerances for mating parts.
- * Apply tolerances to part features.
- * Describe the basics of fastener application.
- * Create and label part features related to the application of fasteners.
- * Generate a variety of different types of section views.
- * Create small assemblies using solid modeling software.

Prerequisite(s): CADD1507.

(3 C: 1 lect/pres, 2 lab, 0 other)

CADD 1520 - SolidWorks Foundations

This course delivers an introduction to Solidworks parametric modeling software. Students construct basic models, basic mechanical designs, multi-view drawings and assembly models. A solid model is more than simply a drawing of an engineered component, it is a true virtual representation of the component, which can be manipulated, combined with other components into assemblies and used to drive the production of the components and the final assembly. A hands-on, exercise intense approach to the parametric modeling techniques and concepts will be taken. The course will establish a basis for exploring the parametric modeling process and growing in the field of Mechanical Design.

Student Learning Outcomes:

- * Demonstrate the startup of the software and the setup for a new model/drawing to be created.
- * Utilize the 2D sketching functions of the software.
- * Construct solid model geometry/features from 2D sketches.
- * Create placed features on a model.
- * Demonstrate the ability to modify features and 2D sketches.
- * Produce 2D multi-view drawings from models.
- * Create an assembly and establish the assembly relationships between the parts.
- * Apply dimensions notes and text on drawings.

(3 C: 1 lect/pres, 2 lab, 0 other)

CADD 1523 - Design Calculations I

This is an exploration into the principles of force, motion, work, power, energy, simple machines, thermodynamics and the properties of solids and liquids. The application of knowledge will be through experimentation and problem solving.

Student Learning Outcomes:

- * Calculate unknown information dealing with motion
- * Determine unknown vector information.

- * Calculate simple work, power and energy problems.
 - * Solve situations dealing with simple machines.
 - * Determine unknown information when dealing with the effects of heat on materials.
 - * Calculate design information based on the properties of solids and liquids.
- Prerequisite(s): TECH1545.
(3 C: 1 lect/pres, 2 lab, 0 other)

CADD 1530 - Basic Electric Circuits

This course will give students a fundamental understanding of electrical circuits, basic components of an electrical circuit, electricity flow and an explanation of the basic units used to measure electricity. It will cover the principles of AC and DC electricity and the basic rules for calculating voltage, current, resistance and power. Students will examine fundamental principles of interpreting electrical prints and will be given an overview of various meters used in electrical maintenance.

Student Learning Outcomes:

- * Describe the foundational principles and components of AC/ DC electric circuits.
- * Explain basic principles and proper usage of various meters.
- * Calculate power, voltage, current, resistance values for basic circuits.
- * Interpret basic electrical prints.

(1 C: 1 lect/pres, 0 lab, 0 other)

CADD 2505 - Advanced Drawing Principles I

This is a further introduction to different components of engineering drawings. Students will be introduced to the common techniques used in the sketching of objects which are used to help communicate ideas to others. The course will also cover the creation of in-house layouts and how information and geometry in these layouts are used in the creation of production drawings. These components and techniques will be covered using solid modeling applications.

Student Learning Outcomes:

- * Create isometric sketches of objects.
- * Create a design layout.
- * Calculate critical dimensions for design layout.
- * Apply surface finishes to drawings.
- * Prepare detail drawings requiring auxiliary views.
- * Document revisions on existing drawings.

Prerequisite(s): CADD1516.

(3 C: 1 lect/pres, 2 lab, 0 other)

CADD 2509 - Advanced Drawing Principles II

This is a further introduction to different components of engineering drawings. Students will be introduced to weldment drawing and how weld information is communicated using weld symbols. Students will apply previously learned principles to more complex applications and be introduced to the documentation of assembly components. Students will be learning the unique characteristics in the creation of sheetmetal parts and the proper way of displaying them on a drawing. Components and techniques will be covered using solid modeling applications.

Student Learning Outcomes:

- * Identify common parts of welding symbols.
- * Create drawings of more complex assemblies.
- * Create drawing of weldment.
- * Formulate parts list for drawings.
- * Create bills of materials for drawing.
- * Create sheetmetal drawings.

Prerequisite(s): CADD2505.

(3 C: 1 lect/pres, 2 lab, 0 other)

CADD 2510 - Design Concepts

Students will create and evaluate different product designs for function, quality, cost, manufacturing techniques and machine elements. Practical geometric, functional dimensioning and tolerancing will be applied to drawings. The course will give students an insight to the importance of providing a quality, cost effective design.

Student Learning Outcomes:

- * Develop design layouts.
- * Analyze the design layout function.
- * Create and evaluate design options.
- * Integrate machine elements into design.

- * Evaluate tolerance and fit applications as they relate to production and cost.
- * Create drawings for newly designed parts that meet industry standards.
- * Apply the use of functional dimensioning to all component part drawings.

Corequisite(s): CADD2522

Prerequisite(s): CADD2509.

(3 C: 1 lect/pres, 2 lab, 0 other)

CADD 2514 - Computer- Aided Design

A complete product design consists of a design layout, design reviews, material calculations, detail drawings, bill of materials, and a complete set of technical documents. Students will be responsible for a complete product design with emphasis on accuracy, tolerances, surface finishes, notes, system design and weld symbols. The documents finalized in the course will be used to create a portfolio for perspective employers.

Student Learning Outcomes:

- * Evaluate design for manufacturability/cost.
- * Analyze the design for function and incorporate changes suggested by design review process.
- * Evaluate the design for maintenance, safety and appearance requirements.
- * Prepare a complete set of detail drawings.
- * Create a complete bill of materials.
- * Prepare related technical documents associated with the completed design.
- * Apply practical machine design elements and use of vendor catalogs/websites.
- * Assemble a portfolio of the completed design.

Corequisite(s): CADD2522

Prerequisite(s): CADD2510.

(3 C: 1 lect/pres, 2 lab, 0 other)

CADD 2518 - Design Calculations II

This is an introduction of how the size of a component and the type of material used is determined. This is partially done through the study of how forces are distributed through components and determining a components center of gravity. Using this information one can reference different materials properties such as the 3 basic types of stress, strain and modulus of elasticity and make necessary decisions in the design of components.

Student Learning Outcomes:

- * Determine unknown values in concurrent-coplanar force systems.
- * Calculate stress and strain on components.
- * Determine unknowns in parallel force systems.
- * Calculate shear forces along the length of a beam/shaft.
- * Calculate bending moments along the length of a beam/shaft.
- * Determine components cross sectional area.

Prerequisite(s): PHYS1305 or PHYS2300 or CADD1523 .

(3 C: 1 lect/pres, 2 lab, 0 other)

CADD 2522 - Machine Design

This course will examine the design and function of common machine elements, such as bearings, shafts, belt and chain drives, lubrication, fasteners, gears and springs. Students will explore comprehensive design problems in the area of machine design relevant to real world applications. Upon completion of the course students will have an understanding of the broad field of mechanisms in Machine Design.

Student Learning Outcomes:

- * Analyze part failure.
- * Define requirements for friction and anti-friction bearings.
- * Perform calculations for shaft, coupling and key design.
- * Analyze the design and application of gears.
- * Calculate power transfer for belt and chain drive systems.
- * Assess applications of mechanical fasteners and the design of power screws.
- * Analyze and apply equations for the design of various spring types.
- * Perform pneumatic and hydraulic cylinder sizing calculations.

Prerequisite(s): CADD2518.

(3 C: 1 lect/pres, 2 lab, 0 other)

CADD 2529 - Manufacturing Systems

This course provides exposure to the basic elements of manufacturing. Basic elements are arranged under two major categories: materials and processes. Students will explore statistics related to process control, product quality, sheet metal processes, foundry and forging practices, material properties and classifications. Students will also be introduced to ISO and Lean Manufacturing.

Student Learning Outcomes:

- * Examine metallic material properties and classifications.
- * Explore methods of metal, plastic, ceramic and composite material processing, conditioning and finishing.
- * Examine various casting and forging methods.
- * Explore methods of Lean Manufacturing and ISO certifications.
- * Participate in industry tours.
- * Apply fundamental statistical analysis of measurements to verify the quality of a design or process.

(2 C: 1 lect/pres, 1 lab, 0 other)

CADD 2532 - Geo-Dim for Designers

This is an introduction to the basics of the Geometric Dimensioning and Tolerancing standards (ASME Y14.5). It is another way to communicate with manufacturing and engineering staff what degree of accuracy and precision is needed on each facet of a part or assembly. The proper creation and placement of symbols are emphasized. Theoretical and practical concepts of each of the geometric controls are explained relative to design and function.

Student Learning Outcomes:

- * Explain what each geometric characteristic controls.
- * Define what datums is.
- * Designate datums on detail drawings.
- * Determine which geometric characteristic should be used for different situations.
- * Apply geometric tolerances of form, profile, orientation, runout and location to drawings.
- * Calculate tolerance values for hole locations.
- * Determine material conditions for internal and external features.
- * Organize geometric symbols on a drawing for maximum readability.

Prerequisite(s): CADD1502 or CADD1512 or CADD1520.

(2 C: 1 lect/pres, 1 lab, 0 other)

CADD 2541 - Mastercam Fundamentals

This course is an introduction to the Mastercam software. Students will gain an understanding of computer assisted CNC (computer numeric controlled) programing software. A guided lab approach to construction of 2D geometry and toolpaths for lathe and router applications will be used. Students will operate CNC equipment in a lab setting, while exercising safe lab practices.

Student Learning Outcomes:

- * Manipulate basic 2D geometry for lathe and router milling machine using Mastercam software.
- * Input data for tool selection, speeds and feeds of machines.
- * Develop tool paths for u router and lathe
- * Generate basic g-codes using post processors for a router and lathe.
- * Produce projects using CNC router and lathe.
- * Apply safe practices when using lab equipment.

Prerequisite(s): CADD1502.

(2 C: 0 lect/pres, 2 lab, 0 other)

CADD 2542 - Reverse Engineering

This course emphasizes the fundamentals of part documentation and production of professional quality engineering documents consistent with industry standards as a result of reverse engineering a product or component. The class will have students using various types of inspection devices/tools. Students will disassemble mechanisms, measure and sketch parts, and record data. Students create assembly and detailed piece part drawings utilizing functional dimensioning practices. Creation of these drawings will help build a portfolio of engineering documents for potential employers.

Student Learning Outcomes:

- * Measure parts with inspection equipment.
- * Produce sketches of parts and record measurements and data.
- * Produce multi-view detailed piece part and assembly drawings according to industry standards.
- * Apply dimensions and tolerances with regard to functionality and in accordance with industry and manufacturing practices.
- * Select drawings to be inserted in a student portfolio.
- * Utilize the Metric and English measuring system.

Prerequisite(s): CADD2509.

(2 C: 0 lect/pres, 2 lab, 0 other)

CADD 2550 - Mechanical Design Technical Communications

This is a study of the different types of written communications in the technical field including the collection and presentation of technical data. While drawings are the main mode of communication for a drafter, there are several types of written documents they need to create on a weekly or monthly basis. In some of these documents technical drawings need to be created. These technical drawings give a more realistic look to parts and assemblies.

Student Learning Outcomes:

- * Create common documents that are used in the design department.
- * Perform a site visit and create a report.
- * Organize information by creating an outline.
- * Create an Operation and Maintenance Manual.

(1 C: 1 lect/pres, 0 lab, 0 other)

CADM 3502 - CMM Operations

Student will setup and perform flexible gauging operations on a stand-alone coordinate measuring machine (CMM). Inspection of piece-parts and fixtures will be done on the three axes. Students will do part-to-print inspection. Piece-parts and matching prints drawn in conventional and geometric dimensioning will be inspected to size and location tolerances, as well as other tolerancing such as runout, form and orientation where applicable.

Student Learning Outcomes:

- * Start up, calibrate and setup CMM
- * Probe part and compare generated data with drawing specifications
- * Create drawing from probed part
- * Create CMM program for specific part

Prerequisite(s): MACH1524, MACH1525.

(2 C: 1 lect/pres, 1 lab, 0 other)

CARP 1507 - Construction Tools, Equipment and Machines

Proper use and care of hand and power tools is critical to the success of the carpenter. With successful completion of this course the student will understand how to use and care for many hand and power tools. Because power and pneumatic tools can be dangerous to the user and others safety will be emphasized in this course.

Student Learning Outcomes:

- * Distinguish different carpentry hand and power tools for their proper uses.
- * Employ hand tools in a safe manner.
- * Employ power and pneumatic tools in a safe manner.
- * Demonstrate processes for maintaining hand and power tools.
- * Integrate safety practices while completing projects
- * Explain the importance of safety while using construction tools.
- * Demonstrate the safe use of ladders, scaffold and fall protection equipment.
- * Construct a safe, OSHA compliant work site including ladders, scaffolding, and fall protection.
- * List the OSHA requirements for the use of ladders, scaffold and fall protection.

(2 C: 1 lect/pres, 1 lab, 0 other)

CARP 1521 - Construction Principles

This course will enable the student to learn about materials and methods for footings, foundations, framing floors, walls, and rafters for residential and light commercial construction. The course will cover terms, techniques and layouts used. Estimating and materials used will also be emphasized.

Student Learning Outcomes:

- * Identify types of footings.
- * Identify types of foundations and the relationship to applicable building codes.
- * Examine waterproofing techniques.
- * Recognize residential layout and framing techniques.
- * Layout and frame floor systems.
- * Construct exterior and interior walls including layout and framing.
- * Estimating of materials.
- * Distinguish building codes and how applied.

(4 C: 1 lect/pres, 3 lab, 0 other)

CARP 1524 - Rafters and Stairs

The effective carpenter must be able to perform the calculations necessary to correctly layout and cut rafters and stairs. This course will take the student through the steps necessary to understand the mathematical principles, materials, and methods used in modern stair and rafter framing. The student will be able to identify the building code requirements and safety concerns related to rafters and

stairs.

Student Learning Outcomes:

- * Describe various roof designs.
- * Recognize the terms associated with roof framing and identify roof framing parts used in gable and hip roofs.
- * Apply the methods used to calculate the length of rafters.
- * Employ a framing square, a speed square, and a calculator to layout rafters.
- * Classify types of trusses and truss bracing.
- * Identify various types of sheathing used in covering roofs.
- * Estimate the materials used in framing and sheathing a roof.
- * Identify building code requirements pertaining to roofs.
- * Recognize the safety requirements pertaining to roof construction.
- * Identify the various types, parts, and materials of stairs.
- * Perform the calculations to determine the total rise, number of risers, number and size of treads for a stair.
- * Layout and cut a stair.
- * Estimate the materials required to build a stair.
- * Identify building code requirements pertaining to stairways.

Prerequisite(s): CARP1507, CNST1502.

(4 C: 1 lect/pres, 3 lab, 0 other)

CARP 1538 - Cabinet Building and Estimating

The building and installation of cabinets requires great precision, attention to detail and the ability to use a variety of specialized tools. This course will introduce the learner to the materials and techniques used in cabinet making. The student will design, estimate materials for, build, and finish a cabinet. The proper use of power tools and tool safety will be emphasized.

Student Learning Outcomes:

- * Recognize the common materials used in cabinet making.
- * Correctly and safely use stationary power tools.
- * Identify the various joints used in cabinet making.
- * Design a cabinet project.
- * Estimate materials for a cabinet project.
- * Select the proper materials for a cabinet project.
- * Construct cabinet cases, doors and drawers.
- * Select and apply finishing materials.
- * Properly apply cabinet finishes.
- * Identify cabinet hardware.
- * Install a cabinet.
- * Install cabinet hardware.
- * Explore various countertop materials
- * Recognize safety concerns pertaining to cabinet construction and finishing.
- * Demonstrate professionalism

Prerequisite(s): CNST1502, CARP1507.

(4 C: 1 lect/pres, 3 lab, 0 other)

CARP 1540 - Blueprint Reading

This course introduces students to basic blueprint reading for residential construction. Students study and read a series of residential construction working drawings including floor plans, elevations, detail drawings, electrical, and plumbing.

Student Learning Outcomes:

- * Identify isometric, orthographic, oblique, and presentation drawings.
- * Understand blueprint terminology.
- * Recognize construction dimensioning techniques.
- * Interpret blueprints.
- * Comprehend construction specifications.

(2 C: 2 lect/pres, 0 lab, 0 other)

CARP 1545 - Interior Finish

The skills of a carpenter become most apparent in the interior finishing of a building. This course introduces the student to the materials, methods, and techniques used in the application of various interior finish materials including drywall, interior doors, moldings, baseboard, casing, and crown molding. Successful completion of the course will move the student forward in their journey to master the skills necessary to be a proficient carpenter.

Student Learning Outcomes:

- * Identify types of drywall and drywall fasteners and their uses.
- * Install drywall on wood and steel studs.
- * Recognize various types and sizes of interior doors.

- * Identify and install various interior moldings.
- * Classify fasteners used in the installation of interior trim.
- * Install various interior doors and interior trim.
- * Install hollow metal doors and hardware.
- * Demonstrate safe work habits.

Prerequisite(s): CNST1502, CARP1507.

(3 C: 1 lect/pres, 2 lab, 0 other)

CARP 1550 - Exterior Finish

This course will enable the student to develop skills used to properly install windows, exterior doors, shingles, soffits and siding.

Student Learning Outcomes:

- * Identify and install materials used in roofing, cornice and siding work
- * Demonstrate how to make roof projections watertight.
- * Identify critical elements of the building exterior as they relate to water, vapor, and air intrusion.
- * Select and install flashings.
- * Estimate materials used in exterior finish.
- * Demonstrate safe work habits.
- * Explain the safety requirements for working on roof, ladders and scaffold.
- * Demonstrate professionalism.

Prerequisite(s): CNST1502, CARP1507.

(2 C: 1 lect/pres, 1 lab, 0 other)

CARP 1555 - Residential Construction Lab

This course provides advanced skill development in installation and maintenance of the building system. Students will practice these skills through layout and construction of floors, walls, and roofs, while gaining knowledge of the various installation methods and techniques. Students will perform window and door installation according to manufacturer specifications and Minnesota Building Code compliant processes. Students will develop the skill needed to spot job hazards and OSHA safety hazards. Students will learn best practices as identified by industry standards.

Student Learning Outcomes:

- * Demonstrate layout and framing of floors, walls, and roofs.
- * Analyze and prepare the building for installation of exterior materials.
- * Perform window and door installation per manufacturer's specifications and applicable building codes.
- * Demonstrate safe, OSHA compliant work habits.
- * Identify "punch list" items on the job site.
- * Identify safety hazards.

(3 C: 0 lect/pres, 3 lab, 0 other)

CHEM 1305 - Chemistry for the Non-Scientist

Meets Mn Transfer Curriculum Goal Areas 3 and 10 - Natural Sciences, People and the Environment. In this course, students with little or no science background will learn how chemistry is at the center of essentially every aspect of our daily lives. A broad array of concepts that comprise the field of chemistry will be introduced, along with the practical applications and impact that chemistry has on modern concerns. This includes food and drug production, health and nutrition, environmental pollution and energy sources. Laboratory activities will provide the opportunity to put the scientific method into action to allow for further exploration and reinforcement of chemical principles.

Student Learning Outcomes:

- * Identify the roles chemistry plays in the advancement of food and drug production, health and nutrition, environmental pollution and energy sources.
- * Relate basic chemical concepts to everyday observations and problems.
- * Discuss physical phenomena from a molecular perspective.
- * Explain how and why atoms and molecules combine to form new compounds.
- * Use the periodic table to predict the physical and chemical properties of the elements.
- * Complete basic quantitative problems involving unit conversions and chemical equations.
- * Apply appropriate laboratory methods, including: recording, interpreting and reporting experimental observations as well as using laboratory equipment and chemicals safely.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(4 C: 3 lect/pres, 1 lab, 0 other)

CHEM 1345 - General, Organic and Biological Chemistry Foundations

Meets Mn Transfer Curriculum Goal Area 3 - Natural Sciences. This course is intended as a broad introduction to general, organic, and biochemistry. Topics covered include the scientific method, measurements, atomic structure, radioactivity, ionic and covalent compounds, reactions, oxidation-reduction, solutions, acids and bases, organic compounds and biological macromolecules. This is recommended for students intending to enroll, or already enrolled in the health sciences programs. This course includes two hours of required lab per week. The laboratory introduces students to safe handling of chemicals, appropriate use of lab ware, and transcription of observations and data. Attendance in the week 1 lab safety session is mandatory.

Student Learning Outcomes:

- * Use physical and chemical properties to explain the structure of matter from macroscopic to sub-atomic levels.
- * Describe the types of chemical bonds in compounds
- * Compare different types of chemical reactions and rationalize their occurrence from a thermodynamic standpoint
- * Identify organic functional groups found in biological molecules and use their reactivity to explain their physical and chemical influence in biological systems
- * Explain the main metabolic pathways in humans
- * Identify the relationships between chemistry and nutrition, disease and pharmacology
- * Complete quantitative problems involving unit conversions, chemical equations and formulas
- * Utilize skills appropriate to the chemistry laboratory environment

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(4 C: 3 lect/pres, 1 lab, 0 other)

CHEM 1350 - General Chemistry I

Meets MN Transfer Curriculum Goal Area 3 Natural Sciences. This is the first course in a two-semester sequence that, upon completion of the sequence, meets the general chemistry requirements for the Biology (Minnesota State Transfer Pathway) AS degree. Fundamental chemical concepts including measurements, nomenclature, atomic and molecular structure, chemical reactions, thermochemistry and the behavior of gasses are explored. This course includes two hours of required lab per week. Attendance in the first week lab safety session is mandatory.

Student Learning Outcomes:

- * Demonstrate basic knowledge and understanding of the fundamentals of experimental and theoretical chemistry.
- * Explain and apply skills in analytical thinking and problem solving, and apply scientific methods to experimental data.
- * Demonstrate skills in laboratory operations including making accurate and precise measurements, preparing solutions, operating instrumentation, experimental design, and the interpretation and reporting of quantitative and qualitative data and results.
- * Communicate their own data and analysis in oral and written communications that uses tables and graphs, describes detailed experimental procedures, and clearly explains conclusions, in order to create clear and compelling papers, posters, or presentations.
- * Work both independently and collaboratively in the classroom and in the laboratory.
- * Apply learned concepts to everyday situations and experiences and critically evaluate contributions to science reported in the media; identify valid approaches to scientific problem solving and reporting.
- * Conduct laboratory work in compliance with guidelines for personal lab safety and responsible management of chemical waste; this includes appropriate use of personal protective equipment and interpretation of Globally Harmonized System for Hazard Communication (GHS) labels.
- * Use proper techniques for laboratory procedures, such as titration, filtration, solution preparation, spectrophotometric measurements, etc.
- * Properly use glassware and equipment including beakers, Erlenmeyer flasks, volumetric pipets, burets, volumetric flasks, watch glasses, graduated cylinders, filtration apparatus, single-beam spectrophotometer, pH meter, balances.
- * Effectively communicate lab procedures, observations, and results in the form of laboratory notebook, written reports, and/or verbal presentation.
- * Interpret and analyze qualitative observations and quantitative results, incorporating graphs and tables as appropriate.

Prerequisite(s): CHEM1345, or MATH0960, or MATH1360, or appropriate

placement score. And ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(4 C: 3 lect/pres, 1 lab, 0 other)

CHEM 1355 - General Chemistry II

Meets Mn Transfer Curriculum Goal Area 3 Natural Sciences. This is the second course in a two-semester sequence that, upon completion of the sequence, meets the general chemistry requirements for the Biology (Minnesota State Transfer Pathway) AS degree. Topics covered include intermolecular forces of liquids and solids, properties of solutions, chemical kinetics, equilibrium, and nuclear chemistry. This course includes two hours of required lab per week. A first week lab safety session is mandatory.

Student Learning Outcomes:

- * Demonstrate basic knowledge and understanding of the fundamentals of experimental and theoretical general chemistry II topics.
- * Explain and apply skills in analytical thinking and problem solving, and apply scientific methods to experimental data.
- * Demonstrate skills in laboratory operations including making accurate and precise measurements, preparing solutions, operating instrumentation, experimental design and the interpretation and reporting of quantitative and qualitative data and results.
- * Communicate data and analysis in oral and written communications that uses tables and graphs, describes detailed experimental procedures, and clearly explains conclusions, in order to create clear and compelling reports, papers, posters, or presentations.
- * Work both independently and collaboratively in the classroom and in the laboratory.
- * Apply learned concepts to everyday situations and experiences and critically evaluate contributions to science reported in the media.
- * Conduct laboratory work in compliance with guidelines for personal lab safety and responsible management of chemical waste; this includes appropriate use of personal protective equipment and interpretation of Globally Harmonized System for Hazard Communication (GHS) labels.
- * Use proper techniques for laboratory procedures, such as titration, filtration, solution preparation, spectrophotometric measurements, etc.
- * Properly use glassware and equipment including beakers, Erlenmeyer flasks, volumetric pipets, burets, volumetric flasks, watch glasses, graduated cylinders, filtration apparatus, single-beam spectrophotometer, pH meter, balances.
- * Effectively communicate lab procedures, observations, and results in the form of laboratory notebook, written reports, and/or verbal presentation.
- * Interpret and analyze qualitative observations and quantitative results, incorporating graphs and tables as appropriate.

Prerequisite(s): CHEM1350.

(4 C: 3 lect/pres, 1 lab, 0 other)

CMAE 1502 - Technical Math

This is an introductory technical math course. The course is for students who have basic math skills and for those who need basic technical math concepts. The primary goals of this course are to help individuals acquire a solid foundation in algebra and geometry used in a technical setting. This course will show how these skills can model and solve authentic real-world problems.

Student Learning Outcomes:

- * Solve practical problems using correct order of operations, fractions and percent, units of linear measure, signed numbers and metric system.
- * Solve practical problems in technical algebra concepts that include operations of polynomials and monomials, addition, subtraction, multiplication and division principles of equality, manipulating equations, formulas, ratios, and proportions
- * Solve practical problems in technical geometry concepts that include lines and angles, angular measurement, types of triangles, interior angles of a triangle, areas of geometric shapes, characteristics of geometric shapes, principles of circles, and the Pythagorean Theorem
- * Utilize a systematic approach to problem solving
- * Use a scientific calculator to solve technical math problems

Prerequisite(s): ENGL0900, ESOL1310, ESOL1120, ESOL1330, MATH0420, MATH0410, READ0900 or Appropriate Placement Score.

(3 C: 3 lect/pres, 0 lab, 0 other)

CMAE 1506 - Introduction to Computers

This is an introductory course in Microsoft Office computer applications for

technical fields. The primary goal of this course is to help individuals acquire a hands-on working knowledge of current personal computer applications including word-processing, spreadsheets, database, presentation, and internet browser software.

Student Learning Outcomes:

- * Compose technical documents using a word-processing application
- * Sort and query database information
- * Create spreadsheets utilizing functions, formulas and charts
- * Construct a professional level multi-media presentation
- * Utilize internet browser software to find credible information
- * Manage files, email application, business calendars, and contacts while using professional etiquette

Prerequisite(s): ENGL0900, ESOL1310, ESOL1120, ESOL1330, READ0900 or Appropriate Placement Score.
(2 C: 2 lect/pres, 0 lab, 0 other)

CMAE 1510 - Print Reading

This course will give students an understanding of basic mechanical drawing principles. Topics include the alphabet of lines, arrangement of views, orthographic projections, scaling, dimensioning, tolerancing, and symbols. Students will read and interpret mechanical drawings.

Student Learning Outcomes:

- * Interpret types of multi-view drawings within manufacturing
- * Evaluate drawings based on information in the title block, notes and tables
- * Explain line types, symbols, and dimensions on mechanical drawings
- * Apply tolerances and to determine dimensional limits on drawings

Prerequisite(s): ENGL0900, ESOL1310, ESOL1120, ESOL1330, READ0900 or Appropriate Placement Score.
(2 C: 2 lect/pres, 0 lab, 0 other)

CMAE 1514 - Safety Awareness

This course aligns with the Manufacturing Skill Standards Council's (MSSC) assessment and certification system for Safety. The curriculum is based upon federally endorsed national standards for production workers including Occupational Safety Health Administration (OSHA) standards relating to Personal Protective Equipment (PPE), lockout/tagout (LOTO), Hazardous Material (HAZMAT), tool safety, and confined spaces.

Student Learning Outcomes:

- * Implement safe and effective workplace practices
- * Apply procedures for emergency situations
- * Choose correct Personal Protective Equipment (PPE) for workplace environment
- * Choose applicable OSHA requirements for maintenance, installation, and repair

Prerequisite(s): ENGL0900, ESOL1330, ESOL1310, ESOL1120, READ0900 or Appropriate Placement Score.
(2 C: 2 lect/pres, 0 lab, 0 other)

CMAE 1518 - Manufacturing Processes and Production

This course aligns with the Manufacturing Skill Standards Council's (MSSC) assessment and certification system for Manufacturing Processes. The curriculum is based upon federally endorsed national standards for production workers emphasizing lean manufacturing principles, basic supply chain management, communication skills, and customer service.

Student Learning Outcomes:

- * Identify the needs of the customer
- * Determine resources required for the production process
- * Interpret job assignments to meet production goals
- * Analyze work flow of team members and work groups to meet production goals
- * Utilize lean and high-performance manufacturing principles to improve the manufacturing process

Prerequisite(s): ENGL0900, ESOL1330, ESOL1310, ESOL1120, READ0900 or Appropriate Placement Score.
(2 C: 2 lect/pres, 0 lab, 0 other)

CMAE 1522 - Quality Practices

This course aligns with the Manufacturing Skill Standards Council's (MSSC) assessment and certification system for Quality Practices. The curriculum is based upon federally endorsed national standards for production workers. Emphasis

is placed on Continuous Improvement concepts and how they relate to a quality management system. Students will be introduced to a quality management system and its components. These include corrective actions, preventative actions, control of documents, control of quality records, internal auditing of processes, and control of non-conforming product.

Student Learning Outcomes:

- * Summarize the basics of quality management systems including the PDCA cycle
- * Illustrate calibration of gauges and other data collection equipment
- * Apply key principles of quality systems including Lean, ISO, and TQM
- * Apply process control practices for quality assurance
- * Document test results and corrective actions to restore or maintain quality
- * Apply key principles of 6 Sigma
- * Evaluate internal quality audit practices, outcomes, and trends to improve quality and processes
- * Develop a Quality Policy Statement utilizing the fundamentals of quality documents

Prerequisite(s): ENGL0900, ESOL1330, ESOL1310, ESOL1120, READ0900 or Appropriate Placement Score.
(2 C: 2 lect/pres, 0 lab, 0 other)

CMAE 1528 - Career Success Skills

This is an introductory career success skills course. The primary goals of this course is to help individuals acquire a solid foundation in the basic skills for a successful career. This course will identify the skills important to businesses and help the student assess his/her level of skill. The course will provide suggestions for how the student can improve his/her level of skill.

Student Learning Outcomes:

- * Characterize appropriate and inappropriate professional behavior
- * Evaluate areas of personal strengths and weaknesses related to a successful career
- * Identify the skills needed to be a productive, responsible, and professional employee for a business

Prerequisite(s): ENGL0900, ESOL1310, ESOL1120, ESOL1330, READ0900 or Appropriate Placement Score.
(1 C: 1 lect/pres, 0 lab, 0 other)

CMAE 1560 - Interpreting Symbols

Welding symbols are used to facilitate communication among the designer, fabricator, and inspection personnel. To accurately layout and fabricate parts, the welder will need basic knowledge of working drawings and their significance to the welding industry. Students will breakdown welding prints to develop skills necessary to fabricate individual component parts of welded structures. Written and fundamental tests will be administered in accordance with American Welding Society (AWS) standards and the appropriate correlating code books (AWS A2.4).

Student Learning Outcomes:

- * Interpret basic elements of a drawing or sketch.
- * Interpret welding symbol information and placement guidelines.
- * Describe Nondestructive Examination (NDE) methods and symbol use.
- * Calculate weight and cost of welding consumables and materials.
- * Prepare an applicable bill of materials (BOM).

Prerequisite(s): ENGL0900, ESOL1310, ESOL1120, ESOL1330, READ0900 or Appropriate Placement Score.
(2 C: 2 lect/pres, 0 lab, 0 other)

CMAE 1562 - Oxyfuel Welding and Cutting Process

This course covers the use of oxyfuel equipment while welding, cutting, brazing, and using the Plasma Arc Cutting (PAC) and Air Carbon Arc Cutting (CAC-A) processes. There will also be an introduction to laser cutting equipment. A very important part of this course will be discussing safety as it relates to thermal welding and cutting equipment. Written tests will be completed in accordance with -American Welding Society (AWS) codes and standards.

Student Learning Outcomes:

- * Explain proper use of Personal Protective Equipment (PPE) in welding and cutting operations.
- * Describe the differences between gas welding, brazing, and soldering.
- * Describe the differences between plasma arc cutting (PAC), laser cutting, and air carbon arc cutting (CAC-A).

* Identify the welding and cutting applications used by researching current industry practices
Prerequisite(s): ENGL0900, ESOL1310, ESOL1120, ESOL1330, READ0900 or Appropriate Placement Score.
(3 C: 1 lect/pres, 2 lab, 0 other)

CMDE 1500 - Two Dimensional CADD

Students will develop knowledge of system configuration, hardware operations and interactive graphics software and will input drafting commands to develop drawings, store data and output drawings to the plotter for hard copy.

Student Learning Outcomes:

- * Perform start up and shut down procedures for computer software.
- * Manipulate the drawing software.
- * Set up drawing layout and create basic drawings.
- * Generate completed drawing in hard copy form.
- * Store, transfer, and retrieve data in a variety of CADD formats.
- * Demonstrate the ability to respect others and their ideas.

(3 C: 1 lect/pres, 2 lab, 0 other)

CMDE 1504 - Inventor Foundations

The primary goal of this course is to introduce students to the aspect of creating components with Inventor parametric modeling software. The course will guide you through constructing basic models, basic mechanical designs, creating multi-view drawings and assembly models. A solid model is more than simply a drawing of an engineered component, it is a true virtual representation of the component, which can be manipulated, combined with other components into assemblies and used to drive the production of the components and the final assembly. We will take a hands-on, exercise intense approach to the parametric modeling techniques and concepts. As an introductory course it is intended to help the student establish a basis for exploring the parametric modeling process and growing in the exciting field of Computer Aided Engineering.

Student Learning Outcomes:

- * Demonstrate the startup of the software and the setup for a new model/drawing to be created.
- * Utilize the 2d sketching functions of the software to construct solid model geometry .
- * Create placed features on a model.
- * Produce a 2 dimensional multi-view drawing from a model according to industry standards.
- * Utilize dimensional notes to call out various machine element features.
- * Define and demonstrate the use of standard dimensioning rules and terms.
- * Create an assembly and establish the assembly relationships between the parts.
- * Demonstrate the ability to meet deadlines, work independently and respect others.

(3 C: 1 lect/pres, 2 lab, 0 other)

CMDE 1508 - Mechanical Drafting Foundations

This course is a further study of Computer-Aided Drafting. Students will input drawings using absolute, relative and polar coordinates and will examine advanced CAD capabilities such as complex multi-view drawings, libraries and attributes using 2D and solid modeling software.

Student Learning Outcomes:

- * Demonstrate the use of standard dimensioning rules.
- * Produce complex multi-view drawings according to industry standards.
- * Create and modify complex detail part drawings and 3 dimensional objects.
- * Utilize dimensional notes to call out various machine element features.
- * Create Blocks, Attributes, and Symbol Libraries.
- * Demonstrate timeliness in finishing assignments.
- * Treat classmates with respect.

Prerequisite(s): CMDE1504.

(3 C: 1 lect/pres, 2 lab, 0 other)

CMDE 1512 - Intermediate Mechanical Drafting

This course provides information for completing engineering drawings including geometric construction, sections, fasteners, and tolerances and fits using 2D and solid modeling software as well as 3D assemblies.

Student Learning Outcomes:

- * Create drawings using geometric construction.
- * Generate section views.
- * Create drawings of fasteners.

- * Determine tolerances for mating parts.
- * Apply tolerances to part features.
- * Create 3D Assemblies.
- * Demonstrate timeliness in finishing assignments.
- * Treat classmates with respect.

Prerequisite(s): CMDE1504.

(3 C: 1 lect/pres, 2 lab, 0 other)

CMSC 1203 - Structured Programming Logic

This course introduces students to the programming major and lays the foundation for continued skill development in programming. Students will study both object-oriented and procedural programming and learn essential programming design methods and structures. Students will create algorithms, examine array constructs, and explore object-oriented topics such as classes and inheritance. The course includes team programming projects and introduces software collaboration tools. By using a mix of theory and practical application, students will develop the introductory skills needed in structured program logic to succeed in the programming major.

Student Learning Outcomes:

- * Create algorithms to solve programming problems.
- * Identify common programing structures.
- * Discuss modularization and its importance in programming.
- * Examine array concepts.
- * Discuss object-oriented programming concepts such as classes, inheritance, and polymorphism.
- * Collaborate in team programming projects.
- * Use software collaboration tools.
- * Create programs that use looping and decision structures and integrate user input.
- * Create programs that use arrays and modularization.
- * Create programs that utilize classes.

Course Content/Topics:

- * Introduction to Computers and Programming
- * Input, Processing, and Output
- * Decision Structures and Boolean Logic
- * Repetition Structure
- * Functions
- * Files and Exceptions
- * Lists and Tuples
- * Dictionaries and Sets
- * Class, Inheritance, and Polymorphism

(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 1206 - Introduction to Information Technology Concepts

This course will provide students with an introduction to information technology concepts in order to prepare them for a career in IT. During this class students will learn about hardware, cloud applications and data management systems. The student will be introduced to operating systems concepts, application software fundamentals, and using the Internet to communicate and search for information. The course will cover basic concepts and terminology used in local area networks and students will also be introduced to information security best practices. Students will become familiar with containers and virtualization, and be given an overview of use cases and best practices for these tools. Software development collaboration will also be demonstrated with a focus on team-based collaboration. Ethics and Intellectual Property rights will be emphasized throughout the course.

Student Learning Outcomes:

- * Identify computer system hardware and software components
- * Troubleshoot hardware and software issues
- * Explain networking fundamentals
- * Implement container and virtualization technologies
- * Describe the need for information security
- * Explain the concepts of risk management
- * Use software development collaboration tools
- * Discuss legal and ethical issues in information technology

(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 1212 - Web Markup Language

This course will teach the student how to create web pages using the markup language HTML. Students will follow industry standards by using JavaScript and Cascading Style Sheets, which is used to make the web pages dynamic, formatted

and styled. Students will also complete exercises using links, graphics, tables and forms. The programming techniques include proper coding syntax, passing information via web pages, and responsive design (mobile-friendly design) The HTML 5 and CSS3 standards will be reviewed in the course.

Student Learning Outcomes:

- * Develop and build web pages using HTML, HTML5, JavaScript and CSS3.
 - * Create dynamic web pages with JavaScript and JavaScript libraries such as jQuery.
 - * Format web pages with Cascading Style Sheets (CSS).
 - * Integrating links, graphics, tables and forms in HTML pages.
 - * Create responsive web pages using media queries, flexbox and bootstrap framework concepts.
 - * Publish code to production web servers.
- (3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 1216 - Database Modeling I

Databases are an integral part of modern computer applications. This course introduces students to basic relational database concepts, relational database terminology, and data modeling concepts. Students will create a conceptual data model using entity-relationship diagrams, understand the importance of referential integrity, and learn how to enforce data integrity constraints when creating a database. SQL Data Manipulation Language and Data Definitions Language will be used to create database objects and to insert, read, update, and display data in a relational database management system. An introduction to NOSQL databases will also be covered.

Student Learning Outcomes:

- * Install and configure a relational database in a Virtual PC environment.
- * Employ database normalization techniques.
- * Create and maintain relational databases, tables and other objects using Structured Query Language (SQL).
- * Write SQL statements to create indexes, views, referential, entity, domain and user-defined constraints on database tables.
- * Write SQL statements and scripts to insert, delete, update and retrieve data in tables.
- * Write SQL statements to extract and manipulate data from database objects using joins.
- * Determine differences between different relational databases and not-relational databases

(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 1217 - Introduction to Data Analytics

The goal of data analytics is to gain knowledge and communicate conclusions drawn from data. This is an introductory data analyst course using commonly available data management systems. Throughout the course the students will make extensive use of spreadsheets including formulas, graphs and pivot tables. This course covers concepts such as percentages, trends and basic statistical concepts and database fundamentals. The course is targeted towards individuals who would like to apply the practices and potential use of large-scale data analytics to data sets.

Student Learning Outcomes:

- * Demonstrate an understanding of the analytical process
- * Compare different data analysis tools
- * Recognize how data analysis tools automate and enhance the data analysis process
- * Identify the role statistical concepts play in analytics
- * Apply basic spreadsheet modeling for use in analytics
- * Create flexible data aggregations using pivot tables
- * Represent data visually using spreadsheet tools
- * Employ advanced spreadsheet functions to analyze data
- * Create a basic data model and connect to external data
- * Demonstrate an understanding of the importance of databases in the analytical process

(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 1228 - Client-Side Programming

As internet and mobile use continues to grow, users expect web applications to perform like desktop applications. Single-page web apps (SPAs) deliver this functionality for the user. SPAs integrate client-side JavaScript frameworks to allow the application to seamlessly and dynamically integrate front-end user interfaces with back-end databases and server processing. Because SPAs only send the data

that has been changed back to the server, they also offer the user a better application experience. These factors have increased the popularity and use of SPAs in the internet development environment.

Student Learning Outcomes:

- * Construct a SPA programming environment.
- * Utilize JavaScript framework to develop SPAs.
- * Write SPAs that integrate JavaScript variables and constructs.
- * Integrate HTML templates into SPAs.
- * Utilize JSON for SPA database access and manipulation.
- * Integrate routing into SPAs to manipulate the SPA content.
- * Integrate sessions into SPAs to manage user profile information.
- * Integrate security into SPAs to manage user authentication and SPA security.

Prerequisite(s): CMSC1255.

(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 1236 - Java Programming

Java is a widely used programming language, crucial for various types of software development, including web services, mobile applications, and enterprise solutions. This course aims to deepen students' understanding of both fundamental and advanced programming constructs in Java, with a particular focus on object-oriented programming and development best practices. In this course students will set up a Java development environment and explore the key differences between Java's strongly typed system and loosely typed languages such as Python. They will also explore core object-oriented programming concepts such as inheritance, polymorphism. And encapsulation, and advanced concepts including interfaces, collections, and exception handling. The course places significant emphasis on development methodologies including unit testing, employing popular frameworks like Junit, and introduces students to essential debugging techniques. Through a range of hands-on exercises and a final project, students will not only create new Java programs but will also engage in comprehensive unit testing and debugging, ensuring the development of robust, reliable software.

Student Learning Outcomes:

- * Create the JDK and JRE environment.
- * Implement variables, data types, and control structures in Java.
- * Apply constructors, method overloading, inheritance, polymorphism, and encapsulation to Java programs.
- * Integrate interfaces, abstract classes, and exception handling in Java programs.
- * Implement File I/O operations.
- * Develop unit tests using testing frameworks.
- * Use debugging tools and best practices to troubleshoot Java applications.

Prerequisite(s): CMSC1203.

(4 C: 2 lect/pres, 2 lab, 0 other)

CMSC 1255 - Server-Side Programming

This course lays the groundwork for server-side programming, essential for developing dynamic, interactive web applications. It aims to equip students with critical skills in server-side logic, database management, and seamless data exchange between web servers and clients. It prepares students for a variety of programming languages and environments. Focusing on practical application, the curriculum includes database interaction techniques, data manipulation, and SQL usage within database systems. Students will gain a deep understanding of server-side scripting principles, achieving a comprehensive grasp of web development paradigms. The course also emphasizes server-side performance optimization and security assessments to cultivate the development of efficient, scalable, and secure web solutions, thereby enhancing application quality and reliability. Upon completion, students will possess a fundamental skill set in server-side programming, ready to take on modern web development challenges.

Student Learning Outcomes:

- * Implement server-side scripts to handle web requests and responses, using server-side programming languages.
- * Develop interactive web forms that capture user inputs and interact with server-side scripts to store and retrieve data from a database.
- * Apply core programming constructs and paradigms in server-side development to effectively manage control flow, data processing, and application logic.
- * Implement database connectivity using server-side scripts to perform CRUD (Create, Read, Update, Delete) operations on a live database.
- * Construct a web-based application that utilizes server-side logic and database interactions to create a dynamic, data-driven user experience.
- * Evaluate strategies for optimizing server-side performance and ensuring the security of web applications.

Prerequisite(s): CMSC1203, CMSC1212
(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 2201 - Database Modeling II

Database Modeling II is an advanced database modeling course designed to introduce the student to the management side of relational databases. This course builds on the skills learned in course prerequisites with a review of database maintenance and creation. Database reporting, administration and programming skill development will be the primary focus of this course. Advanced skill development in design, installation, configuration, maintenance, and analysis of performance will be highlighted throughout the course.

Student Learning Outcomes:

- * Create, configure, and maintain SQL Server databases, tables, views, constraints, indexes, queries
- * Construct UDF's, stored procedures, and triggers
- * Import data into database systems
- * Export data from database systems
- * Design security policies for operating and database users
- * Perform and maintain database systems
- * Implement database performance monitoring and tuning
- * Create and configure user permissions on database systems
- * Design and implement data backup and recovery plans on database systems
- * Create end user reports
- * Implement a basic Create, Read, Update, Delete interface
- * Explore alternative database models and software systems

Prerequisite(s): CMSC1203, CMSC1216.

(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 2203 - C# Programming I

This course introduces students to C# which is an object-oriented, type-safe programming language. C# enables developers to build many types of secure and robust applications that run in .NET. In this course students will learn the basics of Visual C# program structure, language syntax, and implementation. The focus of this course will be desktop application development. Students will also be introduced to software project management by participating in project-based, team-oriented groups while developing applications. Students will learn team dynamics through changing project roles, meetings, demonstrations, and maintaining technical documentation for their projects. Practical usage of version control tools, such as Git, will also be emphasized in this course.

Student Learning Outcomes:

- * Use C# programming language to create Windows Presentation Foundation (WPF) applications.
- * Employ data access with Graphical User Interface (GUI) controls and external data sources.
- * Apply source control into WPF applications.
- * Use current project development techniques and best practices.
- * Use software collaboration tools and version control.
- * Explain software project and team development roles.

Prerequisite(s) CMSC1236, CMSC2266.

(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 2204 - Mobile Device Programming/Connectivity

Mobile devices have become an integral part of the business world. Having the knowledge to program these devices will increase the programmer's value in the workplace. Mobile applications are developed using programming languages to be able to render intelligently on different devices. Applications are developed on a virtual PC using software to emulate different mobile devices and deployment scenarios. Mobile development focuses on the Android mobile device.

Student Learning Outcomes:

- * Employ the Android Studios Integrated Development Environment (IDE) to write and deploy mobile applications.
- * Write mobile applications using Bootstrap and Web programming languages.
- * Write mobile applications that process data.
- * Write mobile applications that cross platforms to render data to the user.
- * Write mobile applications that consume web services.
- * Write Android applications that use Android User Interface (UI) constructs.
- * Write Android multi-page applications.
- * Discuss other mobile application platforms.

Prerequisite(s): CMSC1216, CMSC1236.

(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 2240 - C# Programming II

This course is a continuation of CMSC 2203 - C# Programming I and will expose the student to advanced C# concepts which will increase their programming expertise and value in the industry. Students will build additional knowledge and skills by creating cross platform .NET Core cloud enabled applications. The use of Generics, Delegates, Collections, Events, Lambda expressions, and Unit Testing will be reinforced. Students will integrate remote database connectivity and develop .NET applications and services. In addition, advanced programming performance techniques will be reviewed and implemented. Students will also build on the structured product development and collaboration techniques used in CMSC 2203 to deliver full featured C# applications.

Student Learning Outcomes:

- * Create C# applications to access and manipulate data in a database using .NET.
- * Develop .NET applications.
- * Deploy .NET applications.
- * Create C# applications that use generics, delegates, collections and events.
- * Design anonymous functions using Lambda expressions.
- * Create multi-threaded applications
- * Create applications that utilize tasks and asynchronous techniques.
- * Demonstrate software project and team development roles.

Prerequisite(s): CMSC2203.

(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 2279 - Systems Analysis and Design

This course provides a detailed framework for students to design and implement a comprehensive software application, from the initial concept to final deployment. It focuses on imparting essential skills and knowledge for developing a robust system, encompassing backend, frontend, and mobile components. The curriculum also includes a comprehensive exploration of various agile methodologies, aimed at creating a collaborative class environment that enhances students' team management and project coordination skills. Utilizing a team setting, students will be responsible for the system's overall planning and evolution, engaging in activities such as designing the system architecture, managing project source control, and ensuring project progress through detailed documentation and task completion. Additionally, students will submit system project reports, such as weekly progress updates and change requests. Testing and quality assurance will be integrated throughout the development process to maintain quality and reliability. Upon completion of this course, students will gain a solid understanding of software development, encompassing both its technical aspects and collaborative dynamics, and will create a portfolio of work that demonstrates their ability to excel in the field of modern software programming.

Student Learning Outcomes:

- * Evaluate agile methodologies to understand their application in software development.
- * Develop strategies for application development, incorporating user needs and project requirements.
- * Analyze user needs and requirements to provide a solid foundation for the development process.
- * Select suitable programming languages, platforms, and databases for application development based on project needs.
- * Formulate development tasks and goals to guide project iterations and ensure progress.
- * Engage in regular team meetings to foster communication, address challenges, and promote continuous improvement.
- * Identify common challenges in team-based application development.
- * Employ problem-solving skills to manage and resolve unforeseen obstacles in application development.

Prerequisite(s): CMSC1236, CMSC2201, CMSC2203.

(3 C: 2 lect/pres, 1 lab, 0 other)

CMST 1320 - Introduction to Communication Studies

Meets MN Transfer Curriculum Goal Area 1: Oral Communication. This course introduces students to components of effective communication across a variety of communication contexts. These areas include the theoretical and skill-based elements of listening, interpersonal communication, small group communication, and public speaking. Students will apply concepts from these areas through writing, discussion, and speaking. This course emphasizes the importance of effective communication in everyday life.

Student Learning Outcomes:

- * Explain how perception and identity affect how we send and receive written

and oral messages.

- * Explore how communication is affected by verbal and nonverbal symbol choices within personal, academic, and professional settings.
- * Utilize effective communication choices that meet the needs of a multicultural audience.
- * Apply understanding of how communication functions within personal relationships, small groups, and public contexts to one's own communication.
- * Apply effective listening strategies individually and within groups.
- * Participate in group communication to develop effective small-group skills.
- * Develop public speaking self-confidence and skills by preparing, practicing, and delivering logically sound speeches.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

CMST 2300 - Introduction to Public Speaking

Meets Mn Transfer Curriculum Goal Area 1 - Oral Communication. This course helps students become familiar with, and use, a variety of techniques for effective public speaking. Public speaking skills built in this class can help individuals in a range of communicative settings; from a large keynote addresses to interpersonal job interviews. These skills will empower students with the ability to achieve communicative goals in their professional and personal lives.

Student Learning Outcomes:

- * Develop understanding of public speaking as an interactive process through audience analysis and evaluation of speeches.
- * Demonstrate effective public speaking delivery.
- * Compose and effectively deliver a research-based informative speech.
- * Compose and effectively deliver a research-based persuasive speech.
- * Compose and effectively deliver a special occasion speech.
- * Compose and effectively deliver an impromptu speech.
- * Examine the role of speech-making in society.
- * Relate critical listening skills to persuasive messages.
- * Analyze ethical issues related to public speaking.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

CMST 2302 - Small Group Communication

This course meets MnTC Goal Area 1 and Goal Area 9 - Oral Communication and Ethical and Civic Responsibility. This course covers basic Small Group Communication principles and practices. Students are given a variety of group projects in order to experience for themselves problem solving and decision making techniques. In groups, students will try a variety of group roles, work on facilitation skills, and develop their listening and discussion abilities. Topics such as mediated communication, culture, power, and leadership and their influence on small group communication will be covered. Group presentations (preparation, delivery, and assessment) will be part of the course.

Student Learning Outcomes:

- * Demonstrate communications skills necessary for effective groups
- * Apply effective communication strategies for groups involving technology and virtual environments
- * Analyze ethical issues and responsibilities of groups and their members in society
- * Examine types of leadership and the benefits and limits of different leadership styles.
- * Examine types of power and the influence of different sources of power.
- * Evaluate effective group decision making and problem solving
- * Analyze types of conflict and conflict-management styles.
- * Evaluate groups and their work in our society, both as participant and observer.
- * Deliver and assess group presentations.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

CMST 2310 - Interpersonal Communication

Meets Mn Transfer Curriculum Goal Area 1 - Oral Communication - This course provides students with an understanding of the theory and practice of interpersonal communication. Successful management and maintenance of relationships is a necessity in professional and personal settings. Students will apply concepts to enhance their ability to effectively send and receive verbal and nonverbal mes-

sages across a variety of channels. This course highlights the importance of style, perception, and identity when communicating in the context of interpersonal interactions.

Student Learning Outcomes:

- * Understand how sending and receiving messages (verbal and nonverbal) changes across varying channels.
- * Analyze the effects of culture, gender, self, and perception when communicating.
- * Evaluate the implications of various communication behaviors and the influence of those behaviors on self and others.
- * Evaluate listening habits and practice effective listening skills
- * Produce effective written and oral communication.
- * Apply interpersonal theories and concepts when discussing and writing about various communication topics.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

CMST 2315 - Persuasion and the Media

Meets MN Transfer Curriculum Goal Area 1: Oral Communication. Meets MN Transfer Curriculum Goal Area 9: Ethical and Civic Responsibility. Citizens within a democracy are exposed to persuasive messages on a daily basis affecting their understanding and perceptions of the world in which they live. This course will explore the communicative, logical, and psychological processes of persuasion. This is accomplished through analysis of various persuasive theories and practices as they occur in a range of communication situations and across different media. Students will apply concepts from these areas through writing, discussion and speaking. This course will focus on the impact of mediated persuasion on society in order to develop an awareness of our responsibilities as consumers of persuasion.

Student Learning Outcomes:

- * Examine the nature, methods and functions of persuasion in contemporary society.
- * Evaluate persuasion in a variety of communication contexts to become better receivers of persuasive messages.
- * Understand our responsibility as citizens to be aware of the impact of persuasion on us.
- * Identify and employ strategies for analyzing and discussing persuasive messages.
- * Analyze the impact of media on cultural attitudes and values.
- * Assess how persuasive messages from the media influence a receiver's attitudes and creates behavioral change.
- * Understand the ethical and moral obligations of being a consumer of the media's persuasive messages.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

CNST 1502 - Building Materials and Methods

This course introduces the student to materials used in construction, including lumber, panel materials, engineered products, concrete, and metals. Adhesives, fasteners and fastening techniques will be studied. This course will also introduce the student to the basics of construction practices, techniques, and construction problem solving.

Student Learning Outcomes:

- * Identify various building materials and elements of a building using the correct industry terms.
- * Describe the various components of building systems, including foundations, structural systems, thermal and moisture protection systems, finish systems, electrical and mechanical systems.
- * Demonstrate the application of various materials.
- * Select materials for correct use based on their compliance with applicable building codes and industry practices.
- * Examine the manufacturing, environmental issues, social impacts, and the distribution processes of various building materials.
- * Evaluate various methods of construction used currently and in the past.
- * Compare various conservation strategies.

(3 C: 3 lect/pres, 0 lab, 0 other)

CNST 1506 - Estimating for the Construction Trades I

This course will introduce the student to residential construction estimating concepts. Students will be introduced to materials and methods used in residential construction projects. Some materials to be examined include, metals, concrete, masonry, wood, engineered wood products, plastics, thermal and waterproofing products. Application of linear, square, and cubic measurements and their relationships to the estimating process will be studied. Estimating software will be introduced. The application of the various Minnesota Codes used in residential construction will be studied.

Student Learning Outcomes:

- * Develop an understanding of various building trade terminology.
- * Identify various types of construction used on specific projects.
- * Identify the principles of estimating.
- * Examine residential construction documents to determine items and quantities.
- * Explore and interpret plan specifications.
- * Organize material takeoffs for building plans.
- * Select appropriate materials for various applications.
- * Describe properties of various materials.
- * Develop an understanding of the applicable codes and how they apply to residential construction estimating.
- * Estimate costs using industry cost sources.
- * Demonstrate consistency in the estimating process.

Prerequisite(s): CNST1502.

(3 C: 2 lect/pres, 1 lab, 0 other)

CNST 2502 - Estimating for the Construction Trades II

This course will build on the knowledge and skills developed in CNST1506. Further study will include more complex structures, commercial construction documents and emerging materials of the industry. Materials costs, availability and compatibility will be analyzed.

Student Learning Outcomes:

- * Identify various types of construction used on specific projects.
- * Apply the principles of estimating.
- * Examine commercial construction documents to determine items and quantities.
- * Expand knowledge of plan specifications.
- * Organize takeoffs by CSI division.
- * Select appropriate materials for various applications.
- * Analyze properties of various materials.
- * Develop an understanding of the applicable codes in commercial construction.
- * Determine unit costs using industry cost sources.
- * Demonstrate consistency in the estimating process.

Prerequisite(s): CNST1506.

(3 C: 2 lect/pres, 1 lab, 0 other)

CNST 2506 - Construction Management

The learner will develop skills and knowledge of construction management that will assist them in understanding how projects are envisioned, designed, and built; the types of materials and methods used; methods for estimating the cost of construction; project scheduling and project management.

Student Learning Outcomes:

- * Describe the phases of a construction project.
- * Explain why it is important to plan.
- * Explain the importance of construction documents.
- * Identify various construction documents and describe their use.
- * Identify the components of an estimate.
- * Describe the estimating process.
- * Select the correct materials for a project.
- * Prepare a project estimate.
- * Compare scheduling methods.
- * Create a project schedule.
- * Describe the billing process.
- * Compute net billing calculations.
- * Explain the importance of personal presentation to customers.
- * Discuss the importance of ethical business behavior.

Prerequisite(s): CNST2502.

(3 C: 3 lect/pres, 0 lab, 0 other)

CNST 2510 - Commercial Estimating and Project Analysis

This course will introduce the students to commercial construction estimating

concepts. Application of linear, square, and cubic measurements and their relationships to the estimating process will be studied. Estimating software will be introduced and used for commercial applications.

Student Learning Outcomes:

- * Identify various types of construction used on specific projects.
- * Establish material quantities for commercial construction projects.
- * Establish material quantities with emphasis on related mathematics as it applies to commercial construction.

Prerequisite(s): CNST2502.

(2 C: 0 lect/pres, 2 lab, 0 other)

CPTR 1200 - Introduction to Microsoft Excel

This course is designed to teach fundamental spreadsheet skills. Students in this course will learn and demonstrate a strong proficiency in Microsoft Excel by creating and manipulating spreadsheets. The course will focus on learning how to input data, edit and format text, perform basic calculations, and create charts and graphics. Keyboarding proficiency is recommended for any student entering this course.

Student Learning Outcomes:

- * Utilize skills needed to work with Microsoft (MS) Excel in the Windows environment.
- * Generate worksheets to process, manipulate, and display numeric data in a meaningful manner through the use of special functions, charts, and graphs.
- * Demonstrate an ability to save, preview and print MS Excel workbook.

(1 C: 1 lect/pres, 0 lab, 0 other)

CPTR 1210 - Introduction to Computers

Students in this course will demonstrate a strong proficiency in all components of the Microsoft Office Suite (Word, Excel, Access, and PowerPoint) by creating documents, worksheets, databases, and presentations. They will also gain hands-on experience with the most recent Microsoft Windows operating system. In addition, students will understand the components of a computer, computer terminology, the internet, networks, security, and privacy. This course uses Windows PC only. Keyboarding proficiency is recommended for any student entering this course.

Student Learning Outcomes:

- * Demonstrate use of computer hardware, software, and terminology.
- * Employ file management skills for a variety of storage devices.
- * Demonstrate working in the Windows environment.
- * Evaluate the potential security and privacy issues associated with the online environment.
- * Examine the moral and social implications of computer technology.
- * Create professional documents using Microsoft Word.
- * Create professional and informational slide shows using Microsoft PowerPoint.
- * Create professional spreadsheets to process, manipulate, and display numerical data using Microsoft Excel.
- * Create basic databases emphasizing efficient data access and retrieval using Microsoft Access.
- * Integrate information between Microsoft Word, Excel, Access, and PowerPoint.
- * Use appropriate referencing, citations, tables, building blocks, and special formatting.

(3 C: 2 lect/pres, 1 lab, 0 other)

CRTK 1300 - Introduction to Critical Thinking

Meets MN Transfer Curriculum Goal Area 2 - Critical Thinking - Intro to Critical Thinking is a practical course in critical thinking. It develops monological and multilogical and ethical reasoning skills and explores creative and logical approaches to problem solving. It examines how our thinking skills affect our personal identities, our relationships with others, and our understanding of culture. It analyzes systems of ideas, multiple perspectives on issues, and differing analytical approaches. It develops the higher order thinking skills, intellectual values, and the qualities of thought important for personal integrity, academic success, and effective citizenship.

Student Learning Outcomes:

- * Solve problems using creative thinking and logical reasoning.
- * Distinguish between facts, assumptions, inferences and implications in beliefs and arguments.

- * Apply effective problem solving techniques to monological and multilogical problems.
 - * Apply strategies for reducing the effect of bias and prejudice on thinking.
 - * Analyze the Elements of Thought (Purpose, Questions, Information, Inferences, Assumptions, Point of View, Concepts, and Implications) in decision making.
 - * Apply ethical reasoning to problem solving situations.
 - * Apply the Intellectual Virtues (Intellectual Humility, Empathy, Integrity, Courage, Autonomy, Perseverance and Confidence in Reason) to the evaluation of beliefs, arguments, and theories.
 - * Demonstrate the Intellectual Standards (accuracy, precision, clarity, breadth, depth, significance, logic, and fairness) in coursework
- Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

CSEC 2200 - Ethics in Information Technology

Information technology, the use of and creation of information spans almost every aspect of our lives. This course is designed to provide an understanding of the ethical responsibilities of end users, creators, and information technology specialists. The goal is to expand our understanding of how access to information and systems can have an impact on industry, society, and the world. Through topical exploration this course will equip students with skills necessary to make ethical decisions when presented with personal and professional information, especially in the field of cyber security.

Student Learning Outcomes:

- * Explain why ethics is important.
 - * Describe what corporate social responsibility is.
 - * Analyze trends in unethical use of data.
 - * Summarize the value of compliance in industry
 - * Summarize laws regarding data privacy.
 - * Evaluate the impact of IT on the standard of living and worker productivity.
- (2 C: 2 lect/pres, 0 lab, 0 other)

CSEC 2205 - Cloud Computing Fundamentals

The deployment of locally based computing resources to internet connected cloud-based service providers requires that network administrators and computer security professionals change the way they view their company's digital assets. Combining traditional business needs with new technologies means understanding virtualization, resource management, hybrid, and multi-cloud systems. Exploration of current industry leading cloud providers along with private cloud solutions provides students with the skills to understand standard cloud methodologies; to implement, maintain, and deliver cloud technologies. This course prepares students for the CompTIA Cloud+ certification exam.

Student Learning Outcomes:

- * Analyze system requirements to ensure successful system deployment.
- * Analyze testing results to determine if the testing was successful in relation to given system requirements.
- * Apply elements required to extend the infrastructure into a given cloud solution.
- * Apply the appropriate access control list (ACL) to the target objects to meet access requirements according to a security template.
- * Implement defined security technologies to meet given security requirements.
- * Analyze defined metrics to determine the presence of an abnormality and/or forecast future needed cloud resources.

Prerequisite(s): ITEC1240.

(3 C: 2 lect/pres, 1 lab, 0 other)

CSEC 2210 - Computer Forensics

The investigation of computer-related crimes with the goal of exposing, cataloging and reviewing evidence to be presented in court is a methodical and detail-oriented process. Using a variety of digital forensics tools and techniques, students will gain hands-on experience discovering and analyzing systems for digital evidence.

Student Learning Outcomes:

- * Describe different aspects of computer crime.
- * Discover, protect, and present digital evidence.
- * Differentiate valid evidence from mundane data.
- * Explain various ways of hiding data.
- * Utilize computer software to search for evidence.

- * Perform basic investigations on a computer system.
- * Examine ethical and legal responsibilities associated with a forensic examination.
- * Review and critique a forensic report.
- * Recover whole and partial data from a variety of computing systems.

Prerequisite(s): ITEC1220.

(3 C: 2 lect/pres, 1 lab, 0 other)

CSEC 2215 - Scripting and Automation

Making the most efficient use of our time is critical in any business. In Information Technology the use of scripts and automation reduce mundane tasks and simplify complex implementations. This course will introduce methods and tools for understanding and automating system tasks. Scripting and Automation explores the foundations and usage of the command line, developing programmatic flow and creating shell scripts to assist in the automated performance of common technology management duties. Successful participants will be able to automate many tasks with scripts and reduce effort by creating scripts that can run interactively or automatically.

Student Learning Outcomes:

- * Implement basic programming structures in programs and scripts
- * Understand the flow a program or script
- * Apply problem solving strategies to develop scripts/programs
- * Demonstrate appropriate use of programming fundamentals
- * Apply systems automation techniques to new areas in system administration
- * Evaluate how scripting may or may not facilitate system automation.

Prerequisite(s): ITEC1250.

(3 C: 2 lect/pres, 1 lab, 0 other)

CSEC 2220 - Offensive Security

Research a network, examine the traffic and identify its vulnerabilities. Computer security relies on the research and examinations provided by ethical penetration testers. This course provides a foundation for strong security research and the execution of a controlled and well documented system examination to identify weaknesses in an enterprises physical and digital systems.

Student Learning Outcomes:

- * Enumerate target networks and systems.
- * Analyze computer systems to identify potential vulnerabilities.
- * Demonstrate creative problem solving and lateral thinking.
- * Explain the ethical and legal challenges of a penetration test.
- * Apply the appropriate tools for specific reconnaissance or attack.
- * Produce a detailed test report.

Prerequisite(s): ITEC1110, ITEC1250.

(3 C: 2 lect/pres, 1 lab, 0 other)

CSEC 2225 - Network Defense

Attacks on our systems are becoming increasingly broad and complex. It is simply not feasible to conduct full host-based forensic analysis on every system in an organization of any size. The proper use of network forensics can enable examiners to determine the origin and impact of malicious events quickly and effectively. This course will allow students to develop the understanding of the fundamentals of network forensics, normal and abnormal conditions for common network protocols, the process and tools used to examine device and system logs, wireless communication, and encrypted protocols.

Student Learning Outcomes:

- * Evaluate the behavior, security risks and controls of common network protocols.
- * Analyze techniques and practices used to encode and encrypt common network traffic and common attacks on these controls.
- * Utilize NetFlow data and information sources to identify network attacks.
- * Demonstrate familiarity of open-source packet analysis tools and their purpose
- * Design and deploy a network employing diverse transmission and collection technologies.
- * Analyze diverse protocols and data traversing a network environment.
- * Integrate network security proxies, common log formats and flow of data in a network.
- * Analyze diverse log formats, protocols and the security impact of the event generating processes.
- * Apply the configuration and deployment strategies for position logging aggregators and collection devices throughout a network environment.
- * Identify and control the risks associated with wireless technologies, protocols

and infrastructure.
Prerequisite(s): ITEC1230.
(3 C: 2 lect/pres, 1 lab, 0 other)

CSEC 2230 - Advanced Security Concepts

Building on the Information Security Fundamentals course, the Advanced Security Concepts course will dive deeper into the complex and constantly changing information security and assurance landscape. Examination of security models, governance, and security process assessment to produce secure computing environments and effective threat evaluation. Hands-on activities will develop the use of threat detection tools and provide experience using data analysis to identify threats and risks to the enterprise.

Student Learning Outcomes:

- * Apply environmental reconnaissance techniques using appropriate tools and processes.
- * Explain the purpose of practices used to secure a corporate environment.
- * Implement an information security vulnerability management process.
- * Distinguish threat data or behavior to determine the impact of an incident.
- * Explain the importance of communication during the incident response process.
- * Summarize the incident recovery and post-incident response process.

Prerequisite(s): ITEC1110.
(3 C: 2 lect/pres, 1 lab, 0 other)

CULN 1202 - Introduction to Culinary Arts

This course introduces key components of the Culinary Arts program at SCTCC as well as information about the Food Service industry. Students will learn historical/foundational practices, standards of professionalism, industry-specific terminology, the use of weights/measurements, equipment/tool identification, safe equipment/tool usage, and proper cleaning and sanitization of equipment/tools. This course will also cover knife identification, knife use, and proper care of knives.

Student Learning Outcomes:

- * Identify proper standards of professionalism within the Food Service industry.
- * Define various segments within the Food Service industry and employment opportunities within each segment.
- * Apply various historical/foundational practices within the Food Service industry.
- * Apply kitchen terminology to all aspects of food production.
- * Identify equipment/tool items within a kitchen environment.
- * Demonstrate proper use of scales and weights/measurements.
- * Demonstrate proper cleaning/sanitization procedures for multiple kitchen equipment items.
- * Demonstrate appropriate knife usage and proper knife care.

(3 C: 2 lect/pres, 1 lab, 0 other)

CULN 1205 - Kitchen Operations

This course teaches essential operating procedures that students will need to know in all areas of the Food Service industry. This course will cover service line operations, kitchen mathematics, dish and ware-washing procedures, and equipment identification, usage, and proper cleaning procedures.

Student Learning Outcomes:

- * Apply kitchen terminology to all equipment, techniques, and protocols.
- * Perform proper dish washing/dish room procedures.
- * Demonstrate knowledge of kitchen mathematics in daily operations.
- * Calculate food expenses including profit and loss statements.
- * Utilize recipes in the composition of various dishes.
- * Demonstrate the process of designing, planning, and sequencing menus.
- * Demonstrate preparation procedures (mise en place) in the production of various dishes.
- * Demonstrate recipe conversions.

(3 C: 2 lect/pres, 1 lab, 0 other)

CULN 1210 - Servsafe Certification

This course provides a working knowledge of safe food handling, personal hygiene, food-borne illnesses, and HACCP procedures. This course is designed to prepare students for the State of MN food management certificate examination.

Student Learning Outcomes:

- * Identify food-borne illnesses.
- * Understand proper sanitation techniques.

- * Practice good personal hygiene methods.
 - * Pass state food safety tests.
- (1 C: 1 lect/pres, 0 lab, 0 other)

CULN 1215 - Stocks, Soups, Sauces

The production of a properly seasoned stock is a foundational principle within all of food production. This course covers the key concepts of stock production from these stocks, sauces and soups can be prepared utilizing various cooking principles. This course covers the identification and production of classical stocks as well as the utilization of convenience bases for stock production.

Student Learning Outcomes:

- * Prepare various stocks and sauce ingredients in stock and sauce production.
- * Demonstrate selection and utilization of proper equipment for stock, sauce, and soup production.
- * Prepare various stocks including chicken, beef, vegetable, and other stocks.
- * Evaluate various convenience bases and utilize this knowledge to develop stocks, sauces and soups.
- * Identify by sight, taste, and/or flavor profile up to 100 herbs, spices, flavorings, and oils.
- * Evaluate flavor profiles within stocks, sauces and soups and demonstrate proper adjustment techniques.
- * Identify and prepare various types of sauces including mother sauces and small sauces.
- * Demonstrate preparation and use of various thickening agents (i.e., roux and slurry) in the production of various sauces and soups.

(3 C: 1 lect/pres, 2 lab, 0 other)

CULN 1220 - Introduction to Pantry Food Preparation

This course covers proper techniques, procedures and responsibilities in the preparation of various pantry foods/dishes including salads, salad dressings and sandwiches. An emphasis on the proper storage and handling of various ingredients is addressed. Hands-on work will be an integral part of this course as students apply knowledge of various aspects of pantry foods.

Student Learning Outcomes:

- * Demonstrate pantry food preparation including the safety and storage of ingredients and sanitization methods for pantry food items.
- * Identify by sight and flavor profile various salad ingredients and types.
- * Evaluate types of oil and vinegar and create various salad dressings.
- * Identify and prepare various types of breads, spreads, and fillings for sandwich production.
- * Demonstrate the proper production of both hot and cold sandwiches.
- * Evaluate pantry items for quality and usage.

(2 C: 1 lect/pres, 1 lab, 0 other)

CULN 1230 - Vegetables, Potato, Rice and Starches

This course covers the key components of cooking practices related to vegetables, potato, rice, and starches (legumes, grains, pasta, and other starches). A wide range of topics will be covered, including identification, utilization within menus, yield analysis, small and large batch cooking principles, safety and sanitization, and proper dry and wet storage. Each area will be covered in detail, with emphasis on demonstrative production. Classroom demonstrations and hands-on work will be an integral part of this course as students apply knowledge to multiple areas within food production.

Student Learning Outcomes:

- * Demonstrate multiple cooking methods and approaches to various vegetables, potato, rice, and starches and apply these methods/approaches to a wider variety of products.
- * Identify the different vegetable types (Red, Yellow, Green, White, etc.) and apply cooking techniques to each type.
- * Apply knowledge of vegetables, potato, rice, and starches to menu preparation and design.
- * Identify proper safety and storage procedures for vegetables.
- * Apply small and large-batch cooking techniques to various food products.
- * Demonstrate troubleshooting and problem-solving skills in food production.

(2 C: 1 lect/pres, 1 lab, 0 other)

CULN 1235 - Introduction to Breakfast

This course covers key components of breakfast production including the preparation of various egg dishes, meats, cereals, starch products, breakfast pastries, fruits, and beverages. Teamwork, professionalism, efficiency and service are

stressed in this course. Students will practice these concepts concurrently while gaining knowledge of the various cooking methods and techniques. A capstone project to this course will include preparing 2 over-easy eggs and an omelet within 4 minutes.

Student Learning Outcomes:

- * Identify various types of breakfast food products.
- * Apply proper terminology for breakfast items for efficiency in breakfast production.
- * Demonstrate proper techniques in the preparation of eggs including over-easy, poached, scrambled, hard-boiled, and various types of omelets.
- * Prepare various types of meats and potato products for breakfast service.
- * Serve breakfast.
- * Prepare and serve multiple types of pastries.
- * Demonstrate professionalism and teamwork in the production of breakfast items and develop a sense of urgency in the production of breakfast items.
- * Prepare 2 over-easy eggs and an omelet within 4 minutes.

(2 C: 1 lect/pres, 1 lab, 0 other)

CULN 1245 - Basic Baking

This course covers key components of bakeshop production and will provide an understanding of the terminology, methods, and functions of multiple baking ingredients. A wide range of topics will be covered in this course, including the use of yeast products, the development of yeast breads and quick breads, cake production and icings, cookies, various pies and pastries, and the production of creams, custards, puddings, and desserts.

Student Learning Outcomes:

- * Utilize standard baking terminology and ingredients in a variety of productions.
- * Demonstrate the proper use of scales and other weights and measurements.
- * Demonstrate various mixing methods within the bakeshop such as straight dough, angel food, sponge, and creaming methods.
- * Prepare a variety of cakes, cookies, pies, pastries, and dough products utilizing skills and production techniques demonstrated in class.
- * Utilize baker's percentages to convert bakeshop recipes for production.
- * Participate in a variety of experiences that develop professional skills, attitudes, and behaviors.
- * Demonstrate proper safety and sanitization methods for all bakeshop work.

(3 C: 1 lect/pres, 2 lab, 0 other)

CULN 1250 - Basic Cooking Principles

This course builds upon the skills and knowledge developed in the preparation of stocks, sauces, and soups and applies the knowledge to larger food industry principles. Key topics included in this course include the identification of various meat products, fabrication of meats, poultry, wild game, various seafood items, processing and curing of meats, and the application of complementary sauces for meat, poultry, and seafood dishes. Additional topical areas in this course include food cost and pricing, "center of the plate" costs, yield testing for the fabrication of meats, application of cooking methods for various meat, poultry, and seafood dishes, and an introduction to food presentation and garnishing.

Student Learning Outcomes:

- * Identify by sight over 25 meat cuts.
- * Fabricate a primal cut of beef and perform a raw yield test. Apply raw yield test results to food costs and menu pricing.
- * Demonstrate proper fabrication of poultry and various wild game products and prepare fabrications for meal service.
- * Demonstrate cleaning and preparation of various seafood items including fish, clams, mussels, squid, octopus, and others.
- * Prepare accompaniments and sauces for various meat, poultry, and seafood dishes.
- * Evaluate various dishes on presentation and garnishing to determine the final product for customers.
- * Apply proper cooking principles to a multitude of dishes.
- * Identify industry terminology applicable to multiple aspects of food production.
- * Apply proper safety, sanitization, and storage procedures for all meat, poultry and seafood items.

(4 C: 0 lect/pres, 4 lab, 0 other)

CULN 1265 - Basic Food Production Principles

This course covers key components of food production, including menu planning,

time management for food production, delegation and direction within kitchen teams, and food presentation. Teamwork and professionalism are stressed in this course. Students in this course will practice these concepts concurrently while learning various cooking methods and techniques, including broiling and grilling, roasting and baking, and sautéing. A capstone project for this course will include preparing a three (3) course dinner for four (4) people to whom the student will demonstrate and apply various cooking methods and procedures.

Student Learning Outcomes:

- * Apply proper food production terminology to various projects.
- * Prepare various dishes (meat, poultry, seafood, vegetables, fruits, pastas, etc.) utilizing multiple cooking techniques including broiling and grilling, roasting and baking, and sautéing.
- * Apply various concepts related to kitchen leadership including sense of urgency, time management, preparation/planning, management, and direction and delegation.
- * Apply food production principles for convenience foods and ingredients.
- * Apply knowledge of garde manger techniques including concepts of food presentation, plate layout and design, and applying height to plates.
- * Demonstrate proper safety and sanitization techniques to all aspects of food production and service.
- * Prepare and serve a three (3) course meal (soup/salad, main entree with accompaniments, and dessert) to an evaluating team.

(3 C: 1 lect/pres, 2 lab, 0 other)

CULN 1270 - Garde Manger

Developing visual interest and appeal in all dishes is an essential skill for all professional cooks. This course introduces students to the fundamental elements of food art and garde manger work. This course will specifically address food selection and preparation techniques, fruit, vegetable, and tallow carvings, and various centerpiece displays. Additional work with hors d'oeuvres, canapes, and charcuterie will be emphasized.

Student Learning Outcomes:

- * Identify tools, equipment, and techniques used in garde manger work.
- * Learn the definitions and terminology used in garde manger.
- * Identify products used in garde manger work.
- * Prepare a variety of centerpieces and garnishes for dishes developed in class.
- * Participate in a variety of experiences that will develop student professional skills, attitudes, and behaviors.
- * Prepare and display one (1) showpiece utilizing proper garde manger techniques.

(4 C: 1 lect/pres, 3 lab, 0 other)

CULN 1275 - Social Etiquette

Social etiquette within a society or group varies greatly across cultures. This course is an overview of current etiquette standards in today's work environment, with special attention given to the Food Service industry. Key components of this course include social/dining etiquette, professional behaviors and standards, and an exploration of different cultural norms and expectations for social etiquette.

Student Learning Outcomes:

- * Identify the key elements of professional and social etiquette for formal dining.
- * Identify specific professional behaviors for use in a variety of global industry settings.
- * Demonstrate social dining etiquette from different countries throughout the world.
- * Present on social etiquette from different countries throughout the world.
- * Demonstrate proper place settings for a multiple-course gourmet dinner.
- * Develop communication strategies and techniques demonstrating professional standards.
- * Describe the proper use of various utensils and dishware.

(2 C: 0 lect/pres, 2 lab, 0 other)

CULN 1280 - Foodservice Internship

This course involves a three-week (96-hour) internship at a food service operation. This course will provide the student with an opportunity to sharpen their culinary skills in a fast-paced, real-world environment. Under the direction of experienced chefs/cooks, the student will experience teamwork, problem-solving, and a feel for the Food Service Industry.

Student Learning Outcomes:

- * Devise internship expectations, hours/scheduling, goals, paperwork, and duties

- to be assigned. Coordinate with internship coordinator(s) and instructor.
 - * Improve teamwork skills through communication and daily work with food service staff.
 - * Demonstrate problem-solving abilities by applying in-class experiences and knowledge to the real-world environment.
 - * Demonstrate an understanding of the different menu items and cooking procedures while balancing classroom knowledge with processes/procedures expected at the internship location.
 - * Experience a food service establishment in full operation.
 - * Demonstrate professional behaviors and standards.
 - * Maintain communication with internship coordinator(s) and instructors.
 - * Serve as a positive reflection of both St. Cloud Technical and Community College and the Culinary Arts program through work with internship contact.
- (2 C: 0 lect/pres, 0 lab, 2 other)

DEHY 1400 - Dental Hygiene Seminar I

This course introduces the first year dental hygiene student to the profession of dental hygiene. Students gain knowledge and understanding of patient assessments, medical histories, dental histories, medical emergencies and infection control protocol in the dental setting. Students will learn charting, documentation, and components of the dental record. Identification of soft and hard deposits, use of dental indices and stain removal techniques are introduced. The topics of patient communication, health literacy, and cultural competence are addressed.

Student Learning Outcomes:

- * Explain the history of the dental hygiene profession and role of the dental hygienist.
 - * Relate the significance of personal, medical and dental histories to provide safe dental care for patients.
 - * Describe procedures for managing medical emergencies in the dental office.
 - * Discuss how health literacy facilitates culturally competent patient care.
 - * Explain confidentiality and privacy of patient information related to the Health Insurance Portability and Accountability Act (HIPAA).
 - * Identify transmissible diseases and infection control protocols.
 - * Explain use of personal protective equipment in the dental setting.
 - * Demonstrate dental charting and documentation procedures for patient records.
- (2 C: 2 lect/pres, 0 lab, 0 other)

DEHY 1402 - Dental Hygiene Seminar II

This course will expand the dental hygiene student's knowledge level in planning dental hygiene patient care. Emphasis is on dental disease prevention, patient education, use of oral hygiene devices, tobacco cessation, and xerostomia counseling. Students will assess the oral care needs of edentulous patients, patients with dentures, orthodontic appliances and dental prosthetics. Students will learn about diabetes mellitus, the Americans with Disabilities Act (ADA), mobility devices, safe patient handling, and guidelines for creating a barrier free environment for dental patients.

Student Learning Outcomes:

- * Utilize scientific evidence to plan and deliver dental hygiene patient education.
- * Develop educational counseling sessions for xerostomia patients and patients who use tobacco products.
- * Demonstrate oral hygiene devices, adjuncts, and plaque removal aids to prevent dental disease.
- * Assess the oral hygiene needs of patients with orthodontic appliances, dentures and dental prosthetics.
- * Explain the periodontal risk factors for patients with diabetes mellitus.
- * Describe a barrier free environment based on government regulations for accessibility standards.
- * Demonstrate safe patient handling using transfer techniques and devices.

Prerequisite(s): DEHY1400.

(2 C: 2 lect/pres, 0 lab, 0 other)

DEHY 1404 - Clinical Seminar III

This course is a continuation of Clinical Seminar II (DEHY 1402) with emphasis on advanced dental hygiene skills, and adjunct therapies. The course includes didactic study of treatment planning and preventative therapy with the use of oral health care adjuncts such as: dentifrices and mouthrinses, hypersensitivity treatment, ultrasonic powered instrumentation, dental antimicrobials and chemotherapeutics, implant care and care for the client who is medically compromised with cardiovascular disease and blood disorders. It includes the local delivery of chemotherapeutic agents and hypersensitivity treatment in a lab setting. This

course is to be taken concurrently with DH Materials and Methods (DEHY 1421) and Clinical DH III (DEHY 1486).

Student Learning Outcomes:

- * Utilize the dental hygiene process of care to identify unmet dental needs and determine dental hygiene therapies.
- * Formulate and present a formal dental hygiene care plan.
- * Recognize the need for and recommendation of appropriate mouth rinses and dentifrices, hypersensitivity therapy and placement of antimicrobials/chemotherapeutics.
- * Recognize the need for advanced ultrasonic instrumentation for effective clinical treatment planning.
- * Propose appropriate treatment for the client with implants and present motivational strategies for home care.
- * Recognize client special needs in relationship to cardiovascular disease.
- * Compose a literature review on a product or method utilizing evidenced based research to incorporate into a dental hygiene care plan.

Corequisite(s): DEHY1486, DEHY1421

Prerequisite(s): DEHY1402 or DEHY1485.

(2 C: 1 lect/pres, 1 lab, 0 other)

DEHY 1406 - Clinical Seminar IV

This course is a continuation of DEHY 1404, with a continued focus on care of the client with special needs, and continued emphasis on dental hygiene research, leadership and management, and the role of the dental hygienist in alternative care settings. This course also prepares the student for the workplace with resume and cover letter writing and professional development. This course is to be taken concurrently with DEHY 1488.

Student Learning Outcomes:

- * Determine dental hygiene care planning interventions for clients with special needs.
- * Recommend parameters for the dental hygiene practitioner in selection of new products for clients.
- * Design an appropriate resume and cover letter for the dental hygienist.
- * Critique current trends in dentistry as evidenced by scientific articles.
- * Recognize cultural diversity in the delivery of the dental hygiene health care plan including writing and presenting a formal plan appropriate for treatment.

Corequisite(s): DEHY1488

Prerequisite(s): DEHY1404, DEHY1486.

(2 C: 2 lect/pres, 0 lab, 0 other)

DEHY 1410 - Introduction to Dental Materials and Methods

This lecture/lab course is designed to provide the dental hygiene student with information required to facilitate the optimal selection, handling, placement and care of the materials used in dentistry. Topics covered include: adhesive materials, direct polymeric restorative materials, amalgams, dental cements, impression materials, and gypsum materials. Lab procedures will include: restoration identification, denture cleaning, etch and place sealants on a green teeth, placing and polishing amalgam restorations, fabricate temporary restorations, cement temporary restorations, adjust temporary restorations, remove temporary restorations, place temporary fillings, take impressions, and fabricate study models.

Student Learning Outcomes:

- * Describe the physical, chemical, and biologic properties of dental materials addressed in this course
- * Identify the physical, chemical, and biologic properties of dental materials to demonstrate proper selection, handling, and care of dental materials used within our dental hygiene scope of practice.
- * Assess client needs, plan materials, implement procedures and evaluate results of material used within our dental hygiene scope of practice.
- * Apply the most up to date infection control and safety procedures in the laboratory and clinical setting.

(2 C: 1 lect/pres, 1 lab, 0 other)

DEHY 1414 - Nutrition and Dental Hygiene

This course is an introduction to the basic principles of nutrition and the relationship to dental hygiene. Course content includes: the role of nutrients in the maintenance of normal health, the effects of nutrition on disease, nutrition in the human life cycle, food behaviors and diet. The course will analyze the links between oral health and diet and how to assess the nutritional status of dental patients. Students will learn about sugars, acids, caries cycle, the prevention of tooth decay, and the benefits of fluorides to prevent tooth decay. Students will

complete a self-analysis of their own diets and learn how to develop a nutritional care plan for dental patients.

Student Learning Outcomes:

- * Explain the therapeutic value of foods in the normal diet.
- * Apply basic nutrition principles through the lifespan and with ethnic groups to recognize food choices that may be different.
- * Explain the role of sugar in cause of tooth decay.
- * Identify nutritional factors in tooth development and maintenance.
- * Discuss the implications of specific foods and nutrients on oral health and systemic health.
- * Complete a nutritional self-assessment of diet and eating habits.
- * Analyze a food diary of a dental patient.
- * Develop a care plan for a patient with a high sugar diet and potential for tooth decay.
- * Compare and contrast the use topical versus systemic fluoride in preventing tooth decay.

(2 C: 2 lect/pres, 0 lab, 0 other)

DEHY 1418 - Introduction to Radiology

This lecture/laboratory course provides dental hygiene students with the knowledge of radiographic principles and exposure techniques in digital radiography. Course content includes theoretical concepts of radiation, effects of radiation exposure, radiation production, radiation safety and monitoring, infection control, operation of x-ray unit, intraoral and extraoral radiographic techniques, and anatomical landmarks. The laboratory portion of the course will prepare the student to demonstrate competency in exposing digital radiographs using the paralleling and bisecting techniques. Students will practice taking radiographs on phantom skulls and DXTTR (Human-like mannequins).

Student Learning Outcomes:

- * Identify the concepts, effects, production and monitoring of radiation according to OSHA (Occupational Safety and Health Administration) guidelines for both traditional and digital radiology.
- * Recognize the difference between the paralleling, bisecting, and bitewing technique for digital imaging.
- * Demonstrate the exposure of digital radiographs according to the 'SCTCC Radiology Criteria' manual.
- * Identify images of anatomical structures and images recorded on all dental radiograph.

(2 C: 1 lect/pres, 1 lab, 0 other)

DEHY 1421 - Dental Hygiene Materials and Methods

This course is a continuation of DEHY 1410 where students gain lab experience and competency with dental hygiene expanded functions. Lab procedures will include alginate impressions, study models, custom bleaching trays, power scaling devices, isolation techniques, irrigation, and use of dental technology.

Student Learning Outcomes:

- * Assess dental clients and determine need for dental hygiene procedures.
- * Explain level of supervision for each procedure based on the Minnesota Board of Dentistry guidelines.
- * List risks and benefits of treatment as they relate to patients' dental needs.
- * Demonstrate dental hygiene procedures on typodonts and classmates.
- * Demonstrate documentation of procedures in patient dental chart.

Corequisite(s): DEHY 1404, DEHY 1486

Prerequisite(s): DEHY 1402, DEHY 1410, DEHY 1485.

(1 C: 0 lect/pres, 1 lab, 0 other)

DEHY 1422 - Dental Pharmacology

This course provides an explanation of basic pharmacology and drug use. The major focus is on drug mechanism of action, therapeutic effects, clinical uses, and adverse reactions to drugs. Dental hygiene students will learn about over the counter medications and prescription medications that appear on medical histories of dental patients.

Student Learning Outcomes:

- * Identify and discuss the therapeutic uses, mechanism of action, and important pharmacokinetics for common drugs.
- * Explain the role of the central nervous system, parasympathetic autonomic nervous system, and the sympathetic autonomic nervous system in drug use.
- * List and describe the major pharmacologic effects, adverse reactions, and side effects associated with the drug groups.

- * Describe any contraindications or precautions for various drug groups.
 - * Determine changes in the treatment plans that would be required for patients taking medications.
 - * Utilize drug references look up medications, indications and side effects.
- (2 C: 2 lect/pres, 0 lab, 0 other)

DEHY 1424 - Head, Neck and Dental Anatomy

This course covers the anatomical components and functions of head, neck, teeth, and supporting structures. Emphasis will be on the skeletal, muscular, nervous, venous and masticatory systems. The course includes comparative study of the deciduous and permanent teeth.

Student Learning Outcomes:

- * Describe the development, form and function of primary and permanent dentitions.
- * Classify teeth according to classification, arch, type, function and notation system.
- * List the calcification dates and eruption patterns of primary teeth and permanent teeth.
- * Identify the parts of a tooth and the landmarks of the crowns and roots.
- * Classify occlusion and bite according to the Angle's classification system.
- * Identify the TMJ (temporal-mandibular joint) and describe various TMJ disorders.
- * Identify the various glandular tissues found in the head, face and neck.
- * Identify bones and muscles of the head and neck utilizing diagrams, skulls and models.
- * Describe the bony landmarks of the maxilla and mandible as they relate to local anesthetic injection sites.
- * Differentiate the various blood vessels to and from the head, neck, and oral structures.
- * Identify the major nerve branches of the head, neck, face, and teeth and describe what structures they innervate. Describe the muscles of mastication and muscles of facial expression.
- * Locate the major lymph nodes of the head, neck, face and teeth.

(3 C: 3 lect/pres, 0 lab, 0 other)

DEHY 1428 - General and Oral Pathology

This course covers concepts of development and growth disturbances; diseases of microbiological origin; injury and repair; metabolic and disease disturbances; and oral manifestations of various diseases and conditions. Special emphasis is placed on clinical and slide recognition of pathology in the oral cavity.

Student Learning Outcomes:

- * Identify normal and abnormal pathology while using dental terminology to describe findings
- * Differentiate between inflammation and immunity to recognize diseases associated with each process.
- * Synthesize patient information (medical history, dental history, and dental assessments) to develop a care plan for oral pathology findings.
- * Differentiate common etiologies and neoplasms to determine between benign and malignant oral neoplasms.
- * Classify cysts and tumors by examining pictures and radiographs.

(3 C: 3 lect/pres, 0 lab, 0 other)

DEHY 1440 - Community Dental Health I

This course introduces students to the disciplines and basic principles of dental public health, epidemiologic methods, and biostatistical measurements and analysis. The course will include identification of current issues in community dental health and review current community health practices. Emphasis will be placed on comparing and contrasting community health practices with those in private clinical settings. Students will be introduced to current literature in the field of community dental health through evaluation and critiquing of journal articles.

Student Learning Outcomes:

- * Compare and contrast the histories of public health dentistry and public health medicine.
- * Utilize dental indices and describe how they can be used for evaluation.
- * Compose a written grant designed around the dental hygiene process of care as it relates to dental public health.
- * Identify the barriers in dental public health and the dental needs as related to age, sex, race, income, and geographic regions.
- * Evaluate different types of research designs and describe how to measure, analyze and interpret data.

DEHY 1445 - Community Dental Health II

This lab course is designed to provide the dental hygiene student with field experience in assessment, planning, implementation and evaluation of community dental health presentations. Practical application of dental public health methods is included.

Student Learning Outcomes:

- * Demonstrate theory and practice in instructional methods by presenting field experiences.
- * Integrate the dental hygiene program at St. Cloud Technical and Community College with other health outreach programs in the community through field trips and presentations.
- * Implement and evaluate a dental public health program within the community.
- * Research and develop a professional Table Clinic to educate dental professionals within the community.
- * Apply theory and practice in instructional methods to help educate healthcare professionals.
- * Apply theory and practice in instructional methods to educate patients in the community on the latest research and healthcare information.

Prerequisite(s): DEHY1440.

(1 C: 0 lect/pres, 1 lab, 0 other)

DEHY 1448 - Dental Hygiene Radiology II

This lecture/laboratory course is a continuation of DEHY 1418. The course will cover: intraoral and extraoral radiographic techniques, exposure of digital and panoramic imaging, exposing and technique errors, and interpretation of dental images. The interpretation emphasis is on recognition of anatomic landmarks, caries, periodontal disease, abnormalities, dental materials, foreign objects and periapical lesions. The laboratory aspect of this course prepares the student to demonstrate competency in exposing digital radiographs using the bisecting and paralleling techniques on a skull/dexter. The human experience in this course will be with digital imaging and will include both intraoral and extraoral experiences.

Student Learning Outcomes:

- * Integrate didactic and clinical skills in exposing and evaluating radiographic images using digital technology.
- * Incorporate radiographs into the assessment process for effective dental hygiene care planning and client education.
- * Implement supplemental techniques and patient management skills for clients that present with special needs.
- * Contrast and compare normal radiographic landmarks, artifacts and shadows to those conditions that present as a result of the disease process.
- * Implement necessary infection control guidelines for preparation, during and after x-ray exposure for the operator, the patient and the equipment.
- * Demonstrate digital panoramic exposure technique on skulls.
- * Demonstrate paralleling and bisecting technique exposure on both Dexters and humans.

Prerequisite(s): DEHY1418.

(2 C: 1 lect/pres, 1 lab, 0 other)

DEHY 1460 - Periodontics I

This course will focus on the pathogenesis, diagnosis, and treatment of periodontal disease. Emphasis will be on the progression of periodontal disease, diagnostic methods, treatment modalities, and the role of the dental hygienist in the prevention and treatment of periodontal disease.

Student Learning Outcomes:

- * Describe the pathogenesis of periodontal diseases in relationship to host response.
- * Define local and systemic risk factors for periodontal diseases as they relate to severity of periodontal destruction.
- * Classify periodontal patients using the American Academy of Periodontology (AAP) and World Workshop 2017 guidelines for staging and grading.
- * Explain the goals of nonsurgical periodontal therapy.
- * Identify periodontal abscesses and endodontic-periodontal lesions.
- * Explain peri-implant diseases and conditions.

Corequisite(s): DEHY1485

Prerequisite(s): DEHY1428.

(2 C: 2 lect/pres, 0 lab, 0 other)

DEHY 1464 - Periodontics II

This course incorporates periodontal protocols and care planning with the CDT (Current Dental Terminology) dental insurance codes. Student will learn indications and contraindications for periodontal surgical procedures. Students will place periodontal dressings, remove sutures and gain understanding of periodontal flap procedures and types of bone grafts.

Student Learning Outcomes:

- * Identify indications and contraindications for periodontal surgical procedures.
- * Describe periodontal surgical procedures and the role of the dental hygienist.
- * Demonstrate placement of periodontal dressings and removal of sutures.
- * Utilize CDT insurance codes to formulate dental hygiene care plans

Prerequisite(s): DEHY1460.

(1 C: 1 lect/pres, 0 lab, 0 other)

DEHY 1468 - Pain Management

This course covers pain management techniques used in dentistry. The course will focus on preparing the dental hygiene student for the safe, effective administration of local anesthesia and nitrous oxide/oxygen inhalation for dental hygiene practice. Included in this course are content areas in anatomy, physiology, pharmacology and emergency procedures as they relate to local anesthesia and nitrous oxide. In the clinical sessions, students will be administering local anesthesia and nitrous oxide/oxygen to fellow students.

Student Learning Outcomes:

- * Recognize the scientific basis and/or rationale for local anesthesia and nitrous oxide/oxygen inhalation analgesia for pain management in dentistry.
- * Administer local anesthetic agent, competently, safely and effectively, to control pain with a minimum of patient discomfort.
- * Administer nitrous oxide/oxygen, competently, safely, and effectively, to manage associated complications.
- * Identify and manage complication/emergencies associated with pain management techniques.

Prerequisite(s): DEHY1422, DEHY1424.

(2 C: 1 lect/pres, 1 lab, 0 other)

DEHY 1481 - Pre-Clinical Dental Hygiene I

This dental hygiene lab course is an introduction to the dental clinic setting. Students will learn principles of infection control, dental unit operation, ergonomics, dental hygiene instrument design and usage. Students will learn how to assess hard tissues and soft tissues of the head, neck and mouth. Students will be introduced to electronic patient records and data gathering. This course provides the dental hygiene student with skills and knowledge to provide prophylactic dental hygiene services to patients.

Student Learning Outcomes:

- * Demonstrate infection control protocol, hand washing and use of personal protective equipment.
- * Demonstrate operation and usage of the dental chair and dental unit parts.
- * Demonstrate and explain usage of assessment instruments.
- * Perform oral cancer screenings.
- * Document all findings in the patient record.

(4 C: 0 lect/pres, 4 lab, 0 other)

DEHY 1485 - Clinical Dental Hygiene II

This clinical course introduces the first year dental hygiene student to providing direct patient care in the dental clinic. Students are supervised in the dental clinical setting while performing patient assessments, charting, preventive dental hygiene services, scaling, mechanical polishing and therapeutic services. Students gain experience in reviewing medical histories, taking vital signs, using dental imaging, and interacting chair side with the dentist.

Student Learning Outcomes:

- * Demonstrate professional and ethical behavior when treating dental patients.
- * Apply HIPAA rules and regulations when dealing with patient data.
- * Perform patients assessments based on medical history, dental history and vital signs.
- * Classify patients using the ASA (American Society of Anesthesiologists) medical classifications.
- * Classify dental patients according to American Academy of Periodontology (AAP) guidelines.
- * Differentiate plaque and calculus deposits on teeth.
- * Demonstrate removal of dental deposits with hand instruments and mechanical

- equipment.
- * Utilize dental imaging on dental patients.
- * Utilize electronic dental record system to document patient services and patient chart data.
- * Provide clinical dental hygiene services to pediatric, adolescent, adult and geriatric aged patients.
- * Demonstrate critical thinking skills when planning and delivering dental treatment to patients.
- * Demonstrate verbal and non-verbal communication skills with patients, staff, dentists and peers.
- * Integrate time management protocols and procedure sequencing during patient care.

Corequisite(s): DEHY 1402

Prerequisite(s): DEHY 1480 or DEHY 1481.

(4 C: 0 lect/pres, 4 lab, 0 other)

DEHY 1486 - Clinical Dental Hygiene III

This course is a continuation of Clinical DH II with supervised clinical experiences which include introduction to periodontal therapy, ultrasonic instrumentation, treatment planning, and sealant placement. Radiographic interpretation is incorporated within the radiographic portion of this clinical experience.

Student Learning Outcomes:

- * Incorporate dental hygiene methodology and technology from laboratory competency to clinical competency.
- * Demonstrate clinical competency in areas of client communication, assessment, care planning, implementation of care and evaluation of success.
- * Interpret medical history for assessment of indications/contraindications for dental hygiene procedures.
- * Interpret the relationships between oral health and general health and the interrelationships between medical and dental care.
- * Demonstrate intermediate clinical competency in areas of time management, treatment planning, instrumentation, tissue management, radiography and client counseling.
- * Demonstrate sharpening of instruments and maintain sharpness throughout all procedures for scaling and root planing.
- * Record all assessments, observations and procedures using Subjective, Objective, Assessment, and Plan (SOAP) format.

Corequisite(s): DEHY 1404

Prerequisite(s): DEHY 1485.

(6 C: 0 lect/pres, 6 lab, 0 other)

DEHY 1488 - Clinical Dental Hygiene IV

This course is a continuation of Clinical DH III with supervised clinical experiences which include advanced periodontal therapy, advanced ultrasonic instrumentation, chemotherapeutics and completion of procedural requirements. Clinical application of pain management techniques and radiographic interpretation are included during this clinical course. Students gain experience removing marginal overhangs and placing nonsurgical retraction material for gingival displacement.

Student Learning Outcomes:

- * Demonstrate clinical competency in areas of client assessment, care planning, implementation of care and evaluation of dental hygiene treatment.
- * Demonstrate workplace readiness through clinical competency in areas of time management, instrumentation, nonsurgical periodontal therapy, client counseling and digital radiography.
- * Correlate the relationships between oral health and general health and the interrelationships between medical and dental care.
- * Demonstrate cultural competency and health literacy when providing dental services to patients.
- * Evaluate sharpness of instruments and maintain sharpness during all scaling procedures.
- * Demonstrate effective pain management techniques on clinical patients and minimize tissue discomfort for post-operative care.
- * Document all assessments, observations and procedures in Subjective, Objective, Assessment, and Plan (SOAP) format.

Prerequisite(s): DEHY 1468, DEHY 1486.

(6 C: 0 lect/pres, 6 lab, 0 other)

DEHY 1490 - Dental Hygiene Licensure and Jurisprudence

This is a lecture course that will prepare the students for the jurisprudence exam

for dental hygiene licensure. This course will look at the Minnesota Board of Dentistry Rules and Regulations and their responsibilities involved with legal actions and how it relates to the dental profession. This course will also prepare the dental hygienist for ethical issues in the profession including mandated reporting.

Student Learning Outcomes:

- * Apply for dental hygiene licensure.
- * Prepare for the state jurisprudence exam.
- * Develop an awareness of ethical dilemmas encountered in the practice of dental hygiene.
- * Identify legal issues relevant to the various roles of the dental hygienist.
- * Recognize criteria for mandated reporting.
- * Discuss ethical issues as they relate to the American Dental Hygienist Association Code of Ethics.

(1 C: 1 lect/pres, 0 lab, 0 other)

DENT 1400 - Dental Sciences

This course is designed to provide fundamental knowledge of embryonic development pertaining to the face and oral cavity, development of the hard and soft tissues, oral histology and the terminology related to the oral cavity and anatomy of the teeth. Students will be introduced to the various structures and functions of the head and neck and their relationship to the oral cavity and dentistry. Characteristic supporting structures are studied along with an introduction to general anatomy and physiology.

Student Learning Outcomes:

- * Identify the stages of development with emphasis on the formation of the teeth and structures of the oral cavity.
- * Discuss genetic and environmental disturbances that can have an impact on dental development.
- * Discuss sensory intervention of the head and neck.
- * List and explain the body systems and their effects on the overall health of the patient.
- * Identify salivary glands related to maintaining the integrity of the tooth surfaces and their function in the oral cavity as well as in the digestion process.
- * Identify and label bones of the cranium and face and their associated landmarks.
- * Locate and identify the muscles of the head and neck and explain their relationship with facial expression, mastication and movement.
- * List the components of the temporomandibular joint and its relationship to mastication and speech.
- * Identify and discuss the regions of the face and facial features used for clinical applications in dentistry.
- * Diagram anatomic parts of a tooth, supporting structures and oral mucosa surrounding the teeth and oral cavity.
- * Locate teeth using individual characteristics and numbering systems within the maxillary and mandibular arches.
- * Compare and contrast the features of the primary and permanent dentitions.
- * Explain how size, shape and location of teeth relate to function.

(3 C: 3 lect/pres, 0 lab, 0 other)

DENT 1405 - Introduction to Dental Assisting

This course combines lecture and preclinical instruction to acquaint the student with the fundamentals of working as a chairside assistant in a dental office. Students will be introduced to instruments and equipment utilized for performing basic dental procedures. Emphasis is placed on the proper techniques utilized during hand washing, patient seating/dismissal and oral evacuation while maintaining infection control protocols. Students will apply knowledge towards the completion of clinical records including medical/dental and vital signs.

Student Learning Outcomes:

- * Identify equipment located in a dental operator and demonstrate and/or state its use.
- * Identify and/or list the instruments used in basic dental procedures.
- * Demonstrate necessary steps to take and record vital signs.
- * Review and record medical and dental histories and explain its relevance to dental treatment.
- * Demonstrate the procedures necessary to seat and dismiss a patient.
- * Demonstrate infection and work practice protocol consistent with professional guidelines prior to and after performing chairside procedures.
- * Utilize appropriate ergonomics while performing oral evacuation.
- * Apply the concepts of patient, operator and assisting positions while delivering dental care.

(2 C: 1 lect/pres, 1 lab, 0 other)

DENT 1413 - Preclinical Dental Assisting

This course is designed to provide the student with the knowledge necessary to evaluate and understand medical conditions, symptoms and treatments in order to function effectively as part of the dental team in medical emergencies. The student will be familiar with the fundamentals of pharmacology and drugs used in dentistry as well as their effects and interactions. The course will also introduce the student to preventive dentistry and basic nutritional concepts and their practical applications as it relates to oral disease.

Student Learning Outcomes:

- * Differentiate between a drug's chemical, generic, and brand name.
- * Identify medical conditions relating to medication.
- * Describe indications and contraindications of medications as they relate to dental care.
- * Discuss protocols for managing medical emergencies and the medically compromised patient.
- * Discuss the signs and symptoms of a medical emergency.
- * Define the Drug Enforcement Agency (DEA), and explain why drugs are categorized in five schedules of the Controlled Substance Act.
- * Describe factors relating to drug dosage, administration and the stages a drug goes through the body.
- * Describe the differences between the "recommended daily allowance", "Dietary Reference Intake", and "Dietary Guidelines for Americans".
- * Differentiate key nutrients and their primary functions providing insight for making healthy food choices as a means for evaluating dietary intake.
- * Interpret food labels, including criteria that must be met for food to be considered organic.
- * Explain what is meant by a cariogenic food source and its relationship to decay.
- * List how diet and nutrition can affect oral conditions.
- * Discuss psychosocial aspects of food and eating.
- * Match health and oral implications as they relate to eating disorders.

(2 C: 2 lect/pres, 0 lab, 0 other)

DENT 1415 - Infection Control in the Dental Environment

This course will enable the dental assisting student to function effectively as part of the dental health team within the concepts of infection control, the bloodborne pathogens and hazard communication standards. It will include infection control recommendations for dentistry from the CDC (Center for Disease Control and Prevention), OSHA (Occupational Safety and Health Administration), OSAP (Organization for Safety and Asepsis) and the ADA (American Dental Association) protecting the patient and the dental health care worker. Topics of discussion include but are not limited to microorganisms and infectious diseases and their means of transmission, instrument processing, surface and equipment asepsis and managing chemicals safely in the dental office.

Student Learning Outcomes:

- * Recognize the role played by governmental, state and professional organizations in relationship to infection control in dentistry.
- * Explain the concepts of how microorganisms cause diseases including types and stages of infections and the function of the immune system in relation to breaking the chain of disease transmission.
- * Describe the rationale for performing infection control procedures utilized to interfere with the mode of transmission of microbial spread in the dental office.
- * Explain the components of the Occupational Safety and Health Administration Bloodborne Pathogen Standard as it relates to infection control protocols in dentistry.
- * Recognize the principles and techniques of disinfection and instrument processing and sterilization according to specified guidelines.
- * Explain the components of the Occupational Safety and Health Administration Hazard Communication Program in relation to chemical and waste management in the dental setting.

(2 C: 2 lect/pres, 0 lab, 0 other)

DENT 1425 - Chairside Assisting I

This course is designed to continue the students' education in basic dental assisting with emphasis on instrument identification, charting, anesthesia and instrument transfer in general dentistry. Students will perform chairside techniques and follow infection control protocols in the dental clinic and utilize dental software

to record clinical data. Students will also increase oral communications skills by instructing patients in oral hygiene and preventive care.

Student Learning Outcomes:

- * Apply infection control and safety measures within OSHA, ADA, CDA guidelines to protect the patient and dental personnel while working in the dental clinic
- * Demonstrate knowledge of dental equipment, anesthetics, hand and rotary instruments while performing chairside techniques
- * Identify instruments, supplies and equipment necessary for restorative procedures utilized in general dentistry
- * Assist in the collection of diagnostic data and maintain patient clinical records utilizing manual and dental software systems
- * Understand concepts of preventive dentistry while communicating oral hygiene instruction to patients in a clinical setting

Prerequisite(s): DENT1405.

(3 C: 1 lect/pres, 2 lab, 0 other)

DENT 1435 - Dental Materials

This course is designed to introduce the student to dental materials and techniques utilized for various laboratory, restorative and clinical applications. It includes both didactic information and laboratory practice with products including gypsum, impression materials, waxes, cements, restorative materials and thermoplastic resins. Safety is emphasized.

Student Learning Outcomes:

- * Identify gypsum materials based on type, classification, color and use.
- * Manipulate gypsum materials according to its clinical application.
- * Select impression materials according to its use.
- * Identify the types of dental wax used in dentistry.
- * Distinguish the differences of various dental cements.
- * Manipulate dental cements according to its intended application.
- * Manipulate various restorative materials according to their use.
- * Demonstrate comprehension of resins (acrylic and/or thermoplastic) through manipulation according to clinical applications.
- * Function within current industry standards for infection control and personal safety.

Prerequisite(s): DENT1400.

(3 C: 2 lect/pres, 1 lab, 0 other)

DENT 1441 - Dental Radiology I

This course combines lecture and laboratory practice to introduce dental assisting students to the knowledge and skills required in dental radiology. The course introduces students to the equipment, various full-mouth image surveys, and provides instruction on the paralleling and bisecting techniques. Radiation history, production and control, and exposure variables are discussed. Other concepts include; dental anatomy and pathology, intraoral and extraoral imaging, and critiquing. Laboratory practice is provided on skulls and teaching manikins.

Student Learning Outcomes:

- * Demonstrate techniques to produce diagnostic dental image surveys on manikins.
- * Describe and practice the use of dental imaging equipment and processing procedures.
- * Demonstrate competency in mounting and critiquing dental image surveys.
- * Diagram the components of a dental x-ray machine and explain how they relate to the production of x-rays.
- * Explain how exposure variables affect an image.
- * Identify anatomical landmarks and pathologies on dental images.
- * Demonstrate panoramic imaging and describe other extraoral radiography.

Prerequisite(s): DENT1400.

(3 C: 1 lect/pres, 2 lab, 0 other)

DENT 1445 - Expanded Functions I

This course is an introduction to expanded functions that are delegated to the licensed dental assistant in the State of Minnesota. The course combines lecture, laboratory and clinical instruction and experience performing functions according to predetermined criteria utilizing typodonts, manikins and classmates. Infection control, safety and proper patient management will be reviewed.

Student Learning Outcomes:

- * Describe benefits, types and characteristics of topical fluoride and demonstrate various methods of application.

- * Recognize supporting structures of the oral cavity and demonstrate proper sizing, loading and seating of the tray while taking an alginate impression and appropriate bite registrations.
- * Identify the procedural steps in preparing a dental dam and demonstrate the steps in applying and removing the dental dam.
- * Assess the purpose and action of topical medications and demonstrate the application technique as prescribed.
- * Describe classifications, examples, distribution and the removal process or treatment (including bleaching techniques) of common stains seen in a patient's oral cavity.
- * Defend indications and contraindications for the use of pits and fissure sealants and demonstrate procedural steps in etching appropriate surfaces and applying sealants.
- * Identify instruments, supplies and equipment and prepare tray set-ups associated with performing designated expanded functions.
- * Demonstrate competence in preclinical and clinical levels as indicated by the Minnesota Board of Dentistry in the procedural steps of expanded functions covered in this course.

* Demonstrate infection control protocols and safety precautions during laboratory and clinical procedures.

Prerequisite(s): DENT1405.

(3 C: 1 lect/pres, 2 lab, 0 other)

DENT 2406 - Dental Health

This course will provide an overview of pathological conditions and developmental disorders of the oral cavity. Students will recognize the appearance and maintenance of healthy oral tissue as well as anomalies of the teeth and abnormal conditions of surrounding tissues. Students will apply their knowledge while presenting oral hygiene instructions and develop citizenship skills through service learning projects.

Student Learning Outcomes:

- * Compare and contrast characteristics of healthy oral tissue with pathological conditions of the oral cavity.
- * Differentiate developmental disorders and anomalies of the teeth and surrounding tissues.
- * Summarize characteristics of oral diseases and screening processes and treatments associated with oral cancer.
- * Plan and facilitate a group oral health presentation to a diverse population.
- * Develop citizenship skills and understand what it means to be a contributing member to the community by completing service learning projects.
- * Support and respect concepts of human dignity and appreciate individual differences.

Prerequisite(s): DENT1425.

(1 C: 1 lect/pres, 0 lab, 0 other)

DENT 2413 - Dental Practice Management

This course will cover principles and applications related to the management of the dental business office. Topics discussed include appointment control, telephone techniques, financial records maintenance, third-party reimbursement forms, HIPAA regulations, supply inventory and business operating systems. Emphasis will be placed on job seeking skills and developing a professional portfolio.

Student Learning Outcomes:

- * Develop dental software skills by completing pre-treatment estimates and third-party reimbursement forms
- * Apply knowledge utilized in business operation systems to include appointment scheduling, record keeping and inventory management
- * Apply knowledge utilized in financial management to include accounts payable, accounts receivable and dental insurance following HIPAA guidelines
- * Assemble an employment professional portfolio
- * Prepare a resume, cover letter and follow-up letter necessary to attain employment
- * Relate staff/patient interactions as they pertain to the dental business office through the use of role-play scenarios

Prerequisite(s): DENT2424.

(2 C: 2 lect/pres, 0 lab, 0 other)

DENT 2424 - Chairside Assisting II

This course the student will be introduced to the different specialties in dentistry,

specifically: endodontics, oral surgery, prosthodontics, periodontics, and pediatric dentistry. Through lecture and instrument identification, the student will become familiar with the procedures and instruments used in each specialty. Current concepts of chairside assisting in general dentistry as well as dental specialties are presented with emphasis on the utilization of the dental assistant.

Student Learning Outcomes:

- * Explain the procedures performed within each specialty of dentistry and its relationship with general dentistry.
- * Summarize the need for Pediatric dentistry relating to long term oral health of patients.
- * Compare and contrast surgical and non-surgical procedures utilized in Periodontic dentistry.
- * Categorize instruments utilized in Oral and Maxillofacial surgery.
- * Justify endodontic treatment relating to overall health of the patient.
- * Compare and contrast fixed and removable dental prosthetics.
- * Demonstrate appropriate adaptation for patients with special needs.
- * Demonstrate knowledge of dental procedures to be performed and prepare tray set-ups for the various procedures in each specialty.
- * Select and arrange armamentarium necessary for treatment in restorative dentistry and dental specialties.
- * Demonstrate job entry level competence using instrument transfer techniques while assisting for specific dental procedures.
- * Demonstrate skills necessary to chart and record medical and dental histories.
- * Apply patient management skills appropriate for the communication of pre-operative and post-operative instructions to patients.
- * Apply infection control protocol and safety precautions during laboratory and clinical procedures according to regulating agencies.
- * Utilize appropriate positioning for operator and assistant while performing dental procedures.

Prerequisite(s): DENT1425.

(4 C: 2 lect/pres, 2 lab, 0 other)

DENT 2447 - Dental Radiology II

This course combines lecture and laboratory practice to expand on knowledge and skills in dental radiology. Radiation characteristics, the geometry of image formation, biological effects and dosimetry are included. Operator safety, patient safety, and infection control procedures are expanded. Quality assurance and radiology regulations are stressed. Clinical practice is heightened to include patients. The radiographer's role as it pertains to patient relations, education, and patients with special needs are included.

Student Learning Outcomes:

- * Demonstrate knowledge and skills to produce diagnostic dental image surveys on patients as indicated by the MN Board of Dentistry.
- * Explain the effects of radiation characteristics on an image (density, contrast, sharpness, magnification, and distortion) Explain dosimetry, the effects of ionizing radiation on living tissue and protection procedures for the patient, operator and other personnel.
- * Demonstrate infection control techniques, quality assurance and describe radiology regulations.
- * Explain radiographer expectations including: patient relations, education, management and special needs.
- * Demonstrate ethical conduct, moral attitudes and principles essential when treating patients from diverse populations.

Prerequisite(s): DENT1441.

(3 C: 1 lect/pres, 2 lab, 0 other)

DENT 2454 - Expanded Functions II

This course is a continuation of Expanded Functions I and will provide the student with the background knowledge and necessary skills to perform expanded functions that are delegated to the licensed dental assistant according to the Minnesota Dental Practice Act. This course combines lecture, laboratory and clinical instruction and experience performing the advanced functions according to predetermined criteria utilizing typodonts, manikins, and patients. Infection control, safety, and patient management will be emphasized.

Student Learning Outcomes:

- * Contrast classifications, examples, distribution and the removal process or treatment (including bleaching techniques) of common stains seen in a patient's oral cavity.
- * Compare polishing agents and demonstrate mechanical polishing techniques and operator/patient positions while performing a coronal polish.

- * Demonstrate procedural steps in etching appropriate surfaces and applying and adjusting pit and fissure sealants.
- * Classify the angles of malocclusion and identify terminology as it relates to orthodontic treatment and demonstrate procedures performed in an orthodontic office as it specifically relates to the designated orthodontic expanded functions.
- * Explain indications and contraindications and pharmacological effects of nitrous oxide and demonstrate techniques in the administration and monitoring of nitrous oxide-oxygen relative analgesia.
- * Demonstrate the techniques and procedure for removing excess cement.
- * Explain the purpose of sutures and suturing techniques and demonstrate the removal process.
- * Compare the types, brands names, purpose and composition of various dressings and demonstrate the application and removal technique.
- * Distinguish clinical uses for gingival displacement and its limitations and clinical contraindications.
- * Summarize the purposes, features and uses of temporary restorations and fabricate a variety of provisional restorations utilizing different materials and armamentarium.
- * Apply knowledge in each expanded function and demonstrate competence in preclinical and clinical levels as indicated by the Minnesota Board of Dentistry in the procedural steps for expanded functions covered in this course.
- * Utilize infection control protocols, safety precautions and patient management during preclinical and clinical procedures.
- * Demonstrate ethical conduct, moral attitudes and principles essential when treating all patients including those from diverse populations.

Prerequisite(s): DENT1445.

(4 C: 2 lect/pres, 2 lab, 0 other)

DENT 2461 - Internship

Clinical experience assisting a dentist is an integral part of the dental assistant program designed to perfect the students competence in performing chairside assisting and expanded functions. Each student will be assigned to two different clinics or offices for clinical experience. For each rotation, the student is given the opportunity to work with one or more dentists and auxiliary in a clinical office. The intent of each extramural assignment is to allow the student to further develop speed and accuracy of the skills learned throughout the program. Integration of knowledge and skills to a job entry level by hands-on experience and evaluation of competence is expected.

Student Learning Outcomes:

- * Comply with CODA (Commission on Dental Accreditation) requirements for clinical externship experiences.
- * Apply and perform essential dental assisting and chairside assisting skills previously learned in the preclinical and clinical dental assisting courses.
- * Apply and perform dental practice management skills previously learned in the dental assisting curriculum.
- * Apply and perform laboratory assistant skills previously learned in the pre-clinical dental assisting curriculum.
- * Apply and perform expanded functions delegated duties previously learn in the preclinical and clinical dental assisting courses.
- * Demonstrate technical competence, professional attributes and ethical standards during patient care including those from diverse populations.
- * Demonstrate infection control and hazard control protocols consistent with published professional guidelines.

Prerequisite(s): DENT2424.

(7 C: 0 lect/pres, 0 lab, 7 other)

DENT 2486 - Internship Seminar

Internship seminar coincides with Internship II and provides students with opportunities to share clinical experiences with their classmates and faculty. It combines the didactic training with the internship experience in preparation for the Dental Assisting National Board (DANB) General Chairside and the Minnesota State licensure examinations. Students are expected to complete and turn in written reports relating to functions performed in the clinical internship facility. The course will also provide the necessary information to apply for licensure with the State Board of Dentistry and to establish and maintain a professional portfolio.

Student Learning Outcomes:

- * Complete weekly time sheets and reports and student evaluations to assess common dental materials and techniques utilized in general/specialty offices/clinics.

- * Identify and focus on deficient areas to increase awareness of proper studying and problem solving abilities.
- * Complete the necessary review sheets/assignments to successfully write the Dental Assisting National Board (DANB) General Chairside exam and the Minnesota State Licensure exam.
- * Provide the opportunity to work with SCTCC placement office in securing and maintaining employment.
- * Participate in group discussions relating to clinical experiences and problem solving skills.

Prerequisite(s): DENT2424.

(1 C: 1 lect/pres, 0 lab, 0 other)

DENT 2488 - Dental Ethics and Jurisprudence

The course focuses on the legal and ethical standards that govern the practice of dentistry. It includes a guided process that will qualify the student to sit for the Minnesota Jurisprudence exam. Discussions will revolve around; scope of practice for dental professional, delegation of duties, mandated reporting, doctor-patient responsibility, privacy standards, with additional focus on continuing education requirements for maintaining licensure.

Student Learning Outcomes:

- * Extrapolate the basic principle of ethics in dentistry.
- * State why continuing education is an ethical obligation for the dental professional.
- * Explain the American Dental Assistants Association Code of Ethics.
- * Define the meaning of ethical dilemmas.
- * Explain the steps involved in ethical decision-making.
- * Develop case studies that involve ethical dilemmas.
- * List examples of personal ethics and unethical behaviors.
- * Explain types of statutory law, including the difference between criminal law and civil law.
- * Expound on the purpose of the state Dental Practice Act, and role of the Minnesota Board of Dentistry.
- * Discuss the dynamics of dentist-patient relationship, standard of care, and dentist's obligation of due care.
- * Identify strategies for risk management in dentistry.
- * Discuss the protocol necessary when; working with patient records, obtaining consent, patient referral, and failure to refer.
- * Explain the role of dental professional in reporting abuse and neglect of patient.
- * Discuss the purpose of Health Insurance Portability and Accountability Act (HIPAA).

(1 C: 1 lect/pres, 0 lab, 0 other)

DENT 2499 - Dental Assisting Refresher

This course is designed to reintroduce students to the skills and terminology necessary to allow them to succeed in the Dental Assisting program. Students will discuss preventative dentistry, nutritional health and its effects on the oral cavity. Basic dental patient care to include patient safety, asepsis, instruments and their use, as well as maintaining proper ergonomics. Students will also identify common anatomical landmarks, as well as the development of teeth and surrounding tissues.

Student Learning Outcomes:

- * Identify landmarks of the face and oral cavity as they relate to the oral cavity.
- * Classify stages of tooth development as it relates to the different dentitions.
- * Explain what preventative dentistry means in relation to oral health and prevention.
- * List medical conditions that may compromise dental care.
- * Assemble instruments for use according to the procedure given.
- * Employ proper disinfection and sterilization for equipment and instruments used in dental care.
- * Practice oral evacuation techniques to produce a dry environment in the oral cavity according to evacuation type used.
- * Apply ergonomics used in dentistry while working as an operator or assistant.
- * Differentiate two handed and four handed dentistry when administering dental care.

(2 C: 2 lect/pres, 0 lab, 0 other)

DMSG 1401 - Introduction to the Sonography Field

This course will introduce students to the sonography field, covering the origins and evolution of Diagnostic Medical Sonography. The students will learn the

sonographer profile, sonographer safety; legal, ethical, and legislative issues; current sonographic examinations; and basic patient care skills.

Student Learning Outcomes:

- * Describe the evolutionary history of diagnostic ultrasound and the aptitude, abilities, and skills needed to be a sonographer.
- * Explain the differences among accreditation, certification, and registration.
- * Demonstrate awareness and understanding of medical ethics and professional confidentiality when dealing with patient care.
- * Identify ergonomic methods of prevention of musculoskeletal injuries in the field of sonography.
- * Define sonographic exams and procedures done in ultrasound department.
- * Discuss the importance of patient preparations for abdominal obstetrics-gynecologic vascular procedures.
- * Explain how patients, peers, and other health care professionals communicate in a considerate and professional manner.
- * Demonstrate the sonographers role and application of sterile procedures, infection control and standard precautions
- * Explain how culture and religion can influence health and illness.

(1 C: 1 lect/pres, 0 lab, 0 other)

DMSG 1402 - Ultrasound Cross-Sectional Anatomy I

This course focuses on a detailed study of the normal anatomy and physiology of the abdomen, neck, musculoskeletal, neonatal brain and non-cardiac chest using ultrasound. Emphasis will focus on structure orientation and its significance in cross-sections of anatomy. Students will be able to determine normal sonographic appearances and recognize variances and sizes of organs and vessels. This course will introduce the hemodynamics patterns and spectral waveforms found in the abdominal vasculature.

Student Learning Outcomes:

- * Identify anatomy, relational anatomy, anatomic variants, and sonographic appearances of normal anatomical structures of the abdomen, non-cardiac chest, neck, musculoskeletal, and abdominal vasculature.
- * Identify the principal functions of abdomen organs, non-cardiac chest, neck, musculoskeletal, and abdominal vasculature.
- * Analyze characteristics of normal Doppler flow signals of abdominal vessels.
- * Review normal neonatal brain anatomy and functions.
- * List normal sizes of organs and vessels.
- * Demonstrate knowledge of medical and sonographic terminology.
- * Explain the importance of using two different scanning planes.

(3 C: 3 lect/pres, 0 lab, 0 other)

DMSG 1404 - Diagnostic Medical Sonography I

Students will be exposed to different pathologies of the abdomen organs, blood vessels, thyroid, and neonatal head. This course will focus on ultrasound findings, scanning techniques, patient history, laboratory data, and other imaging modalities to help better understand how to interpret pathology. Emphasis will focus on descriptive and anatomical terminology, clinic data, grayscale imaging and Doppler characteristics as seen with various pathologies. Students will be determining what needs to be included on a sonographer worksheet.

Student Learning Outcomes:

- * Demonstrate knowledge of the physiology, pathophysiology, sonographic technique, measurements, sonographic appearances, and Doppler patterns, in both normal and abnormal structures of the abdomen, neck, chest and musculoskeletal systems.
- * Recognize the peritoneal, retroperitoneal, and thoracic spaces with the use of ultrasound.
- * Investigate pertinent patient history and laboratory data that apply to the abdomen, thoracic, thyroid, and parathyroid.
- * Explore scanning techniques, transducer selection and scanning protocols of the abdomen, thoracic, neck, and musculoskeletal.
- * Identify ultrasound artifacts.
- * Analyze Doppler characteristics of the abdomen and thyroid vessels.
- * Show pathology case studies of abdominal organs, blood vessels, neck, musculoskeletal, and thoracic regions.
- * Write mock diagnostic medical sonographer reports.
- * Demonstrate knowledge in sonographic guided procedures.

(3 C: 3 lect/pres, 0 lab, 0 other)

DMSG 1405 - Ultrasound Physics

This course will include the study of the basic principles and concepts of acousti-

cal physics, which include the parameters of sound, and pulsed and continuous waves; the interaction of sound and media; the components of the ultrasound machine; the application of resolution and acoustic artifacts; ultrasound image optimization with consideration of patient exposure to acoustic energy; and emerging technologies and their use.

Student Learning Outcomes:

- * Define the fundamental principles of the production and use of ultrasound.
- * Distinguish the properties of sound waves.
- * Interpret the interaction of sound and media.
- * Identify the factors that influence resolution.
- * Determine the differences between imaging modes.
- * Deconstruct an ultrasound transducer and the function of each part.
- * Evaluate the parts of the ultrasound equipment and their role in formation of an ultrasound image
- * Analyze different Doppler techniques
- * Identify various artifacts of sound to avoid the pitfalls and misdiagnoses that they can cause
- * Evaluate the biomedical influence of ultrasound on human tissue.
- * Explore various devices used to test quality assurance of ultrasound equipment.
- * Review components related to patient care, safety, and communication.

(3 C: 3 lect/pres, 0 lab, 0 other)

DMSG 1406 - Clinical Ultrasound Lab I

This course will introduce students to the aspects of ultrasound scanning of abdominal organs in a simulated clinical laboratory setting. Emphasis will be placed on protocol, instrumentation, imaging, and identification of normal sonographic anatomy.

Student Learning Outcomes:

- * Demonstrate knowledge of the roles and responsibilities of healthcare professions to effectively communicate and collaborate in laboratory setting.
- * Demonstrate knowledge and application of ergonomic techniques.
- * Perform ultrasound instrumentation, transducer care and maintenance.
- * Perform and observe scans of the various abdominal organs in a simulated clinical lab setting following set protocols.
- * Develop knowledge and application of image production and optimization.
- * Perform measurements on ultrasound exams of the various abdominal organs and vessels.
- * Document patient history, findings, measurements, and comments on a sonographer lab worksheet.
- * Document proficiency in the scanning technique and application for abdominal vascular Doppler assessment.
- * Discover the differences between normal and abnormal ultrasound anatomy through simulation scanning exercises.

(3 C: 0 lect/pres, 3 lab, 0 other)

DMSG 1410 - Ultrasound Cross-Sectional Anatomy II

This course focuses on a detailed study of the normal anatomy and physiology of the male and female reproductive system, obstetrics covering all trimesters, breast sonography and vascular systems as it relates to the ultrasound field. Students will be able to determine normal sonographic appearances and recognize variances and sizes of organs and vessels. This course will explore the hemodynamics patterns and spectral waveforms found in the male and female pelvis and obstetrics.

Student Learning Outcomes:

- * Determine sonographic cross-sectional anatomy and functions of the male and female reproductive systems.
- * Determine the normal ultrasound appearance of the gestational sac and early embryo.
- * Identify normal sonographic anatomy of the second and third trimester.
- * Identify sonographic anatomy and functions of the placenta throughout all trimesters.
- * List sonographic measurements of the fetus during the first, second, and third trimester.
- * Determine sonographic cross-sectional anatomy and functions of the female breast.
- * Identify normal sonographic anatomy of the extracranial cerebrovascular and peripheral vascular systems.
- * Differentiate how gray scale ultrasound, color Doppler and spectral Doppler are used in the evaluation of Vascular systems.
- * List the applications of gynecologic and obstetric 3D acquisition.

- * Identify normal sonographic anatomy of the extracranial cerebrovascular and peripheral vascular systems

Prerequisite(s): DMSG1401, DMSG1402, DMSG1404, DMSG1405, DMSG1406.

(3 C: 3 lect/pres, 0 lab, 0 other)

DMSG 1411 - Diagnostic Medical Sonography II

Students will be exposed to different pathologies of the male and female reproductive systems, obstetrics covering all trimesters, breast and vascular systems. This course will focus on ultrasound findings, scanning techniques, patient history, laboratory data, and other imaging modalities to help better understand how to interpret pathology. Emphasis will focus on descriptive and anatomical terminology, clinic data, grayscale imaging, protocols, and Doppler characteristics as seen with various pathologies.

Student Learning Outcomes:

- * Determine sonographic technique and protocols used to evaluate the male and female pelvis.
- * Identify normal and abnormal sonographic appearances of the male and female pelvis.
- * Determine sonographic technique and protocol used to evaluate the female breast.
- * Identify normal and abnormal sonographic appearances of the female breast.
- * Determine obstetric measurements used for gestational age and fetal growth assessment.
- * Investigate pertinent patient history and laboratory data that apply to the obstetric and gynecological ultrasound exams.
- * Analyze Doppler characteristics used in obstetric and gynecological ultrasound exams.
- * Review ultrasound pathology case studies of pregnant and non-pregnant female pelvis.
- * Write mock obstetric and gynecologic diagnostic medical sonographer reports.

Prerequisite(s): DMSG1401, DMSG1402, DMSG1404, DMSG1405, DMSG1406..

(3 C: 3 lect/pres, 0 lab, 0 other)

DMSG 1412 - Clinical Ultrasound Lab II

Practical training in a simulated clinical laboratory will focus on completing and becoming proficient in scanning of the human body. Emphasis will be placed on instrumentation, protocol, record findings along with associated calculations, and anatomy identification of the abdomen, thyroid, pelvis, obstetrics, breast, and vascular systems

Student Learning Outcomes:

- * Illustrate aspects of patient care pertaining to sonography.
- * Perform proper ultrasound instrumentation, transducer care and maintenance.
- * Perform abdominal, thyroid, pelvic, obstetrics, gynecology, breast, and vascular ultrasound scans following set protocols.
- * List ultrasound protocol for scrotum and prostate imaging.
- * Perform various ultrasound measurements following set protocols.
- * Generate patient history, measurements, and comments on a sonographer report.
- * Produce Doppler spectral waveform images of the vascular systems.
- * Differentiate between normal and abnormal ultrasound anatomy through simulation scanning exercises.
- * Identify the pleural spaces sonographically.
- * Discuss various pathology cases and interpret sonography images.

Prerequisite(s): DMSG1401, DMSG1402, DMSG1404, DMSG1405, DMSG1406.

(5 C: 0 lect/pres, 5 lab, 0 other)

DMSG 1415 - Professional Development and Growth in Sonography

This course is designed to transition students from the classroom and lab setting into a clinical setting. Students will be able to recognize the functional skills required to be a diagnostic medical sonographer. Students will observe the day-to-day operations of different ultrasound departments and share their personal reflections.

Student Learning Outcomes:

- * Define the role of a diagnostic medical sonographer.
- * Recognize the obligations of the sonographer to patients, institution, and self.
- * Identify aptitudes, abilities and functional skills to be a sonographer.
- * Identify the impact of cultural diversity in a clinical setting.

- * Analyze patient reactions to illness.
- * Apply infection control and safety measures when at a clinical setting.
- * Establish patient communication skills and teamwork in a clinical setting.
- * Recognize the various ultrasound exams that are completed in an ultrasound department.
- * Identify a variety of ergonomical scanning positions and different ultrasound equipment used in multiple ultrasound departments.
- * Identify professional methods to overcome challenging situations in the ultrasound department.

Prerequisite(s): DMSG1402, DMSG1404, DMSG1405, DMSG1406.

(2 C: 2 lect/pres, 0 lab, 0 other)

DMSG 2403 - Introduction to Vascular Sonography

This course is designed to provide students with a foundation for understanding the basics of vascular sonography through both lectures and lab. Students will gain basic knowledge of the anatomy, physiology, and pathology associated with upper and lower extremity arteries and veins, renal arteries, mesenteric arteries, and extracranial vasculature. In addition, students will be given hands-on instruction and practice in a simulated lab to develop the basic scanning skills required to perform duplex imaging of these various vascular structures

Student Learning Outcomes:

- * Identify normal anatomy of upper and lower extremity veins and arteries, renal arteries, mesenteric arteries, and extracranial vessels.
- * Explain the characteristics of normal and abnormal venous and arterial flow patterns.
- * List risk factors and symptoms associated with most common vascular pathologies.
- * Demonstrate a basic understanding of how to assess for venous insufficiency through successful completion of scanning exercises.
- * Examine upper extremity veins, lower extremity arteries, and renal arteries following set scanning protocols.
- * Interpret normal vs. abnormal Doppler characteristics in various vascular systems using designated diagnostic criteria.
- * Demonstrate the understanding of venous hemodynamics.
- * Interpret the vascular findings of arterial stent placements, ABI exam, and segmental exam

Prerequisite(s): DMSG1410, DMSG1411, DMSG1412, DMSG1415.

(4 C: 2 lect/pres, 2 lab, 0 other)

DMSG 2407 - Sonography Board Reviews

This course will help students prepare to take the American Registry for Diagnostic Medical Sonography (ARDMS) specialty examinations in Physics, Abdomen and OB/GYN in a simulated atmosphere. It is designed to be used as an addition to students' regular study and as a method to determine their strengths and weaknesses so that they can study more effectively. This course will cover test taking skills and preparation on the computer. Students will be able to better recognize pathology through case study presentations.

Student Learning Outcomes:

- * Apply test taking strategies to successfully complete registry exams and specialty exams.
- * Identify testing strengths and weaknesses through self-assessment.
- * Perform mock examinations in a simulated exam room on a computer.
- * Evaluate mock examination results.
- * Discover patient pathology through presentations of student case studies.
- * Develop new study techniques and test taking techniques.

Prerequisite(s): DMSG2403, DMSG2425.

(1 C: 1 lect/pres, 0 lab, 0 other)

DMSG 2425 - Clinical Ultrasound Internship I

Students are assigned to various clinical rotations where they gain hands-on experience under the direction and supervision of assigned clinical preceptors. Students will focus on becoming proficient in the scanning of, abdominal organs, non-cardiac chest, superficial structures, pelvis, obstetrics, and vascular systems. Students will expand scanning and patient care skills and as the semester progresses more clinical responsibilities will be given.

Student Learning Outcomes:

- * Conduct appropriate patient care in a hospital or clinical setting.
- * Demonstrate practical communication skills that enable effective cross-cultural work with health professionals and clients with backgrounds different from their own.

- * Perform infection control guidelines.
 - * Participate in the day-to-day operations of an ultrasound department.
 - * Display teamwork in an ultrasound department.
 - * Perform an examination of an abdominal and pelvic organs, gravid uterus, superficial structures, non-cardiac chest and vascular procedures.
 - * Record and process for display the images necessary for a diagnostic ultrasound examination.
 - * Interpret ultrasound exams that are performed in an ultrasound department.
 - * Describes normal and pathological conditions on sonograms that are routinely examined in an ultrasound department.
 - * Record patient history, measurements, and ultrasound findings on a sonography report.
 - * Translate ultrasound findings to a reading physician.
- Prerequisite(s): DMSG1410, DMSG1411, DMSG1412, DMSG1415.
(5 C: 0 lect/pres, 0 lab, 5 other)

DMSG 2430 - Clinical Ultrasound Internship II

This is the final course in the Sonography Program. The student will focus on becoming proficient in the scanning of the human body. Students will perform under the guidance and supervision of assigned preceptors, in hands-on scanning in abdominal, superficial structures, OB/GYN, and vascular systems. Upon completion of this internship, students will be able to perform routine duties and be ready for the workplace as a Diagnostic Medical Sonographer.

Student Learning Outcomes:

- * Apply appropriate patient care in a hospital or clinical setting.
 - * Model infection control.
 - * Recognize the impact of transcultural communications and the beliefs on diagnosis and treatment.
 - * Demonstrate sensitivity to diverse clinical populations.
 - * Perform the day-to-day operations that are routinely done in an ultrasound department while being part of the team in an ultrasound department.
 - * Perform all ultrasound examinations of any abdominal and pelvic organs, gravid uterus, superficial structures and vascular procedures routinely examined in a diagnostic ultrasound department.
 - * Record and process high quality images necessary for a diagnostic ultrasound examination.
 - * Interpret ultrasound exams that are performed in an ultrasound department.
 - * Determine normal and pathological conditions on sonograms that are routinely examined in an ultrasound department.
 - * Record patient history, measurements, and ultrasound findings on a sonography report.
 - * Translate ultrasound findings to a reading physician.
- Prerequisite(s): DMSG2403 or DMSG2415 or DMSG2425.
(11 C: 0 lect/pres, 0 lab, 11 other)

DVRS 1304 - Diversity and Social Justice

Meets MN Transfer Curriculum Goal Areas 5 History/Social, Behavioral Sciences and 7A - Human Diversity. Diversity and Social Justice is a course that uses critical thinking and questioning to define, recognize, and analyze individual, institutional, cultural, and societal racism, sexism, classism, heterosexism, transphobia, ableism, and other forms of oppression. It focuses on the development of practical skills for addressing these oppressive elements in personal, professional, and public lives in the United States. Students learn how to engage respectfully in interpersonal relationships and empower themselves to act as agents of social change, learning skills to create a more equal and just society.

Student Learning Outcome:

- * Critically examine ideas about people, perspectives, and experiences that are different than their own.
- * Evaluate how their experiences impact how they view others.
- * Critically examine stereotypical or false beliefs, values, and opinions.
- * Critically examine the dehumanizing biases and misinformation that lead to the oppression that various groups in the United States experience.
- * Discuss the national debates within the U.S. that provide a societal context in which oppressive behaviors occur.
- * Recognize ideological messages and social control in U.S. culture.
- * Analyze the prejudices, privileges, and power that motivate individual and institutional classism, racism, sexism, heterosexism, ableism, and other forms of oppression.
- * Explain the complexity of identity in relation to the various forms of oppression.

- * Examine successful social movements in the U.S. that have challenged oppression.
 - * Identify respectful interpersonal strategies for challenging disrespectful behaviors and for building skills in creating a more supportive community for all people.
 - * Plan constructive ways to act as an ally or advocate in channeling personal power toward societal change.
- Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

DVRS 1310 - Human Relations for a Diverse Workplace

Meets MN Transfer Curriculum Goal Area 7. This is a practical and applied course in human interaction in the workplace. The course presents and practices skills that increase effectiveness and harmony in the workplace. These skills include effective communication in speaking and listening based on an awareness and understanding of various differences which affect human interaction. These include differences in culture, beliefs, traditions, socio-economic status and education. The course examines both social structures and the kinds of situations and opportunities which arise in the workplace and challenge cooperation, patience, sensitivity, and courtesy.

Student Learning Outcomes:

- * Apply varied communication skills and strategies to improve interpersonal communication.
 - * Analyze the origins of attitudes, values and beliefs.
 - * Describe issues of diversity and social justice, especially as these affect the workplace.
 - * Apply ethical standards to personal and occupational situations.
 - * Explain the need for critical thinking skills to achieve clarity, accuracy, precision, depth, and fair-mindedness in reading, speaking, writing, and listening in the Human Relations discipline.
 - * Develop habits of thinking with: intellectual humility, intellectual empathy and/or courage, intellectual integrity, intellectual perseverance, intellectual autonomy and confidence in reason.
 - * Evaluate the effects of attitudes, values, and beliefs on human relationships in the workplace
 - * Evaluate the effects of cultural change on human relationships in the workplace.
 - * Describe the impact of human relations skills on an individual's ability to function effectively and ethically in social, institutional and cultural contexts.
 - * Apply teamwork theory and skills to occupational situations
- Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or Appropriate Placement Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

DVRS 1320 - Diversity and Inclusion in Sports

Meets the requirements for MN transfer curriculum Goal Area 7B. Students will be exposed to a comprehensive introduction to the ways in which people differ - including race, gender identity, age, disability, religion, sexual orientation, and social class - and the importance of these differences for varying sports and sport(s) organizations. The course offers strategies for managing diversity and inclusion in work and sport environments. Students are also exposed to strategies for creating and sustaining diverse and inclusive sport(s) organizations. Students will combine personal experience with tools learned in this class to explore the intersection of diversity, sports and societal issues.

Prerequisite(s): ENGL0900, ENGL1308, ESOL1310, ESOL1120, ESOL1330, READ1308, READ0900 or Appropriate Placement Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

DVRS 2301 - Race and Ethnic Relations

Meets MN Transfer Goal 7A - Human Diversity. This course provides students a framework for exploring and understanding race and ethnicity in our world today. Students will examine their own ethnic heritage and compare and contrast the history of their ethnic group with the experiences of other groups in the U.S.

Student Learning Outcomes:

- * Explain the meanings, origins and uses of race and ethnicity and related concepts
- * Use historical data and the concepts of race and ethnicity to analyze and describe their own heritage
- * Describe the experiences and contributions of race and ethnic groups that are

- part of U.S. society
- * Explain individual, institutional and systemic factors involved in inequality related to race and ethnicity
- * Understand their own attitudes and behaviors regarding race and ethnic differences

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

EASC 1310 - Meteorology

This course meets Mn Transfer Curriculum Goal Area 3 Natural Sciences - This is an introductory meteorology course designed for non-science majors. This course focuses on understanding the basic concepts of meteorology by emphasizing observations of the atmosphere and using those observations to explore weather processes in-depth and explain a variety of atmospheric phenomena. This course emphasizes key atmospheric concepts that enable students to understand how science can explain a wide range of regional and local weather events, how it impacts society and their daily lives, and long-term climate connections. This course includes a lab component where students will use real-time and climatological data to analyze and predict weather events, climate patterns, and other atmospheric phenomena.

Student Learning Outcomes:

- * Evaluate the risk and societal issues of natural hazards from a natural science perspective.
- * Employ meteorological and climatological knowledge to analyze a variety of weather phenomena.
- * Identify practices for communities to mitigate severe weather events and understand the socio-economic impacts of severe weather disasters.
- * Describe the physical processes that affect and create atmospheric phenomena.
- * Distinguish the layers of the atmosphere based on temperature and solar radiation.
- * Interpret daily and seasonal temperature cycles in terms of the surface-energy budget and atmospheric stability.
- * Explain how clouds form and describe the different types of precipitation.
- * Diagnose synoptic and mesoscale atmospheric conditions that are favorable for severe weather development, using weather observations.
- * Explain atmospheric forces and global, synoptic, mesoscale, and microscale winds, and how those winds affect the jet stream and pressure systems.
- * Explain Atmosphere-Ocean circulations and interaction that impact climate systems, including the El-Nino phenomena.
- * Classify different types air masses and fronts.
- * Correlate midlatitude cyclone evolution and jet stream interaction to resultant severe weather.
- * Identify the structure and explain the evolution of midlatitude and tropical cyclones.
- * Describe the formation and evolution of different types of thunderstorms.
- * Identify characteristics of thunderstorms and describe the processes that produce lightning, hail, and tornadoes.
- * Collect and interpret various types of weather data to produce a short-term forecast; be able to communicate potential sources of error and uncertainty through probabilistic forecasting.
- * Demonstrate the ability to inspect and question the accuracy of weather data/ observations and numerical weather forecasts, to make informed judgments regarding natural hazard mitigation, response, and public policy.
- * Identify climate zones of the world and describe the natural processes that affect global climate and climate changes.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(4 C: 3 lect/pres, 1 lab, 0 other)

ECED 1230 - Professional Relations in Early Childhood Careers

This course explores career opportunities and professional behavior for working in early childhood education. Students will examine job requirements, duties, regulations, and issues, skills, and personal characteristics for becoming successful professionals in child care and educational careers.

Student Learning Outcomes:

- * Evaluate the appropriate use of technology in the context of professional interactions within the profession.
- * Research licensing requirements for Rule 2, Rule 3 and School-age Child Care Guidelines for application in job settings.

- * Compare and contrast wages and benefits, working conditions, and professional philosophies in a variety of job settings.
- * Practice positive collaborative relationships to perform effectively as a team member.
- * Demonstrate social responsibility through engagement with advocacy and global issues.
- * Examine strategies to support parents and children from diverse cultures.
- * Examine how personal development, healthy life-style choices, and ethical behavior can affect job performance.
- * Analyze available resources to promote a commitment to life-long learning and engagement.
- * Evaluate the impact of trauma and secondary trauma on early childhood educators.

Prerequisite(s) ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or Appropriate Placement Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ECED 1235 - Guidance: Managing the Physical and Social Environment

This course provides an exploration of the physical and social environments that promote learning and development. It includes an introduction to basic guidance techniques for individual and group situations and the importance of building a school family. Emphasis is placed on the techniques of problem-prevention, positive guidance strategies, recognition, communication, limit setting, and problem-solving to improve positive social interaction.

Student Learning Outcomes:

- * Identify environmental influences that impact learning and behavior for children.
- * Evaluate interest areas for learning and positive behavior management.
- * Create examples of problem prevention strategies for the physical environment including the schedule, learning activities and room arrangement.
- * Identify the social-emotional skills children need to regulate emotions and manage conflicts.
- * Describe problem-solving techniques for managing behaviors.
- * Develop routines for positive classroom guidance strategies.
- * Evaluate developmentally appropriate learning environments in the sensory-motor, cognitive, social-emotional, language, and creative arts areas.
- * Examine the role that early social-emotional skill development can have on the reduction of school bullying and violence.

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or Appropriate Placement Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ECED 1240 - Planning and Implementing Curriculum

This course is designed to examine the role and teaching strategies of professionals who work in early childhood settings. These strategies apply knowledge in child development, program development, intervention, and assessment. This course provides research-based, trauma-informed practices to support successful instruction and program development with infant, toddler, and preschool children in early childhood center-based education environments.

Student Learning Outcomes:

- * Examine play-based learning through an understanding of Developmentally Appropriate Practice (DAP).
- * Design instruction using the Minnesota Early Childhood Indicators of Progress (MN ECIPS).
- * Plan lessons for early childhood center-based environments.
- * Examine the role of primary caregivers in supporting early childhood education programs.
- * Create learning experiences addressing all developmental domains.
- * Integrate curriculum adaptations in response to student needs.
- * Differentiate curriculum to address the diversity of learners.

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or Appropriate Placement Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ECED 1245 - Safety, Health and Nutrition

This course will guide the student in obtaining skills needed to establish and maintain a physically and psychologically safe and healthy learning environment for young children. There will be an emphasis on the development of healthy habits and nutritional guidelines. This course will present current issues in children's health, including recognition and treatment of common childhood illnesses

and ailments, dental health, child abuse, nutrition, health, safety and accident prevention. Students will complete the MN Department of Human Services Family Child Care Abusive Head Trauma and Sudden Unexpected Infant Death Syndrome (SUIDS) trainings. THIS COURSE DOES NOT INCLUDE CPR OR FIRST AID CERTIFICATION.

Student Learning Outcomes:

- * Demonstrate universal health and hygiene procedures including hand washing, sanitation and diapering.
- * Identify childhood illnesses and communicable diseases.
- * Examine strategies, policies and procedures that promote risk reduction.
- * Research safety practices related to topics such as playground, traffic, poison and electrical safety.
- * Examine the responsibilities of protecting children from physical, emotional and sexual abuse, and neglect.
- * Plan menus for children that outline basic nutritional guidelines and nutrient strengths of each major food group.
- * Develop activities to promote healthy lifestyles for children.
- * Examine health, safety and nutrition licensing requirements.
- * Role play techniques for communicating with parents and guardians regarding children's safety, health and nutrition.

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or Appropriate Placement Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ECED 1250 - Early Childhood Education Internship II

This course provides an opportunity to apply knowledge and skill in caregiving and/or education settings with young children birth through age 8. Students will observe and assess behavior, facilitate free choice activities and plan and implement child learning experiences, as well as maintain professional relationships. This course is a vital component of the early childhood program as it gives students the opportunity to implement skills learned in other program courses.

Student Learning Outcomes:

- * Observe children in the following developmental areas: language, cognition, social-emotional, sensory-motor, creativity, math and science
- * Plan and record lessons to be implemented in the early childhood setting.
- * Practice and evaluate one-on-one, small and large group teaching strategies.
- * Analyze experiences in a classroom setting for cultural sensitivity and diversity.
- * Integrate learning experiences into the classroom schedule from the following developmental areas: language, cognitive, social-emotional, sensory-motor, creativity, math and science
- * Demonstrate communication skills with supervisors, teachers, professional staff and the children.
- * Implement daily routines and transitions in a supervised environment.
- * Apply site policies and procedures.
- * Prepare a brief resume.

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or Appropriate Placement Score.
(3 C: 1 lect/pres, 0 lab, 2 other)

ECED 2205 - Family and Community Relations

This course is designed to increase a student's knowledge of diverse families and provides an opportunity to examine how current societal and community relationships impact the development of children and the well-being of families. In addition, the student will explore the changing role and structure of families and look at the social service and family support systems in their community.

Student Learning Outcomes:

- * Examine families and communities as dynamic social systems across the lifespan.
- * Explain community strategies that empower families to thrive.
- * Examine issues related to family diversity.
- * Defend the importance of early childhood education in communities.
- * Identify strengths or emerging competencies of caregivers.
- * Explain essential elements of organizations that provide high-quality services to families.
- * Summarize how quality relationships build resiliency.
- * Integrate ways to create a welcoming environment for families.
- * Evaluate effective in-home supports provided by a variety of early childhood professionals.

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120,

ESOL1310, ESOL1330 or Appropriate Placement Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ECED 2210 - Literature and Language Development Experiences

Children's Literature is a powerful and fun component in language development. Students will have the opportunity to work with a variety of wonderful books to develop a base of high quality books to use in their future careers. This course provides an overview of language and literacy learning experiences in school, home or center-based settings. Students will integrate knowledge of children's language development, learning environments, and teaching methods to select, present, and evaluate literature experiences, and to promote literacy and conversation.

Student Learning Outcomes:

- * Analyze whole language learning experiences.
- * Examine conversation learning experiences.
- * Evaluate the role that rhyme learning experiences play in children's literacy learning.
- * Demonstrate the skills necessary for presenting children's literature as motivational learning experiences.
- * Examine the multicultural issues related to literature for children.
- * Examine picture books, non-fiction, fiction, fairy tales/folk tales, and poetry.
- * Critique a wide variety of children's books from different genres and many authors and illustrators.
- * Explore multilingual children's language and literacy experiences that encourage home language/bilingual learning.

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or Appropriate Placement Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ECED 2220 - Caring for Children with Special Health Needs

This course introduces medical terminology and basic concepts of support care related to children with special health and medical needs. The purpose of this course is to provide basic knowledge on a variety of medical disabilities and how these medical issues affect a child's care. This information will be used to determine if a person needs short-term or long-term intervention and support in the early child care, school and afterschool setting.

Student Learning Outcomes:

- * Apply Standard Precautions and Medication Safety Standards as they relate to caring for children with special health conditions.
- * Demonstrate the principles of basic body mechanics and positioning techniques when handling and transferring children with special health care needs.
- * Describe the care and support practices for a child with a urinary catheter.
- * Describe the care for a child with diabetes following health care directives.
- * Identify common feeding abnormalities in relationship to sensory disorders.
- * Identify the types of seizures.
- * Identify where intravenous (IV) needles, ports, urinary catheters and respiratory treatments are located on the body.
- * Demonstrate cultural sensitivity to meet children's health and medical needs.

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or Appropriate Placement Score.
(2 C: 2 lect/pres, 0 lab, 0 other)

ECED 2230 - Teaching Young Children with Challenging Behaviors

This course is designed to increase a student's knowledge of understanding young children with challenging behaviors. Students will identify intervention strategies to prevent and resolve challenging behaviors, design a Functional Behavior Assessment (FBA), and explore behavior modification techniques.

Student Learning Outcomes:

- * Apply Pyramid Model for Promoting Social-Emotional Competence in Infants and Young Children competencies to teaching and learning.
- * Analyze classroom guidance and family strategies to support children with challenging behaviors.
- * Examine the causes of challenging behaviors.
- * Demonstrate an understanding of the definition of trauma and its prevalence in early childhood.
- * Evaluate the impact of trauma on children's behavior and development.
- * Analyze socially unacceptable behavior for the possibility that stress/trauma may be contributing to children's behavior.
- * Evaluate classroom guidance and family strategies to support child's resilience.
- * Analyze the impact of challenging behaviors on the family structure.

- * Examine the intercultural trends of development and the impact on children's behavior.
- * Analyze the value of Behavior Incident Reports (BIRs) to gather data on behavior.
- * Differentiate strategies to support and encourage children as they express family, cultural and community values.

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or Appropriate Placement Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ECED 2240 - Autism Spectrum Disorder (ASD) This course provides an overview of the characteristics of children with Autism Spectrum Disorder. The course illustrates caregiving and classroom strategies to promote inclusion of children into their classroom and communities.

Student Learning Outcomes:

- * Apply the characteristics of Autism Spectrum Disorder to case studies.
- * Demonstrate sensitivity to beliefs, values and cultures related to Autism Spectrum Disorder.
- * Examine resources available for families and professionals.
- * Create an inclusive education/activity plan.
- * Practice a variety of educational modifications and accommodations.

Prerequisite(s): ENGL0900, ESOL1330, ESOL1310, ESOL1120 or READ0900 or Appropriate Placement Score.
(1 C: 1 lect/pres, 0 lab, 0 other)

ECON 1310 - Personal Finance

Meets MN Transfer Curriculum Goal Area 9 - Ethical and Civic Responsibility. Personal finance is a major part of financial management. Individuals and families obtain, budget, save, and spend monetary resources over time while taking into account a variety of financial risks and future life changes. The content includes: personal finance basics and career planning, financial statements and budgeting, consumer credit, the housing decision, investing ones resources and retirement planning. Personal finance gives students the ability to evaluate a wide range of financial decisions and to build an organized system for the future. Students will understand what it means to make responsible economic decisions and how these choices impact their personal and public life.

Student Learning Outcomes:

- * Create personal financial goals.
- * Evaluate factors that influence employment opportunities.
- * Design a system for maintaining personal financial records.
- * Compare the types of financial institutions.
- * Examine issues of personal and civic responsibility.
- * Apply ethical standards to economic decision making.
- * Examine the concepts of voluntary decision making and responsibility as they relate to personal economic decisions.
- * Examine the connection between personal economic choices and social issues which influence decision making.
- * Demonstrate an understanding of consumer credit and alternatives to measurable debt.
- * Analyze the advantages and disadvantages of major sources of consumer credit.
- * Assess the importance of property and liability insurance.
- * Explain the characteristics of mutual funds.
- * Summarize the importance of retirement planning.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ECON 1340 - Environmental Economics

Meets MNTC Goal Area 10 - People and the Environment. This course offers an introduction to the methodologies of economic analysis and a broad survey of environmental and natural resource issues applying those methodologies. It emphasizes the price system, markets, public choice theory and the scientific method. Students will investigate a range of topics including global warming, energy, air and water pollution, and public policy responses. This course has broad general education applications but is especially appropriate for economics, public policy and political science majors.

Student Learning Outcomes:

- * Understand basic market functions, and the conditions under which markets fail.

- * Demonstrate familiarity with environmental and natural resource issues.
- * Synthesize relevant material from diverse sources and points of view regarding environmental challenges today and related public policy.
- * Analyze primary and secondary sources of information regarding environmental challenges today and related public policy.
- * Critically evaluate public policy affecting environmental and natural resource issues.
- * Formulate and defend responses to environmental and natural resource challenges.
- * Use economic modeling processes to depict and analyze environmental issues.
- * Apply cost/benefit analysis to environmental issues.
- * Demonstrate proficiency using the elements of the economic way of thinking, including tradeoffs, opportunity costs, marginal analysis, efficiency and the gains from trade.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ECON 2320 - Introduction to Macroeconomics

Meets MN Transfer Curriculum Goal Area 5 - History and the Social and Behavioral Sciences. Macroeconomics is the part of economic analysis that studies the behavior of the economy as a whole. The content includes: economic growth, national income, measurement of economic performance, understanding economic fluctuations, determination of output, price level, inflation, deficits, knowledge of monetary and fiscal policy, and unemployment in the United States. Economic literacy gives people the tools for understanding the nations economic world and how to interpret events that will either directly or indirectly affect them. Nations benefit from having an economically literate population because it improves the public's ability to comprehend and evaluate critical issues.

Student Learning Outcomes:

- * Comprehend the difference between microeconomics and macroeconomics.
- * Examine relationships among economic efficiency, growth and employment.
- * Contrast and differentiate the laws of supply and demand, and the equilibrium within a market.
- * Explain characteristics of the market system, international trade, and currency exchange.
- * Calculate Gross Domestic Product.
- * Compare the business cycle, unemployment, and inflation.
- * Distinguish between income-consumption and income-saving relationships.
- * Interpret the factors that determine aggregate expenditures.
- * Discuss and analyze fiscal and monetary policies and their role within the business cycle.
- * Comprehend the functions of money and the money supply.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ECON 2330 - Introduction to Microeconomics

Meets MN Transfer Curriculum Goal Area 5 - History and the Social and Behavioral Sciences. Microeconomics is the study of decision making undertaken by individuals (or households) and firms. The content includes: individual units (industries, firms, and households), determination of prices and quantities, measurement of costs and productivity, individual markets, specific goods and services, and resource prices. Economic literacy gives people the tools for understanding the nations economic world and how to interpret events that will either directly or indirectly affect them. Modern economic theory blends micro and macro concepts. Nations benefit from having an economically literate population who can evaluate critical issues faced by individuals (or households) and firms.

Student Learning Outcomes:

- * Comprehend the difference between microeconomics and macroeconomics.
- * Evaluate the nature and methods of economics, and analyze production possibilities.
- * Contrast and differentiate the laws of supply and demand, and the attainment of equilibrium within a market.
- * Explain characteristics of the market system.
- * Interpret price and income elasticity of demand.
- * Analyze consumer behavior and utility maximization.
- * Describe the costs of production on productivity.
- * Summarize pure competition and the impacts of this market structure on economic efficiency.

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

- * Predict how pure monopoly impacts the market structure and economic efficiency.
- * Appraise government and market failure.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

EDUC 1200 - Introduction to Education

Introduction to Education provides an overview of the education profession and the U.S. educational system including historical development, social foundations, and educational institutions. The course also provides an overview of the traditional education classroom and strategies to support the development of the student. This information is necessary for the development of the professional educator.

Student Learning Outcomes:

- * Analyze the historical and philosophical foundations of education.
- * Describe the management and organizational structure of schools and school districts.
- * Identify factors in a student's family circumstances, community environments, health, and economic conditions that may influence student learning.
- * Define student rights and teacher responsibilities to equal education, and the appropriate education for students with disabilities.
- * Define student rights and teacher responsibilities to confidentiality, privacy, appropriate treatment of students, and reporting in situations of known or suspected abuse or neglect.
- * Explain how data are used in instructional decisions.
- * Apply verbal and nonverbal communication skills.
- * Describe the role of reflection in a teacher's professional development.
- * Identify Minnesota academic content standards for students in the scope of the preservice teacher's future classroom.
- * Describe the demographics of young children in her/his geographic area and the distinguishing features of different cultural groups.
- * Describe a strength-based approach to working with multilingual children and their families.

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or Appropriate Placement Score.

(3 C: 3 lect/pres, 0 lab, 0 other)

EDUC 1210 - Multicultural Education

Multicultural Education introduces students to core concepts and approaches to multicultural education including issues related to student, family, and community diversity based on culture, language, race, class, gender, and sexual identity. Emphasis is placed on demonstrating the multicultural competence required of all successful teachers working with today's diverse youth. Awareness of the history, language, and cultural background of Minnesota-based American Indian tribes and various immigrant groups will also be addressed.

Student Learning Outcomes:

- * Investigate identity formation and how the sense of self is formed in a social-cultural context.
- * Define dehumanizing institutional and personal biases, discrimination, prejudices, racism and sexism.
- * Interpret multiple theories of race and ethnicity, including racial formation, processes of racialization, and intersectionality.
- * Assess how biases, perceptions, and academic training may affect teaching practice and perpetuate oppressive systems.
- * Analyze the histories and social struggles of historically defined racialized groups
- * Research the cultural content, world view, and concepts that comprise Minnesota-based American Indian tribal government, history, language, and culture.
- * Investigate how ethnocentrism, eurocentrism, deficit-based teaching, and white supremacy undermine pedagogical equity.
- * Summarize how culture influences knowledge creation and ways of knowing.
- * Evaluate the influence of social groups and their role in student learning environments.
- * Strategize ways to align with a student's cultural background to make meaningful connections necessary for the construction of knowledge and acquisition of skills.

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or Appropriate Placement Score.

(3 C: 3 lect/pres, 0 lab, 0 other)

EDUC 1215 - Technology Strategies for Educators

This course is designed to provide students with the skills necessary to support and reinforce the instruction of K-6 students in the area of technology. Students will utilize technology to gather and develop classroom lesson plans. Students will examine assistive/augmentative technology and the technologies required of prospective and practicing teachers. Students will also learn to apply those skills and knowledge when assisting students.

Student Learning Outcomes:

- * Define terminology related to the instruction of technology including assistive/augmentative technology.
- * Demonstrate how to use available resources using technology.
- * Identify technology resources that enable and empower diverse learners.
- * Demonstrate the use of technology to gather and record data regarding student performance.
- * Utilize educational technology to deliver instruction to students at different levels and paces.
- * Analyze the continuous development needed to effectively use technology and assistive/augmentative technology with students.
- * Apply the concepts of social, ethical, legal, and human issues surrounding the use of information and technology in prekindergarten through grade 12 schools.

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or Appropriate Placement Score.

(2 C: 2 lect/pres, 0 lab, 0 other)

EDUC 1220 - Child Growth and Development

This course is designed to provide an overview of typical development from birth through adolescence, including physical, social/emotional, and cognitive development. It integrates developmental theory with appropriate practices in a variety of caregiving, community and educational settings. An understanding of child development is essential for future educators as they care for and educate children in these various settings.

Student Learning Outcomes:

- * Identify physical, cognitive, and social-emotional child growth and developmental stages.
- * Analyze the different theoretical approaches from the theorists of child development.
- * Evaluate current research on issues pertaining to child development.
- * Explore the scientific methods used to learn about child development.
- * Examine the stages of moral development for child growth and development.
- * Examine the stages of language development for child growth and development.
- * Describe culture-specific influences on parenting and child development.
- * Analyze the dynamics of family relationships on individuals from birth to adolescence.
- * Summarize the factors important for healthy growth in children and adolescents.
- * Examine the impact of adverse childhood experiences on development.
- * Describe the effects of drug use and abuse on student life and learning.

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or Appropriate Placement Score.

(3 C: 3 lect/pres, 0 lab, 0 other)

EDUC 1225 - Education Internship I

This course gives the students the opportunity to observe, practice, and apply skills and techniques at an introductory level. These opportunities will take place in a variety of supervised placements with licensed teachers who model effective teaching practices and implementation of Minnesota state academic content standards for students. Faculty will work with students to choose internship placement at sites set up with contracts through the college. This internship experience is a crucial part of the education program as it gives the students the opportunity to practice and implement skills learned throughout the program. Students must complete 96 hours of internship experience in a school setting. Students are required to complete a DHS criminal background study either through SCTCC or their internship site. Any individual who has direct contact with children at facilities licensed by the Minnesota Department of Health must have a criminal background check completed. Results of the study are to be on file in the Education Program before students begin their clinical experiences. Any student who does not pass the criminal background check will not be permitted to participate in clinical experiences. Therefore, the individual may become ineligible

to progress in the Education Program. "If you have been arrested, charged or convicted of any criminal offense, you should investigate the impact that the arrest, charge or conviction may have on your chances of employment in the field you intend to study or on your chances to obtain federal, state, and other higher education financial aid." Criminal background studies are performed annually. For a list of disqualifying crimes or conduct visit the MN Statutes Sec. 245C.15 page: <https://www.revisor.leg.state.mn.us/statutes/?id=245C.15> Questions and appeals should be directed to the Minnesota Department of Human Services, Licensing Division, 444 Lafayette Blvd., St. Paul, MN **55155-3824**. DHS Background Studies Unit Phone: **(651) 431-6620**, Fax: **(651) 296-1490**. Web address: <http://mn.gov/dhs/>

Student Learning Outcomes:

- * Observe child guidance skills
- * Observe parent communication skills.
- * Observe teaching strategies addressing growth and development for all children in the areas of intellectual, social and personal development.
- * Create lesson plans as part of the curriculum development process.
- * Teach instructional lessons using lesson plans.
- * Demonstrate team building and professional relations skills and behaviors.
- * Apply site policies and procedures.
- * Demonstrate an understanding of mindset and professional dispositions and their impact on the methods used in teaching diverse groups of children.

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or Appropriate Placement Score.
(3 C: 1 lect/pres, 0 lab, 2 other)

EDUC 2200 - Educational Psychology

This course introduces students to developmental theories related to the learning process and how to apply these theories to increase student learning and development. It will provide students with an in-depth analysis of how people learn and a developmental foundation for improving environments for learning. It will explore the differences in approaches to learning and performance, and provide a framework for teachers to plan, create and deliver effective lessons for individual learners. In addition, it will differentiate between teaching and learning and cover ways to assess each student's learning.

Student Learning Outcomes:

- * Compare approaches to learning and performance, including varied learning styles, performance modes and multiple intelligences.
- * Design instruction that uses a student's strengths as the basis for continued learning.
- * Identify technology resources to enable and empower learners with diverse backgrounds, characteristics, and abilities.
- * Create positive learning environments that contribute to self-esteem and positive interpersonal relations.
- * Explore factors fundamental to intrinsic motivation in learners.
- * Investigate the impact tobacco, alcohol, and drugs can have on student life and learning.
- * Apply motivational strategies to encourage continuous development of individual learner abilities and help students become self-motivated.
- * Describe communication theory, language development, and the role of language in learning.
- * Evaluate information, research, and emerging practices relevant to the field of special education.
- * Research methods for assessing student learning that use basic psychometric principles and use the assessment data to improve student learning.

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or Appropriate Placement Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ELEC 1502 - Wiring and Materials I

This is the initial course in a series of courses designed to teach students about the tools and material that are used in the electrical industry. Through the semester students will be required to complete about 40 different projects. The initial projects are designed to introduce students to the basic cutting tools that they will be required to use in the Electrical industry. How to work safe will be a priority. Students will then be asked to diagram basic circuits, and then build or construct the circuits they designed. The primary wiring method for these projects is NM cable. Advancing, students will be introduced to other wiring methods such as EMT, IMC and RMC.

Student Learning Outcomes:

A student successfully completing this course will:

- * List safety requirements of tools and material
 - * Generate simple circuit calculations, layout and drawings.
 - * Compile data from the National Electrical Code, and apply it to wiring projects with no National Electrical Code violations
 - * Model professional Integrity
 - * Perform box fill calculations on all electrical boxes used on wiring projects.
 - * Create charts that evaluate different electrical boxes and devices used in industry.
 - * Provide evidence of (your) ability to focus on wiring projects and to stay on task.
- (5 C: 2 lect/pres, 3 lab, 0 other)

ELEC 1506 - Wiring and Materials II

This course is designed as a continuation of Basic Wiring and Materials I. Students will find themselves working in teams to complete between 30-40 different labs. Some of the projects are designed as introductory, others build on initial concepts and become more complex. Skills that are evaluated tend to be hands on or the ability to work with the tools and electrical material. Students will review NM cable wiring techniques, as well as other wiring methods. Basic EMT conduit bending and calculations are introduced in this class, as well as PVC, RMC and IMC conduit types. Successful students learn the ability to focus on a project and demonstrate the ability to stay on task.

Student Learning Outcomes:

A student successfully completing this course will:

- * Examine safety requirements of the National Electrical Code and NFPA 70E
- * Create circuit calculations and layout with multiple switching and receptacle devices
- * Write service calculations
- * Build an overhead service
- * Compile data from the National Electrical Code and apply it to practical wiring projects
- * Model professional Integrity
- * Perform conduit bends and calculation to an accuracy of 1/8
- * Install GFCI and AFCI equipment into circuits, and test them for accuracy.
- * Build circuits with alternative wiring methods (RMC, IMC, and PVC) Calculate conduit fill
- * Install a row of recess lighting within 1/8 accuracy
- * Explain the difference between types of recess lighting, trims and bulbs.
- * Demonstrate professionalism and team performance attributes.
- * Provide evidence of their ability to focus on wiring projects and to stay on task.

Prerequisite(s): ELEC1502.

(5 C: 2 lect/pres, 3 lab, 0 other)

ELEC 1510 - National Electrical Code I

This course will prepare the students to apply code to the installation of basic wiring. Make aware of laws and licensing of electricians. Use and interpret code general wiring practices. Calculate circuit loads. Calculate feeder demands, service installations, overcurrent protection, and appropriate grounding practices. Utilize tables for conductor size and other purposes.

Student Learning Outcomes:

- * Utilize codebook and interpret code sections
 - * Identify enforcement of the code and the laws governing the electricians
 - * Identify minimum requirements for the installation basic circuits for lighting, equipment and feeder installations
 - * Calculate load requirements for circuits and feeders
 - * Use and interpret tables in the code
- (2 C: 0 lect/pres, 2 lab, 0 other)

ELEC 1515 - National Electrical Code II

This class covers NEC articles 250 thru 490. Students will identify NEC code requirements for the installation of wire, cable, conduit, and wire race ways. Students will connect boxes, switches, transformers, lighting equipment, motors, and motor controls. They will be able to identify hazardous locations.

Student Learning Outcomes:

- * Utilize the general code requirements for building, outdoors, and underground wiring methods.
- * Interpret NEC code tables for the selection of conductors and wiring methods

for specific applications.

- * Identifies and selects cable and conduit systems for specific applications.
- * Selects proper boxes, switches, and other devices to meet NEC code requirements.

Prerequisite(s): ELEC1510.

(3 C: 2 lect/pres, 1 lab, 0 other)

ELEC 1518 - Applied Electrical Principles and Formulas

This course will teach students to utilize ohm's law in the application of series, parallel, and combination circuits. Calculate voltage, current and resistance in these applications. Apply power calculation for circuits. Utilize electrical meters. Apply resistance values in the calculation used for equipment and conductors. Describe use, application and the type of batteries. Apply magnetic principles to the operation of electrical equipment. Apply appropriate electrical formulas in the solution of electrical circuits and problems. This is a 4 hour per week lab setting and 6 hour per week in the lecture setting class that covers math and theory in Delmar chapters 1 thru 14 and Singer units 1 thru 14.

Student Learning Outcomes:

- * Evaluate electrical safety issues
- * Calculate series, parallel, and combination circuits for voltage, amperage, resistance, and power.
- * Calculate voltage drop, and select conductors in compliance with the NEC.
- * Interpret results of ammeter, volt meter, and VOM.
- * Classify the common nominal electrical voltages.
- * Identify resistor types and their application in the electrical industry.
- * Analyze electromagnetic principles and their applications in the electrical industry
- * Identify battery types and functions with complete schematics.

Prerequisite(s): MATH0720 or Appropriate Placement Score.

(5 C: 2 lect/pres, 3 lab, 0 other)

ELEC 1523 - Drafting Blueprint Reading and Specification

This course teaches students to identify construction design of residential and commercial buildings. Application of proper symbols and layout of a workable electrical plan along with specifications will enable students to draft a complete set of construction plans including floor layout, circuit layout, and other equipment as required along with the support of specifications sheets and schedules.

Student Learning Outcomes:

A student successfully completing this course will:

- * Identify electrical, plumbing, heating and general construction symbols and details
- * Illustrate electrical circuit layout design
- * Apply National Electrical Code requirements
- * Draft a model home using CADD Software
- * Perform scaling projects using an architectural scale, and using a tape measure
- * Review a simple scaled construction plan and then layout and square the plan in real footage.
- * Create window and door schedules
- * Analyze and contrast commercial blueprints

(4 C: 4 lect/pres, 0 lab, 0 other)

ELEC 1526 - Applied Electrical Principles and A.C. Fund.

This course teaches students to identify differences in DC and AC circuits. Students will use formulas to calculate voltage, current, and impedance values in AC circuits. Students will implement resistive, inductive, capacitive, and combination circuits. They will explore in phase and out of phase. Leading and lagging power factor will be solved to industry standards. They will calculate power factor correction of equipment and feeders. Students will analyze single and three phase systems. Basic motor, generator, and transformer theory will be explored. This is a 4 hour per week lab setting and a 6 hour per week lecture setting class that covers Delmar chapters 15 thru 32 and Singer units 15 thru 24.

Student Learning Outcomes:

- * Evaluate and implement electrical safety procedures.
- * Calculate AC effects on resistive, inductive, and capacitive circuits.
- * Apply formulas to solve AC impedance problems.
- * Calculate AC voltages for peak, effective, instantaneous and averages values.
- * Calculate volts, amps, ohms, and watts in AC circuits
- * Calculate power factor and correction.
- * Evaluate motors, generators, and transformers.
- * Evaluate single and three phase systems.

Prerequisite(s): ELEC1518.

(5 C: 2 lect/pres, 3 lab, 0 other)

ELEC 1530 - Electric Heat

This course will teach concepts of electric baseboard and plenum heating. Students will also investigate other types of heat and air conditioning methods. Students will learn how to calculate BTUs for heating and cooling applications. Students will physically wire various forms of baseboard heating, and numerous forms of low voltage thermostat controls. Students will work with prints, heating and cooling symbols and related calculations. As students advance, they will explore concepts in off-peak heating and cooling, relationships to the grid, and the age of the smart grid.

Student Learning Outcomes:

- * Layout electrical circuits on a print, and install heating and cooling symbols.
- * Calculate and layout heating and cooling systems
- * Identify electric heat design requirements and components
- * Recognize load management configurations and connections
- * Demonstrate skills of terminating line voltage and low voltage installations and circuits
- * Outline fine points about the electrical grid, off peak electrical usage and smart grid technology including solar and wind technologies

Prerequisite(s): ELEC1502, ELEC1510, ELEC1522.

(2 C: 0 lect/pres, 2 lab, 0 other)

ELEC 1534 - Safety, Certifications and Skills

This course is designed for Construction Electrician Students who have completed the first year of the program. They will have instruction in OSHA, various industry certifications, Industrial jobsite training, advanced blueprint reading, alternative energy options, and training in basic welding and welding safety.

Student Learning Outcomes:

A student successfully completing this course will:

- * Identify electrical, plumbing, heating and general construction symbols and details
- * Illustrate electrical circuit layout design
- * Demonstrate National Electrical Code requirements
- * Draft a model home using CADD software
- * Perform scaling projects using an architectural scale, and using a tape measure
- * Review a simple scaled construction plan, and then layout and square the plan in real footage.
- * Create window and door schedules
- * Students will answer a series of questions by reading through commercial blueprints

(3 C: 1 lect/pres, 2 lab, 0 other)

ELEC 1538 - Industry Skills Development

This course will introduce students to total quality management, team building, and networking. Students will explore their humanitarian responsibility, personal accountability, and develop their organizational and management skills. Students will be responsible for developing a working knowledge of the electrical industry, as well as a personal resume, example of cover letter, and interviewing skills.

Student Learning Outcomes:

- * Develop team building skills.
- * Create working resume, cover letter, and career skills.
- * Practice leadership by participating in MESA or approve club.
- * Complete a community service project.

(1 C: 0 lect/pres, 1 lab, 0 other)

ELEC 2502 - Residential Wiring I

Students will complete the installation of temporary service and installation of permanent service for a residential dwelling and enhance wiring skills by the rough-in wiring for a residential dwelling. Job skills will be developed as part of this class.

Student Learning Outcomes:

- * Develop an electrical plan for a single family residence.
- * Apply electrical codes to unique applications of residential construction.
- * Select materials and layout rough-in project.
- * Select and apply tools and equipment for project.
- * Complete residential rough-in.
- * Validate project against NEC requirements
- * Document skill development for future employment opportunities.

(2 C: 1 lect/pres, 1 lab, 0 other)

ELEC 2506 - Residential Wiring II

Students will demonstrate the ability to completely install the following: electrical devices, light fixtures, receptacles, switches, furnace, water heater, range, and dryer. Upon completion students will be evaluated using the current edition of the National Electrical Code (NEC) book to obtain a final residential dwelling unit inspection.

Student Learning Outcomes:

- * Plan material and equipment to finish wiring a residential dwelling.
- * Install electrical fixtures.
- * Assess operation of all circuits.
- * Analyze and troubleshoot electrical circuit malfunctions.
- * Apply National Electrical Code (NEC) requirements to all projects.
- * Configure electrical connection of household appliances and equipment.

Prerequisite(s): ELEC2502.

(2 C: 1 lect/pres, 1 lab, 0 other)

ELEC 2510 - National Electrical Code III

Students will gain a comprehensive knowledge of the National Electrical Code (NEC) in residential, commercial, and industrial situations. Areas to be covered, to include: wiring methods, raceways, lighting, grounding, bonding, motors, transformers, low voltage, calculations, hazardous locations, solar, wind generation, NFP 70E (OSHA STANDARD) and code changes.

Student Learning Outcomes:

- * Identify technical (NEC) language and vocabulary.
- * Develop reading comprehension skills.
- * Analyze safety aspects of the NEC and NFP 70E.
- * Develop test taking skills in preparation for NEC exam.
- * Develop NEC code skills through collaborative projects.
- * Demonstrate the ability to recognize low voltage systems.

Prerequisite(s): ELEC1515.

(2 C: 1 lect/pres, 1 lab, 0 other)

ELEC 2514 - National Electrical Code IV

Students will analyze advanced electrical concepts as they pertain to the National Electric Code (NEC) and the NFP 70E (OSHA STANDARD). Students will also develop skills required to take the State Electrical exam.

Student Learning Outcomes:

- * Apply NEC calculations.
- * Determine the safety aspects of the NEC and the NFP 70E.
- * Organize thought patterns by using the index and glossary of the NEC.
- * Use occupational specific technical vocabulary as defined in the NEC.
- * Perform calculations per NEC from Blueprint information.

Prerequisite(s): ELEC2510.

(2 C: 1 lect/pres, 1 lab, 0 other)

ELEC 2519 - Commercial Wiring

Students will read and interpret blueprints and develop procedures to follow in the installation of wiring and control systems used in commercial buildings; determine pipe fill, box fill, voltage drop, ampacities and de-rating of conductors; develop their pipe bending skills by lab projects in EMT with 1/2 inch and 3/4 inch conduit. MC Cable and AC cable lab projects will enhance the students knowledge of other wiring installations for commercial wiring.

Student Learning Outcomes:

- * Bend conduit to industry standards.
- * Apply NEC de-rating factors to installations.
- * Recommend proper lighting solutions.
- * Interpret NEC for commercial applications.
- * Complete circuit construction projects.

Prerequisite(s): ELEC1506, ELEC1518.

(3 C: 1 lect/pres, 2 lab, 0 other)

ELEC 2520 - Commercial Lighting

The students will study the basic concepts of incandescent, fluorescent, high-intensity-discharge lamps, compact fluorescent, light emitting diode and mercury vapor light fixtures. The operation, troubleshooting, repair, and layout of lighting systems and efficient usage will be emphasized in this course.

Student Learning Outcomes:

- * Recommend lighting solutions to meet customer needs.
- * Troubleshoot lighting problems and the techniques to solve problems.
- * Interpret NEC code as it applies to lighting systems.
- * Analyze industry trends related to lighting systems.
- * Examine disposal as it applies to lighting systems.

Prerequisite(s): ELEC1506, ELEC1518.

(2 C: 0 lect/pres, 2 lab, 0 other)

ELEC 2522 - AC Motor Control I

Students will study the design, construction and operation of motors. This includes lab time on single phase, squirrel cage, synchronous, repulsion and shaded pole motors. Students will examine the basic design and construction of control equipment for single phase and three phase motors.

Student Learning Outcomes:

- * Participate as a member of a team during lab performance activities
- * Complete lab projects demonstrating appropriate safety practices
- * Analyze the basis of electro-magnets and the rotating magnetic field
- * Draw schematic diagrams of various motors
- * Describe the principles of operation of various motors
- * Identify customer relationships and needs

Prerequisite(s): ELEC1526.

(3 C: 1 lect/pres, 2 lab, 0 other)

ELEC 2526 - A.C. Motor Control II

Students will complete their advancement in motor control with the ability to draw, read, and safely execute the wiring of a motor control circuit through the use of a complex motor control diagram. The students will also demonstrate the ability to troubleshoot electrical and mechanical problems that occur in motor control circuits.

Student Learning Outcomes:

- * Draw single phase and three phase motor control systems.
- * Install single phase and three phase motor control systems.
- * Troubleshoot single phase and three phase motor control systems.
- * Interpret complex motor control diagrams.

Prerequisite(s): ELEC2522.

(4 C: 1 lect/pres, 3 lab, 0 other)

ELEC 2532 - Solid State Devices and Programmable Logic Controllers

This course will enable students to analyze solid state devices and applications. Students will assemble solid state devices using diodes, rectifiers, filters, and transistors. In this course, students will develop basic skills in monitoring motor control situations with Program Logic Controllers (PLC's). Students will write PLC logic, program, and wire PLCs.

Student Learning Outcomes:

- * Demonstrate approved safety practice in all lab projects.
- * Analyze solid state devices.
- * Identify solid state device applications in industry.
- * Interpret one lines and program various PLC's.
- * Outline operating procedure of PLC's.
- * Evaluate variable frequency driver controls and circuits.

Prerequisite(s): ELEC2522.

(3 C: 1 lect/pres, 2 lab, 0 other)

ELEC 2534 - Industrial Systems

This course will examine wiring practices associated with industrial plants and operations. Students will assemble industrial services, bend large conduit, learn conduit sizing, pull box sizing, use electric and hydraulic conduit benders, use electric wire pullers, use electric power threaders for rigid conduit, and learn proper methods for pulling large quantities of conductors. The students will also analyze hazardous areas as defined in the National Electric Code (NEC) article 500 and interpret various job blueprints.

Student Learning Outcomes:

- * Current industry tools and methods
- * Current NEC calculations for electrical installations
- * Industrial lighting solutions.
- * NEC compliance
- * Industrial wiring systems and methods

Prerequisite(s): ELEC1502

(3 C: 0 lect/pres, 3 lab, 0 other)

ELEC 2538 - Transformers, Three Phase Systems, and Formulas

Students will analyze the principles and theory of single and three phase transformers. That knowledge is applied to lab situations where they will construct working models of transformers and three phase systems. Students will also use complex formulas to apply electrical principles. Students will also develop an understanding of power generation, smart grid technology and separately derived systems.

Student Learning Outcomes:

- * Demonstrate professionalism and team performance attributes.
- * Complete lab projects demonstrating appropriate safety practices.
- * Apply formulas to solve electrical circuits.
- * Analyze technical functions of transformers.
- * Solve single phase circuit problems
- * Solve three phase circuit problems
- * Differentiate between single phase and three phase electrical systems.

Prerequisite(s): ELEC1518, ELEC1526.

(3 C: 1 lect/pres, 2 lab, 0 other)

ELEC 2540 - Low Voltage Systems

This course will introduce students to low voltage/limited energy electrical circuits. These include, but are not limited to Telecommunications, Coax cable, networking, Class 2 and 3 circuits, fiber optic systems, security systems, and fire alarm systems. Students will learn proper cable installation and termination skills. Students will analyze problems and solutions to electromagnetic interference and other forms of electrical noise.

Student Learning Outcomes:

- * Identify computer networking devices
- * Demonstrate cable termination techniques
- * Evaluate fiber optic cable applications
- * Identify problems and cures of electromagnetic interference
- * Describe various coaxial and communication cable installations
- * Design a cabling architecture
- * Test and troubleshoot system problems
- * Wire a security and/or a fire alarm system

(1 C: 0 lect/pres, 1 lab, 0 other)

EMSC 1420 - AHA Heartsaver CPR and First Aid

This is a general First Aid and CPR course; it is intended for the lay public, as well as the trades and industry. This course will cover first aid care and treatment of adults and children, including CPR, shaken baby syndrome and sudden unexpected infant death (SUID/SIDS). This course is taught to the standards of the American Heart Association.

Student Learning Outcomes:

- * Describe how and when to access the EMS system
- * Perform CPR and Choking intervention for adults, children and infants according to the latest standards of the American Heart Association
- * Provide treatment for common injuries and illnesses, including strokes and myocardial infarctions
- * Apply proper personal protective equipment (PPE) at appropriate times

(1 C: 1 lect/pres, 0 lab, 0 other)

EMSC 1450 - EMT-1

This Emergency Medical Technician (EMT) course is taught utilizing the 2010 EMS Education Standards and is approved by and taught to the standards of the Minnesota Emergency Medical Services Regulatory Board (EMSRB). This Department of Transportation (DOT) approved course will enable students to attain the knowledge to assess, treat, and transport patients who have a variety of illnesses and injuries. Students must complete both EMT 1 and EMT 2 to be eligible to register for the national certification exams.

Student Learning Outcomes:

- * Differentiates classifications of shock.
- * Explain emergencies pertaining to OB/GYN and childbirth.
- * Categorize various mental health conditions.
- * Effectively evaluate the scene to ensure safety of patients, bystanders and responders.
- * Apply incident command management to a dynamic scene.
- * Differentiates patient care for all stages of life span development.
- * Identify basic human anatomy and physiology.
- * Describe access to the EMS system.

- * Apply medical terminology commonly used by the EMT.
- * Assess different mechanisms of trauma and how they affect the body.
- * Formulate different pathophysiologies and which organ systems are affected.
- * Classify patient conditions based on disease process.
- * Define the indications for use of semi-automatic defibrillators (AED).

Corequisite(s): EMSC1455.

(6 C: 6 lect/pres, 0 lab, 0 other)

EMSC 1455 - EMT-2

This Emergency Medical Technician (EMT) course is taught utilizing the 2010 EMS Education Standards and is approved by and taught to the standards of the Minnesota Emergency Medical Services Regulatory Board (EMSRB). This Department of Transportation (DOT) approved course will enable students to attain the knowledge to assess, treat, and transport patients who have a variety of illnesses and injuries. Students must complete both EMT 1 and EMT 2 to be eligible to register for the national certification exams.

Student Learning Outcomes:

- * Validates knowledge of patient care for all stages of life span development.
- * Perform vital signs, oxygen therapy, and airway management.
- * Conduct patient assessments on medical and trauma patients of all ages.
- * Describe the indications for use of semi-automatic defibrillators (AED).
- * Demonstrate performance of CPR.
- * Exhibit proficiency in all EMT skills set forth by the NREMT.
- * Evaluates the appropriate method for patient access and extrication.
- * Applies knowledge of medical and trauma conditions.

Corequisite(s): EMSC1450.

(3 C: 0 lect/pres, 3 lab, 0 other)

EMSC 1462 - Emergency Medical Responder (First Responder)The Emergency Medical Responder (EMR) course is an entry-level emergency medical provider course that will prepare individuals for employment or a volunteer position in a variety of pre-hospital, industrial and first responder settings. The successful completion of an approved EMR course can be a pre-requisite to pursuing training as a Fire Fighter and many Law Enforcement programs. The EMR course is designed to provide participants with the basic knowledge and skills to manage many medical and trauma-related emergencies. Upon successful completion of this course, graduates are eligible upon passing this course to be certified with the Minnesota State Emergency Medical Service Regulatory Board (EMSRB) as an Emergency Medical Responder. Emergency Medical Responder Certification is valid for two (2) years. This Minnesota State Emergency Medical Service Regulatory Board Approved Course meets or exceeds the National Standard Curriculum for Emergency Medical Responder, as developed by the United States Department of Transportation, and the National Highway Traffic Safety Administration.

Student Learning Outcomes:

- * Define how and when to access the EMS system.
- * Identify how to recognize and provide emergency care to sick persons.
- * Apply acquired knowledge to provide emergency care to injured persons.
- * Describe the need for and employ correctly the use of semi-automatic defibrillators.
- * Demonstrate the use of high performance CPR.
- * Design simple, appropriate care plans for a sick or injured person.
- * Execute basic airway management and oxygen therapy skills.

(3 C: 2 lect/pres, 1 lab, 0 other)

EMSC 1480 - AHA BLS for Healthcare Providers

This course is designed for healthcare providers. It will cover how to prevent heart attacks and stroke. The course focuses on how to perform CPR in the event that someone goes into respiratory arrest, cardiac arrest or is choking; this encompasses treatment for an adult, child and infant with both one and two rescuers. This course discusses integration with emergency medical services (EMS), infection control, barrier devices, breathing devices and semi automatic defibrillation.

Student Learning Outcomes:

- * Describe how and when to access the EMS system.
- * Identify steps of prevention, recognition, risk factors, and possible treatment of stroke and Myocardial Infarctions (heart attacks).
- * Perform CPR and choking intervention for adults, children and infants according to the latest standards of the American Heart Association.
- * Demonstrate the use of the Automatic External Defibrillators (AED).

* Apply proper personal protective equipment (PPE) at appropriate times.
(1 C: 1 lect/pres, 0 lab, 0 other)

EMSP 1450 - Introduction to Paramedicine Practice

Fundamental elements associated with emergency medical services to include preparatory practices, pathophysiology, medication administration, and related topics.

Student Learning Outcomes:

- * Demonstrate the roles and responsibilities of a paramedic within the EMS system.
- * Apply the basic concepts of development, pathophysiology and pharmacology to assessment and management of emergency patients.
- * Demonstrate proper procedure to administer medications.
- * Illustrate ability to communicate effectively with patients.
- * Understand the medical, legal, and ethical issues relating to EMS practice.
- * Describe the issues impacting the well-being of the paramedic.

Corequisite(s): EMSP1452, EMSP1454, EMSP1456.

(3 C: 2 lect/pres, 1 lab, 0 other)

EMSP 1452 - Patient Assessment and Airway Management

This course prepares paramedic students to provide pre-hospital care within the scope of practice and capacity of the paramedic to ill or injured individuals. The course focuses on patient assessment, airway control and emergency response and management. In addition, related topics covered include acquiring patient health history, the standard techniques of physical examination, basic thru advanced airway procedures.

Student Learning Outcomes:

- * Perform a history and comprehensive physical exam on various patient populations;
- * Perform by establishing and/or maintaining a patient airway;
- * Demonstrate oxygenation and ventilation of a patient;
- * Differentiate respiratory distress, failure and arrest;
- * Interpret results of monitoring devices used in EMS patient assessments.

Corequisite(s): EMSP1450, EMSP1454, EMSP1456.

(4 C: 2 lect/pres, 2 lab, 0 other)

EMSP 1454 - Trauma Management

This course covers knowledge and skills in the assessment and management of patients with traumatic injuries.

Student Learning Outcomes:

- * Differentiate the kinematics of trauma as they pertain to mechanism of injury (MOI).
- * Establish and/or maintain a patent airway, oxygenate, and ventilate.
- * Perform a comprehensive physical exam, including a complete history on trauma patients.
- * Integrate a treatment plan for the trauma patient.
- * Perform invasive procedures as they relate to the trauma patient (e.g. chest decompression, pericardiocentesis, surgical airways, tourniquets, etc)

Corequisite(s): EMSP1450, EMSP1452, EMSP14526.

(4 C: 2 lect/pres, 2 lab, 0 other)

EMSP 1456 - Clinical Experience 1

Clinical Experience 1, allows the paramedic student to explore the wide variation between ambulance services and individual patient care experience. Upon completion of this clinical experience, the paramedic student will not only be better prepared to complete future clinical rotations, but also have a better understanding of the wide-variety of ALS care techniques and equipment available. Introduces the student to local clinical agencies and prepares the student for clinical activities above the level of EMT. Includes prerequisites required by clinical affiliates, therapeutic communication, primary assessment, history taking, secondary assessment, reassessment, monitoring devices and documentation.

Student Learning Outcomes:

- * Become familiar with the operations, procedures and care provided by the Paramedic in the field.
- * Apply appropriate treatment to patients under the direct supervision of a Paramedic of Hospital staff.
- * Communicate patient findings to the patient and allied health professionals.
- * Demonstrate a treatment plan for the medical and trauma patient of all ages and patient types.

Corequisite(s): EMSP1450, EMSP1452, EMSP1454.

(3 C: 0 lect/pres, 0 lab, 3 other)

EMSP 1458 - Emergency Pharmacology

This course covers medications commonly used in the pre-hospital setting, how these medications work, and how they are administered. Concepts covered include indications, contraindications, side effects and other issues of concern. Medication administering skills include working with oral, subQ, IM, IO, and IV meds. In addition to providing knowledge of medications currently used in the pre-hospital setting, the course will cover procedures for maintaining preparedness to administer additional medications that may come into the pre-hospital arena.

Student Learning Outcomes:

- * Integrate comprehensive knowledge of pharmacology to formulate a treatment plan intended to mitigate emergencies and improve the overall health of the patient.
- * Develop better critical thinking skills through the discussion of medication safety, medication legislation, naming / classification, schedules, pharmacokinetics, storage and security, autonomic pharmacology, metabolism and excretion, mechanism of action, phases of medication activity, medication response relationships and interactions, and toxicity.
- * Practice multiple methods to administer medications common to the pre-hospital environment.
- * Familiarize the student with common medications used within the paramedic scope of practice including, but not limited to: names, effects, indications, routes of administration, dosages, actions, contraindications, complications, side effects, and interactions.

Prerequisite(s): EMSP1450.

(3 C: 2 lect/pres, 1 lab, 0 other)

EMSP 1460 - Medical Emergencies

This course covers a detailed study of the knowledge and skills necessary to help reach competence in the assessment and management of patients with medical emergencies. At the completion of this course, the student will be able to integrate pathophysiological principles and assessment findings to formulate a field impression and implement a treatment plan for the medical patient.

Student Learning Outcomes:

- * Integrate pathophysiological principles with assessment findings to develop a treatment plan for a medical patient.
- * Apply appropriate pharmacological treatments to various patient types.
- * Communicate patient findings to the patient and allied health professionals.
- * Demonstrate a treatment plan for the medical patient of all ages and patient types.

Corequisite(s): EMSP1458, EMSP1462, EMSP1464

Prerequisite(s): EMSP1450.

(4 C: 3 lect/pres, 1 lab, 0 other)

EMSP 1462 - Cardiology

This course integrates pathophysiological principles and assessment findings to formulate a field impression; and implement a treatment plan for the cardiac patient.

Student Learning Outcomes:

- * Integrate pathophysiological principles with assessment findings to develop a treatment plan for a cardiac patient.
- * Apply appropriate pharmacological treatments to various Cardiac arrhythmias
- * Communicate patient findings to the patient and allied health professionals.
- * Demonstrate communication to patient families when communicating end of life issues.

Corequisite(s): EMSP1460, EMSP1464, EMSP1458

Prerequisite(s): EMSP1450.

(4 C: 3 lect/pres, 1 lab, 0 other)

EMSP 1464 - Clinical Experience 2

This course is the second in a series intended to prepare competent entry-level Paramedics in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains in a supervised clinical setting. Rotations in this course include the emergency department, specialty hospital units, and prehospital shifts. Under the supervision of the field preceptors, students must demonstrate patient care competence and proficiency of skills. Direct supervision is provided by the clinical professional.

Student Learning Outcomes:

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

- * Integrate pathophysiological principles with assessment findings to develop a treatment plan for a diverse patient types.
- * Apply appropriate pharmacological treatments to various Medical and Trauma emergencies.
- * Communicate patient findings to the patient and allied health professionals.
- * Demonstrate legal and ethical behavior, safety practices; interpersonal and teamwork skills.

Corequisite(s): EMSP1460, EMSP1458, EMSP1462

Prerequisite(s): EMSP1456.

(2 C: 0 lect/pres, 0 lab, 2 other)

EMSP 2450 - Special Populations

Focuses on the pre-hospital assessment and management of patients in a specific population including pediatrics, geriatrics, obstetrics/gynecology (OB/GYN), bariatric, vulnerable patients, sexual assault and special needs.

Student Learning Outcomes:

- * Perform a complete patient history and physical exam for patients of extreme age categories.
- * Formulate a field diagnosis and implement a treatment plan for various patient presentations, to include the use of medications and other advanced level skills specific to age categories.
- * Upon Successful completion the students will obtain certification in AHA Pediatric Advanced Life Support
- * Apply principles of injury prevention to case studies.
- * Manage various pre-hospital emergencies for patients of the extreme age categories.
- * Differentiate developmental characteristics of infants and children of varying age groups.

Prerequisite(s): EMSP1458.

(3 C: 2 lect/pres, 1 lab, 0 other)

EMSP 2452 - EMS Operations

This course focuses on matters related to Emergency Medical Services (EMS) operations, incident and scene safety and awareness, triage, multiple and mass casualty incident operations and medical incident management (command and control of EMS incidents). This course develops an awareness of principles, techniques and procedures necessary to safely and effectively manage an emergency scene. This course is required for students desiring to test for National Registry Paramedic certification.

Student Learning Outcomes:

- * Describe the components of ground and air EMS operations
- * Explain the principles of incident management system
- * Differentiate various types of triage methods used in EMS operations
- * Classify types of disasters / terrorist incidents and appropriate response
- * Discuss procedures for responding and operating at crime scenes
- * Identify types of specialized rescue and hazardous materials response

Corequisite(s): EMSP2450, EMSP2454

Prerequisite(s): EMSP1458.

(3 C: 3 lect/pres, 0 lab, 0 other)

EMSP 2454 - Clinical Experience 3

This course is the third in a series intended to prepare competent entry-level Paramedics in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains in a supervised clinical setting. Rotations in this course include the emergency department, specialty hospital units, and prehospital shifts. Under the supervision of the field preceptors, students must demonstrate patient care competence and proficiency of skills.

Student Learning Outcomes:

- * Identify and describe a broad range of medical or traumatic emergencies which present to the student.
- * Perform a thorough interview and assessments with diverse medical or trauma complaints in the field setting.
- * Articulate a complete treatment plan for patients in the students care.
- * Describe how treatments rendered for patient care relate to the care provided by paramedics.
- * Describe clinical interactions, including a presumptive diagnosis with treatments performed, in an appropriate format
- * Perform patient care as appropriate for a paramedic (under the supervision of a paramedic/nurse/physician) for patients in the care of the student.

Corequisite(s): EMSP2450, EMSP2452

Prerequisite(s): EMSP1464.

(3 C: 0 lect/pres, 0 lab, 3 other)

EMSP 2456 - Paramedic Psychomotor Synthesis Lab

This course provides the paramedic student with composition or combination of all psychomotor skills and cognitive knowledge so as to form a whole skill portfolio of an entry level paramedic. This intensive course will culminate with the practical and written portions of the National Registry Paramedic exam. May be repeated once, for credit.

Student Learning Outcomes:

- * Demonstrate competency of material contained in the National Paramedic curriculum
- * Apply knowledge in a lab setting to depict competency in psychomotor testing requirements of the MN Emergency Service Regulatory Board and the National Registry of EMTs.
- * Utilize assessment and techniques of the Paramedic provider in a laboratory setting that depicts competency in psychomotor testing requirements of the MN Emergency Service Regulatory Board and the National Registry of EMTs.

Corequisite(s): EMSP2458

Prerequisite(s): EMSP2450.

(2 C: 0 lect/pres, 2 lab, 0 other)

EMSP 2458 - Paramedic Capstone Internship

This course provides a summative internship to ensure entry-level competence at the paramedic level. This course is the final in a series of field setting clinical internships. At completion, the student will have provided comprehensive assessment and management for fifty (50) patients in the pre-hospital setting as the Team Lead as defined by CoAEMSP

Student Learning Outcomes:

- * Demonstrate entry-level competency in a capstone psycho-motor experience
- * Demonstrate entry-level competency in a capstone cognitive evaluation.
- * Demonstrate entry-level competency in a capstone affective evaluation.

Corequisite(s): EMSP2456

Prerequisite(s): EMSP2454.

(3 C: 0 lect/pres, 0 lab, 3 other)

ENGL 0900 - Writing Fundamentals

This composition course emphasizes foundational principles of writing, including focus, development, organization, clarity, unity, and coherence in paragraphs and brief essays. Students will practice how to generate documents that are understandable for audiences, including how to identify and correct common errors. Emphasis will be placed on increasing written fluency and responding to texts. By the end of the semester, students will have written 4500 words of revised work. This is a college readiness course and does not fulfill college writing requirements.

Student Learning Outcomes:

- * Write unified, coherent and well developed short essays including but not limited to description, narration, exposition and persuasion.
- * Develop controlling ideas with specific and relevant examples and details.
- * Organize ideas, anticipating audience expectation.
- * Apply editing control as a result of peer and instructor feedback.
- * Demonstrate general digital literacy appropriate for college courses using Word files and online learning platforms like D2L Brightspace.
- * Select appropriate topics for academic/professional writing.
- * Identify characteristics of diverse audiences.
- * Respond effectively to various published sources.

Prerequisite(s): Appropriate reading placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

ENGL 1303 - Technical Writing

Meets MN Transfer Goal 1 - Written Communication. This transferable course will teach students to write effectively for the business world. They will learn how to research, write, and design appealing and productive print and electronic documents. Assignments will parallel the writing demands students will face both in college and in the workplace and may include e-mails, memos, reports, graphics, instructions, proposals, collaborative writing, and descriptions.

Student Learning Outcomes:

- * Create professional writing, reports, memos, instruction manuals, graphics, marketing materials, formal proposals, and more

- * Generate professional information products that address audience needs and that accomplish the writer's objectives
- * Apply strategies for successful collaboration, such as working and communicating on-line with colleagues, setting and achieving project goals, and responding constructively to peers' work
- * Locate, apply, and document research ethically
- * Demonstrate proper grammar and mechanics

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

ENGL 1308 - Stretch Analytical Writing I

Meets MN Transfer Curriculum Goal Area 1 - Written Communication. This is an introductory course in college-level composition and develops written communication skills appropriate for academic and professional settings. This course emphasizes analytical writing through the writing process, composition skills, and critical analysis. Through the course, students will discover and enhance their strengths and identify and address their limitations with writing. This three-credit course is intended for students placing between 237 and 249 on the Accuplacer and is not intended to replace the four-credit ENGL 1302 - Analytical Writing. To fulfill the Goal Area One Written Communication requirement of the Minnesota Transfer Curriculum or the Associate of Arts degree, students who take this course must also complete ENGL 1309: Stretch Analytical Writing II.

Student Learning Outcomes:

- * Practice the writing process through invention, organization, drafting, revision, editing, and publication.
- * Select appropriate communication choices for specific audiences.
- * Apply analytical writing skills to construct original written work
- * Synthesize source material by summarizing, paraphrasing and quoting sources into original written work.
- * Incorporate citations into original written work
- * Analyze, in groups, student and professional writing

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or Appropriate Placement Score.

(3 C: 3 lect/pres, 0 lab, 0 other)

ENGL 1309 - Stretch Analytical Writing II

Meets MN Transfer Curriculum Goal Area 1 - Written Communication. This course emphasizes analysis, research, and argumentation in writing while building on written communication skills developed through English 1308 and previous college coursework. Students will write a well-developed research paper. This course is intended for students who have completed English 1308 or an equivalent course accepted in transfer.

Student Learning Outcomes:

- * Demonstrate the writing process through invention, organization, drafting, revision, editing, and publication.
- * Locate, evaluate, analyze and synthesize in a responsible manner material from diverse sources and points of view.
- * Document sources using standard format and citation style.
- * Construct logical, coherent, comprehensive, and well-supported claims and arguments.
- * Demonstrate analytical writing skills in communication choices for specific audiences.
- * Employ syntax and usage appropriate to academic disciplines and the professional world.

Prerequisite(s): ENGL1303 or ENGL1308.

(3 C: 3 lect/pres, 0 lab, 0 other)

ENGL 1312 - Analytical Writing

Meets Mn Transfer Curriculum Goal Area 1 - Written Communication. This course focuses on research and argument, emphasizing contemporary issues. The course develops the writing, research, analytical, and peer evaluation skills necessary to succeed academically, professionally and personally. Students will write an extensive research paper.

Student Learning Outcomes:

- * Demonstrate the writing process through invention, organization, drafting, revision, editing, and publication.
- * Participate effectively in groups with emphasis on listening, critical and reflective writing, and responding.
- * Locate, analyze, evaluate, and synthesize in a responsible manner material

from diverse sources and points of view.

- * Select appropriate written communication choices for specific audiences and rhetorical situations.
- * Construct logical and coherent arguments.
- * Use authority, point of view, and individual voice and style in writing.
- * Employ syntax and usage appropriate to academic disciplines and the professional world.
- * Demonstrate the correct use of citation styles appropriate for academic/professional writing.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(4 C: 4 lect/pres, 0 lab, 0 other)

ENGL 1321 - Introduction to Modern Fiction

Meets Mn Transfer Curriculum Goal Area 6 and 8 - Humanities, Global Perspective. This course expands students' perspectives of reading by focusing on national and international literary works published after 1960. Students will analyze and interpret modern literature from diverse authors, genres, and cultural contexts with attention paid to historical awareness. Through interaction with various forms of fiction, such as novels, poetry and plays, students will explore expressions of diverse human experiences from across the world. Tools for reading and writing critically will be emphasized.

Student Learning Outcomes:

- * Analyze representative works of modern fiction from around the world.
- * Examine the impact of diversity on the themes of modern fiction.
- * Evaluate human universals expressed in literary works from around the world.
- * Utilize fiction and literary analysis terminology.
- * Recognize elements and themes in literature as social commentary.
- * Demonstrate perspectives gained from literature to personal and global situations.
- * Evaluate various interpretations of a text and their validity.
- * Analyze the support/evidence for a particular interpretation.
- * Conduct research to find materials appropriate to use for literary analysis.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

ENGL 1322 - Introduction to Literature

Meets MN Transfer Goal 6 - Humanities. This course is an introduction to the study of creative literature in order to engage in critical analysis, form aesthetic judgments and develop an appreciation of literature as essential to the survival and enrichment of society. Students will analyze and interpret a variety of different genres (poetry, fiction, and drama) spanning from ancient times to the present, understanding influences and how each piece reflects the time, society, and culture in which it was created. Tools for reading and writing critically will be emphasized.

Student Learning Outcomes:

- * Explore the scope and variety of creative literature.
- * Examine literature as expressions of individual and human values within an historical and social context.
- * Develop an informed personal response to literature.
- * Analyze the relationship between literature and society.
- * Analyze literature from various literary viewpoints.
- * Apply critical thinking skills to achieve clarity in reading, speaking, writing, and listening.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

ENGL 1340 - Introduction to Multicultural Literature

Meets MN Transfer Curriculum Goal Areas 6 and 7A - Humanities and Human Diversity. Multicultural literature features works written by African American, Asian American, Native American, and Latino authors as they intersect with issues of race, gender, class, ethnicity, religion, sexuality, and nationality. Students will read, discuss, and analyze multicultural literature to expand and deepen their experiences with diverse voices and perspectives. This will increase students' understanding of traditions and values of varied cultures necessary for living and working effectively in a society with great population diversity.

Student Learning Outcomes:

- * Define and apply literary terms in culturally relevant reading selections.

- * Define and apply glossary terms related to the study of culture.
- * Uncover and interpret cultural similarities and distinctions via literature.
- * Examine culturally relevant literary themes and issues rooted in social structures and values.
- * Analyze cultural issues in literature as expressions of individual and human values within historical periods.
- * Apply critical thinking to achieve clarity, accuracy, precision, depth, and fair-mindedness to reading, discussing, writing, and listening skills to the culture-based study of literature.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

ENGL 1341 - Introduction to Women's Literature

Meets Mn Transfer Curriculum Goal Areas 6 and 7 - Humanities and Human Diversity. This course analyzes women's contributions to the literary canon. Cultural and literary questions raised by women writers throughout history and from different cultural backgrounds will be examined, with particular attention to the relationship between women's social and cultural status and their image in literature. While English and American authors will be emphasized, the course will include global literature.

Student Learning Outcomes:

- * Explore the scope and variety of women's literature
- * Analyze the impact of gender on literature and expression
- * Examine women's literature in relationship to the values, culture, and artistic expressions of society
- * Demonstrate an informed personal response to women's literature
- * Analyze women's literature as expressions of humanity's and women's values within a historical period
- * Consider the writing styles women have used to explore societal roles and the search for identity
- * Apply critical thinking skills to achieve clarity, accuracy, precision, depth and fair-mindedness to reading, speaking, writing and listening skills
- * Participate effectively in groups with emphasis on listening, critical and reflective thinking, and responding.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

ENGL 1342 - Middle Eastern Literature

Meets MN Transfer Goals 6 and 8 - Humanities and Global Perspective. This course attempts to reflect a growing academic interest in the Middle East and its distinguished literary tradition in context of historical, social, and cultural structures and values in Literature. Novels, short stories, and poetry from Arab, Jewish, and Persian backgrounds are covered.

Student Learning Outcomes:

- * Define Middle Eastern Literature
- * Recognize cultural distinctions
- * Differentiate types of Middle Eastern Literature
- * Identify different themes within the Middle Eastern Literature
- * Relate themes of Middle Eastern Literature to culture and tradition
- * Apply critical thinking skills to achieve clarity, accuracy, precision, depth, and fair-mindedness to reading, writing, speaking, and listening skills
- * Analyze Middle Eastern Literature in relationship to the values, cultural and artistic expressions of society
- * Examine the relationship of spirituality in the culture as expressions of literature
- * Interpret presented cultural, social, spiritual issues and ideas in relation to one's own experiences
- * Analyze literature about cultural issues in relationship to the values, culture, and artistic expressions of society

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

ENGL 1345 - Gender in Literature

Meets MN Transfer Curriculum Goal Areas 6 and 7 - Humanities/Fine Arts and Human Diversity. This course explores the portrayal of gender roles (experience and perspectives), gender identity, and sexual identity/orientation in the context of historical, social, and cultural structures as portrayed in literature. This course

also investigates how gender intersects with other identities. Students will read, discuss, and analyze literature to expand and deepen their experiences with issues related to gender. Students will apply critical thinking skills to the gender-based study of literature.

Student Learning Outcomes:

- * Apply literary and gender-related glossary terms.
- * Uncover gender themes and issues within literature to build knowledge of culture and tradition.
- * Interpret presented gender issues and ideas in relation to one's own experiences.
- * Investigate how gender intersects with other identities in relation to marginalized perspectives.
- * Break down gender themes and issues in context of social structures and values.
- * Analyze gender issues in literature as expressions of individual and human values within historical periods.
- * Examine gender issues as expressions in literature.
- * Appraise gender issues in literature as they relate to the values, culture, and artistic expressions of society.
- * Apply critical thinking skills to reading, discussing, writing, and listening to the gender-based study of literature.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

ENGL 1350 - Introduction to Creative Writing

Meets MN Transfer Curriculum Goal Areas 1 and 6 - Written Communication and Humanities. Students will learn the principles and methods of basic creative writing for poetry, fiction, and creative nonfiction with a focus on developing the creative process. Through a variety of methods, students will deepen their appreciation for and ability to produce creative writing. Students will develop the ability to express themselves through poetry, fiction, and creative nonfiction as well as an appreciation for creative works of the past and present, resulting in a creative writing portfolio.

Student Learning Outcomes:

- * Critique short fiction, creative nonfiction, and poetry of past and present.
- * Implement a variety of creative writing methods, including developing voice, creating imagery, and crafting character, setting, and structure.
- * Analyze the connections between personal experience and creativity
- * Create poems, short works of fiction, and creative nonfiction.
- * Develop creative thought and expression through writing poetry, fiction, and nonfiction.
- * Demonstrate the writing process through invention, organization, drafting, revision, editing and presentation.
- * Participate effectively in writers' workshops with emphasis on listening, critical and reflective thinking, and responding.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

ENGL 2315 - Literature from our Latine Communities

Meets MN Transfer Curriculum Goal Areas 6 and 7B - Humanities and Race, Power, and Justice. This survey course features literature of authors from a variety of Latine communities in Minnesota and the United States. Students will explore how the written works reflect issues of language, national origin, immigration, skin color, gender, and sexuality. Students will be exposed to the diversity of the authors' experiences in the U.S. through a variety of genres and cultural expressions, such as poetry, fiction, non-fiction, and memoirs. Students will read, discuss, and analyze Latine literature by authors living in the U.S. to develop a lens for understanding the diverse Latine cultures in Minnesota and the United States. This course is cross-listed as SPAN 2315. Students taking ENGL 2315 will read English translations of the text and submit their assignments in English. Those taking SPAN 2315 will read the texts in the original Spanish and submit their assignments in Spanish.

Student Learning Outcomes:

- * Differentiate terms and concepts such as Latino/a, Latinx, Latine, Latinidad, Hispanic, Xicano/a, and Chicano/a.
- * Examine cultural differences and similarities among the literary production of different groups of Latine in MN and the U.S.
- * Recognize how the migration experience, national origin, skin color, gender,

or sexuality shape the intersectional experiences and tensions of Latine in the U.S.

- * Explain how the bilingual and bicultural experience of Latine informs their discourses.
- * Examine from a literary perspective the themes and issues rooted in social structures and values that affect the Latine community.
- * Uncover traditions and values of various Latine cultures necessary for living and working effectively in a diverse population.
- * Analyze cultural and social issues in literature as expressions of the Latine experience within historical periods.
- * Examine the contributions of major authors in the Latine tradition.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

ENGR 1500 - Introduction to Engineering

This course provides comprehensive information about diverse engineering disciplines, and roles, responsibilities, required skills, and aptitudes of engineers of diverse disciplines. This course provides exposure to the engineering profession through the incorporation of the imperative skills - networking with other students and professionals, team work, engineering design, computer skills, ethical decision-making, time management, and communicating to diverse audiences. Students are also introduced to engineering fundamentals through group projects and learn teamwork skills necessary for success in academics and as modern professional engineers. Engineers representing diverse disciplines will also present to students on their specific branch of engineering. The 3 credit option for this class meets Mn Transfer Curriculum Goal Area 9 Ethical and Civic Responsibility. Students taking the 3 credit option will explore philosophical conceptions of morality, justice and value. Through an examination of major ethical theories, both contemporary and classical, the course reveals the relationship between ethical theory and ethical practice, particularly as it relates to careers in engineering and other STEM (Science, Technology, Engineering, and Mathematics) professions.

Student Learning Outcomes:

For students enrolled in the 2 and 3 credit option:

- * Compare the diverse engineering disciplines based on research and class activities.
- * Summarize codes of ethics and responsibilities of professional engineers.
- * Identify basic software used by engineers.
- * Create group design projects explaining the tasks performed to achieve design objective.
- * Explain engineering design processes.

Additional outcomes for students enrolled in the 3 credit option:

- * Summarize a diverse range of philosophical thought and writings in the area of ethics.
- * Articulate and apply a personal system of ethics.
- * Analyze the basis of moral values in legal, social and scientific issues as expressed in contemporary and classical works in philosophy.
- * Apply core theoretical concepts in ethics to specific issues in the engineering and other STEM professions.
- * Utilize campus services, programs, and resources that promote student success and lifelong learning.

Prerequisite(s): MATH1360 or Appropriate Placement Score.

(3 C: 3 lect/pres, 0 lab, -3 other)

ENGR 2500 - Statics

This course will cover advanced statics and physics concepts through the use of calculus and other math skills. It will introduce static force calculations as they are applied to specific rigid bodies. It will also introduce the key concepts of friction, equilibrium, centroids, and center of gravity of structures.

Student Learning Outcomes:

- * Examine various theoretical and practical concepts of statics used by engineers, physicists, and other scientific professionals.
- * Perform calculations using vectors to solve various mechanics problems.
- * Determine centroids of 2D and 3D shapes.
- * Design free-body diagrams for members of multi-body structures.
- * Analyze joint reaction loads for multi-body structures.
- * Solve internal loads in beams and cables.
- * Determine friction effects on structures.
- * Examine the principle of virtual work.

- * Communicate how statics theory draws conclusions about everyday real-world situations.

Prerequisite(s): PHYS2310 or MATH2311.

(3 C: 3 lect/pres, 0 lab, 0 other)

ENGR 2505 - Dynamics

This course will cover advanced dynamics and physics concepts through the use of calculus and other math skills. It will introduce key concepts of kinematics and kinetics of particles, systems of particles and rigid bodies. It will also introduce the key concepts of work, energy, linear and angular impulse momentum, motion, and vibrations.

Student Learning Outcomes:

- * Examine various theoretical and practical concepts of dynamics used by engineers, physicists, and other scientific professionals.
- * Evaluate kinematic calculations for particles and rigid bodies in 3D, in inertial and non-inertial reference frames.
- * Solve kinematic calculations for particles and rigid bodies in 2D.
- * Identify the fundamental differences between 2D and 3D kinetics.
- * Analyze plane motion and curvilinear motion equations.
- * Compare work and energy.
- * Describe translation and rotation.
- * Perform mechanical vibration calculations.
- * Communicate how dynamics theory draws conclusions about everyday real-world concepts.

Prerequisite(s): ENGR2500.

(3 C: 3 lect/pres, 0 lab, 0 other)

ENGR 2510 - Engineering Thermodynamics

This course covers the basic concepts of thermodynamics and their applications for pure substances. It offers the basic skills essential for designing and evaluating everyday engineering systems. It emphasizes temperature, pressure, heat and heat transfer, properties of substances, and applications of the thermodynamics laws to the analysis of heat engines, refrigeration systems, gas mixtures, and reactions. This is a preparatory course for other innovative courses in the fields of thermodynamics, heat transfer and energy conversion.

Student Learning Outcomes:

- * Use British Engineering (B.E.) and SI unit systems for all thermodynamic quantities.
- * Define temperature, heat, and work in terms of thermodynamics.
- * Describe the Zeroth, the First, and the Second laws of thermodynamics.
- * Apply the first law of thermodynamics to systems.
- * Solve thermodynamics problems using the second law of thermodynamics.
- * Demonstrate knowledge of the idea of absolute temperature scale.
- * Analyze diverse statements of the second law of the thermodynamics and identify characteristics those make thermodynamics processes irreversible.
- * Calculate the Carnot efficiency of thermodynamics cycle.
- * Diagram graphs of pressure-specific volume and entropy-temperature.
- * Calculate various thermodynamic parameters including temperature, pressure, volume, molar mass, and gas constant at critical points using the tables for diverse materials and common gases.
- * Use the tables for ideal gases, compressed liquid air, superheated vapor, and refrigerant 134a to solve problems to calculate thermodynamic properties such as temperature, saturation pressure, and enthalpy.
- * Analyze and solve problems related to behavior of gas mixtures.

Prerequisite(s): CHEM1350, PHYS2310, MATH2311.

(3 C: 3 lect/pres, 0 lab, 0 other)

ENGR 2515 - Linear Circuit Analysis I

This is an introductory course in electrical circuits for engineering major students and it provides a survey to the fundamentals of electricity. It provides exposure to the circuit theorems, circuit laws, and circuit analysis techniques. Students are familiarized with the application of circuits simulation software for the circuits analysis. The laboratory component associated with this course provides noteworthy experience in various experimental procedures such as laboratory safety, collective learning, designing circuits, analyzing circuits, and troubleshooting circuits.

Student Learning Outcomes:

- * Demonstrate the aptitude to convert units used in electrical engineering through problem solving.
- * Interpret simple to complex circuits, laws, and measurements.

- * Appraise electrical circuits using circuits simulation software.
- * Describe the rules and theorems used for the analysis of circuits.
- * Calculate the equivalent resistance of numerous resistors connected in series, parallel or combination of both.
- * Evaluate electrical circuits using Kirchhoff's current and voltage laws, and Ohm's law.
- * Determine the circuitry parameters using the mesh current method and the node voltage method.
- * Apply circuits theorems such as Thevenin's, Norton's and superposition theorems to electric circuits.
- * Invent the equivalent capacitance of several capacitors connected in series and/or parallel.
- * Analyze RC Circuits, RL Circuits and a series LRC Circuits.
- * Review laboratory safety procedures and techniques.
- * Construct electrical circuits schematically, and physically and accomplish measurements using electronic test equipment.
- * Illustrate the skills in using electrical measuring devices including digital oscilloscopes, multimeters, signal generators, A.C. and D.C. power supplies in laboratory.
- * Verify theoretical calculations through performing measurements of critical parameters.
- * Communicate experimental results through presentation to peers and faculty.

Prerequisite(s): PHYS2320, MATH2321.

(4 C: 3 lect/pres, 1 lab, 0 other)

ENGR 2520 - Mechanics of Materials

This course introduces students to the fundamental concepts of mechanics of materials and basic properties of engineering materials. It covers stresses deformations, stress-strain relationships, torsions, beams, shafts, and columns, elastic deflections in beams, combined loading, and combined stresses. Students will be familiarized with the analysis and design of structural member under axial loads, torsion, bending, shear, and combined loading.

Student Learning Outcomes:

- * Understand the vital concepts of stress, strain, failure, and strain energy.
- * Draw a perfect free body diagram to check the equilibrium of a rigid body.
- * Define elastic limit, yield strength, ultimate strength, and modulus of elasticity.
- * Describe ductile and brittle behavior of materials.
- * Calculate stress and strain in axial loading.
- * Analyze and design structural member under axial and torsional loading.
- * Define plastic deformation in circular shafts.
- * Differentiate between normal stress and shear stress, extensional strain and shear strain and the corresponding material properties.
- * Utilize Mohr's circle method to determine principal stresses, principal planes, and maximum shear stress under numerous combinations of bending, torsion, and axial loads.
- * Compute the acute buckling load of a column.
- * Utilize the equation of elastic curve to calculate deflection.
- * Investigate statically indeterminate structures.
- * Design simple bars, beams, and circular shafts for tolerable stresses and loads.

Prerequisite(s): ENGR2500, MATH2321.

(3 C: 3 lect/pres, 0 lab, 0 other)

ENVR 1305 - Environmental Science

This course meets MN Transfer Goal Areas 3 and 10 - Natural Sciences and People and the Environment. This introductory course surveys the processes that shape our planet and examines the Earth's structure and the fundamental interactions between its systems such as atmosphere, water, landscape, biologic processes, and human activities. The course introduces the principles of environmental science to understand the interactions of systems and cycles, feedback mechanisms, modes of system change, and the human environment using case studies. The course is intended for an audience of both Environmental Science majors and non-science majors who are interested in learning about how the Earth works, how the Earth changes, and how that relates to human society.

Student Learning Outcomes:

- * Describe the functions of basic Earth system components.
- * Demonstrate the application of scientific principles in terms of Earth systems.
- * Apply the theoretical concepts of scientific methods.
- * Describe the atmospheric components and impact of anthropogenic pollutants.
- * Articulate the spatial distribution and integration of the Earth system.
- * Examine the relationship of Earth systems and the human community.

- * Investigate the integration of these systems with each other and the human environment.
- * Identify critical aspects of water sources in the hydrological cycle.
- * Explain the principles of energy and differentiate between different forms of energy.
- * Explain ecological concepts and how biological evolution led to biodiversity of life on the earth.
- * Examine the basis for grouping plant communities in biomass.
- * Define the principles of environmental sustainability.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score..

(4 C: 3 lect/pres, 1 lab, 0 other)

ENVR 1310 - Environmental Issues

This course meets MN Transfer Goal Area 3 and 10 Natural Sciences and People and the Environment. The Environmental Issues course introduces students to tools and methods to characterize the ecosystem and identify issues. These tools and methods will help students explore important environmental issues such as air and water pollution, water supply, climate change, agriculture and food supply, environmental health, ecosystem disruption, environmental ethics, and energy resources. The course explores the scientific based research and engineering aspects of these issues and also addresses the social implications. Throughout the semester multiple techniques and innovative approaches will explore alternative solutions to living on Earth and protecting its environment for the long term, sustainable future.

Student Learning Outcomes:

- * Apply the theoretical concepts of scientific methods.
- * Describe the scientific basis of major environmental issues.
- * Compare a variety of social approaches to addressing environmental issues.
- * Identify the impact of human population increase on human environmental health.
- * Explain the impact of society, politics, culture, economics, values, and scientific information on decision making about environmental issues.
- * Distinguish characteristics of pollutants major groups in environmental toxicology.
- * Articulate issues of endangered species and loss of biodiversity.
- * Identify the issues of agriculture and food security.
- * Explain the difference between efficient use and conservation of energy.
- * Contrast the issues of renewable and non-renewable energy.
- * Assess the major air and water issues in the world.
- * Articulate human impacts on atmosphere and global climate.
- * Describe issues related to soil.
- * Illustrate the impact of social, psychological, economic and political issues on global environmental issues.
- * Apply communication skills to answer questions about environmental issues.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score..

(3 C: 3 lect/pres, 0 lab, 0 other)

ENVR 1315 - Natural Resource Conservation

This course meets MN Transfer Goal Area 3 and 10 - Natural Sciences and People and the Environment. This is an introductory course in natural resource conservation. It includes a survey of the distribution of the world's natural resources, resource use, abundance, scarcity, and possible solutions to resource and environmental challenges. The course provides comprehensive coverage of a variety of local, regional, national and global resource and environmental issues. The course will address environmental challenges and sustainability solutions. The course provides knowledge about both renewable resources such as soil, forests, water, and wildlife, and nonrenewable resources such as oil, metals, and minerals.

Student Learning Outcomes:

- * Describe natural resources conservation and management concepts
- * Apply scientific methods for natural resources.
- * Identify the tools for creating a sustainable future of natural resources.
- * Find solutions to manage the natural resources.
- * Demonstrate how to build the future of natural resources.
- * Articulate solutions for the human population challenge.
- * Contrast the challenge and management of world hunger and food security.
- * Assess soil conservation and sustainable agriculture practices.
- * Explain integrated pest management concepts.

- * Design a sustainable management model for water resources.
- * Explain forest management practices.
- * Illustrate plant and animal extinction issues and challenges.
- * Create a model for wildlife management practices.
- * Construct sustainable waste management practices.
- * Explain global warming and climate change concepts.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ENVR 2305 - Field Methods in Environmental Science

This course is designed to introduce and train students in environmental science field methods. These methods will identify issues in the environment that are caused by either human activities or natural disasters and discover the cause of the problems. The course will contain several topics in environmental science such as water quality of surface water and ground water, air quality, soil health, glacial deposition, and the reconstruction of paleoenvironments.

Student Learning Outcomes:

- * Apply environmental science methods
- * Explain what happens in field and laboratory settings.
- * Develop research questions related to environmental issues
- * Implement research methods to evaluate real-life environmental issues.
- * Identify sources of environmental issues in the field.
- * Demonstrate technical skill in the running of field equipment.
- * Demonstrate proper field sample collection protocols.
- * Exhibit the ability to work in interdisciplinary teams in the field and laboratory setting.

Prerequisite(s): ENVR1305.
(3 C: 2 lect/pres, 1 lab, 0 other)

ENVR 2350 - Environmental Chemistry

Meets MN Transfer Curriculum Goal areas 3 and 10. This course is designed as an introduction to the chemical processes impacting global environmental issues. The course will use principles of chemistry to understand chemical reactions in five spheres. A major focus in this course will help students understand the human impacts of the environment's chemical processes on local and global scales. Students will examine the fate of organic chemicals by using equilibrium methods. The course will introduce the relationship between chemical processes and global cycles such as carbon, nitrogen, sulfur, phosphorus, and mercury. Students will discuss the effects of toxicological chemicals on the environment and human health. Several experiments of sampling and analyzing environmental samples will be applied in this course.

Student Learning Outcomes:

- * Apply chemical concepts to five environmental spheres including atmosphere, hydrosphere, biosphere, geosphere, and anthrosphere.
- * Identify the impacts of chemical processes on global cycles.
- * Explain the influence and fate of organic and inorganic contaminants on the environment.
- * Apply the theories of chemistry to the global model system.
- * Design a model of human influence on natural capital.
- * Use analytical skills to identify the impacts of chemicals on the bio-physiological system.
- * Explain approaches of sustainable and alternative materials used for energy.
- * Design practical analytical experiments to demonstrate the influence of chemical processes on the environment.

Prerequisite(s): CHEM1350.
(4 C: 3 lect/pres, 1 lab, 0 other)

ENVR 2370 - Internship in Environmental Science

This course offers training and experience for students in the field of environmental science. The internship experience is both an academic and professional experience. Students need to work a minimum 96 hours to meet the requirements of the course. After completing the internship, students need to write an analytical paper that integrates their knowledge and professional experience.

Student Learning Outcomes:

- * Demonstrate a real work experience for students in the field of environmental science through out observing issues and applying procedures and techniques.
- * Develop professional networks with companies and organizations.
- * Apply mathematical and scientific methods to solve environmental issues.
- * Analyze data in a work place environment.

- * Practice new technologies and managements.

Prerequisite(s): ENVR1305, ENVR1310, ENVR1315, ENVR2350.
(2 C: 0 lect/pres, 0 lab, 2 other)

ESOL 0710 - Foundations for Grammar and Writing

This course will focus on basic writing and grammar skills. It will help build writing and grammar fluency for academic purposes. The course will emphasize foundational grammatical structures and the mechanics of American English. Students will develop cultural knowledge related to Minnesota and the United States to compose context-appropriate written material. This course will help students develop strategies for continuous language development. To maximize student learning, this course has been developed to be taken with ESOL 0720 and ESOL 0730. This course provides an equitable opportunity for non-native speakers of English to improve the skills necessary to succeed in college-level classes.

Student Learning Outcomes:

- * Use verb tenses with increasing accuracy.
- * Memorize irregular verbs.
- * Use basic functions of online learning platforms.
- * Demonstrate an understanding of cultural context clues needed to create appropriate written materials.
- * Formulate affirmative, interrogative, and negative statements with standard grammar.
- * Employ basic English grammatical structure.
- * Compose simple, compound, and complex sentences.
- * Write using various methods of development.
- * Use the conventions of academic English to write clear and concise sentences and paragraphs.
- * Revise written work for structural, grammatical, and mechanical errors.

Prerequisite(s): Appropriate ESL reading placement score.
(4 C: 4 lect/pres, 0 lab, 0 other)

ESOL 0720 - Foundations of Reading and Vocabulary

This course will focus on basic vocabulary building and reading fluency for academic purposes. The course will emphasize academic vocabulary and word formation. Students will develop cultural knowledge related to Minnesota and the United States to understand context-based written materials. Students will explore reading through a variety of materials including novels, newspapers, textbooks, and the internet. Students will develop strategies for continuous language development. To maximize student learning, this course has been developed to be taken with ESOL 0710 and ESOL 0730. This course provides an equitable opportunity for non-native speakers of English to improve the skills necessary to succeed in college-level classes.

Student Learning Outcomes:

- * Recognize common roots, suffixes, and prefixes.
- * Memorize academic vocabulary.
- * Use cultural context clues to comprehend written material.
- * Create level-appropriate oral and written responses to readings.
- * Use level-appropriate vocabulary at both the receptive and productive levels.
- * Apply strategies for increasing vocabulary knowledge.
- * Identify topic sentences and main ideas of a variety of written material.
- * Recognize major details.
- * Summarize short passages to demonstrate understanding

Prerequisite(s): Appropriate ESL reading placement score..
(4 C: 4 lect/pres, 0 lab, 0 other)

ESOL 0730 - Foundations of Speaking and Listening

This course provides foundational speaking and listening support for students who need help in both an academic and daily setting. Students will demonstrate accurate pronunciation and develop comprehension skills for lectures and discussions. Students will develop cultural knowledge related to Minnesota and the United States to communicate verbally in US academic settings. To maximize student learning, this course has been developed to be taken concurrently with ESOL 0710 and ESOL 0720. This course provides an equitable opportunity for non-native speakers of English to improve the skills necessary to succeed in college-level classes.

Student Learning Outcomes:

- * Demonstrate comprehension of classroom and daily directions.
- * Produce appropriate pronunciation for general intelligibility.
- * Formulate requests for clarification.
- * Develop understanding of cultural context clues needed to communicate in US

culture.

- * Model academic and general conversation behavior.
- * Develop vocabulary knowledge for academic and general conversations.
- * Summarize lectures and discussions.
- * Recognize academic language and vocabulary.
- * Apply language skills to general topics in-group discussions.
- * Demonstrate speaking and listening skills in impromptu situations.

Prerequisite(s): Appropriate ESL reading placement score.

(4 C: 4 lect/pres, 0 lab, 0 other)

ESOL 0810 - Writing for Academic Purposes

This course will focus on writing and grammar skills necessary for academic success. Students will improve their grammar, writing fluency, editing skills, and ability to write short paragraphs. Students will also learn to use technology to advance their writing and editing skills, as well as work on formatting documents for an academic audience. Students will deepen cultural knowledge related to Minnesota and the United States to compose context-appropriate written material. To maximize student learning, this course has been developed to be taken with ESOL 0820 and ESOL 0830. This course provides an equitable opportunity for non-native speakers of English to improve the skills necessary to succeed in college-level classes.

Student Learning Outcomes:

- * Write short paragraphs with a variety of sentence types.
- * Organize writing according to chronological order, listing, and description.
- * Utilize appropriate vocabulary and verb forms, keeping in mind audience and purpose.
- * Identify cultural context clues needed to create appropriate written materials.
- * Use punctuation with increasing accuracy.
- * Produce coherent and grammatically correct paragraphs by utilizing the writing process.
- * Demonstrate basic competency in using online learning platforms.
- * Apply academic writing practices in online learning platforms for discussions, essays, and quizzes.
- * Develop a controlling idea with specific and relevant examples and details.
- * Evaluate and revise writing as a result of individual, peer and instructor feedback.
- * Incorporate academic standards into summary writing.

Prerequisite(s): ESOL0710 or Appropriate Placement Score.

(4 C: 4 lect/pres, 0 lab, 0 other)

ESOL 0820 - Reading for Academic Purposes

In this course students will be introduced to vocabulary building techniques as well as comprehension strategies. Course materials will focus on diverse fiction and non-fiction reading materials prevalent in both career and college courses, including college textbooks. Students will deepen cultural knowledge related to Minnesota and the United States to understand context-based written materials. Students will begin to build a strong academic foundation necessary for success in reading intensive courses. To maximize student learning, this course has been developed to be taken with ESOL 0810 and ESOL 0830. This course provides an equitable opportunity for non-native speakers of English to improve the skills necessary to succeed in college-level classes.

Student Learning Outcomes:

- * Analyze common roots, prefixes and suffixes.
- * Apply understanding of academic vocabulary.
- * Use context clues for determining word meaning.
- * Identify how cultural context informs reading.
- * Identify topic, main idea, and supporting details.
- * Differentiate implied and stated main ideas in expository and narrative texts.
- * Demonstrate active reading strategies.
- * Summarize academic texts to monitor comprehension.

Prerequisite(s): ESOL0720 or Appropriate Placement Score.

(3 C: 3 lect/pres, 0 lab, 0 other)

ESOL 0830 - Speaking and Listening for Academic Purposes

This course provides foundational speaking and listening skills needed for success in academic and daily settings. Students will develop notetaking skills related to lectures, speaking skills for academic and professional communication, and listening skills for professional and academic communication. Students will deepen cultural knowledge related to Minnesota and the United States to communicate verbally in US academic settings. To maximize student learning, this

course has been developed to be taken with ESOL 0810 and ESOL 0820. This course provides an equitable opportunity for non-native speakers of English to improve the skills necessary to succeed in college-level classes.

Student Learning Outcomes:

- * Categorize lecture patterns and topics.
- * Apply level-appropriate academic discussion skills.
- * Produce appropriate pronunciation for academic communication.
- * Identify how cultural context informs speaking and listening.
- * Examine academic lecture topics.
- * Analyze lectures and academic discussions.
- * Identify verbal and nonverbal language markers in academic communication.
- * Distinguish topic, main idea, and details in lectures and discussions.
- * Employ academic language and vocabulary.

Prerequisite(s): ESOL0730 or Appropriate Placement Score.

(3 C: 3 lect/pres, 0 lab, 0 other)

ESOL 1120 - Reading for College

In this course, students will focus on critical analysis and appreciation of culturally diverse readings, while refining their academic English reading fluency. Students will increase their proficiency in reading strategies, vocabulary acquisition, and comprehension. Using academic, professional, and culturally diverse reading material, students will learn reading techniques to help them become strategic readers and learners and develop personal, critical responses to texts. Students will expand cultural knowledge to interpret context-based written materials. This three-credit course is intended for students who score 86 and above on the ESL Reading Accuplacer. To maximize student learning, this course has been developed to be taken with ESOL 1310 and ESOL 1330. This course provides an equitable opportunity for English Learners to improve in high-level academic skills in their non-native language.

Student Learning Outcomes:

- * Analyze textbook features for comprehension.
- * Apply various notetaking methods.
- * Utilize various context clues for determining word meaning.
- * Identify topic, stated and implied main ideas, and major and minor details.
- * Evaluate diverse, authentic texts written from various points of view.
- * Determine purpose and tone in expository and narrative texts.
- * Discriminate facts versus opinions in expository and narrative texts.
- * Utilize cultural context clues needed to comprehend academic written materials.
- * Analyze a variety of writing formats and features for general and cultural comprehension.
- * Demonstrate comprehension of college-level texts from various disciplines.

Prerequisite(s): ESOL0820 or Appropriate Placement Score.

(3 C: 3 lect/pres, 0 lab, 0 other)

ESOL 1310 - Writing for College

Meets MN Transfer Curriculum Goal Area 1 - Written Communication. English Language Learners in this course will develop English written communication skills appropriate for academic settings. This course will focus on English language acquisition and writing skills through production of various written work. Students will be introduced to ethical inclusion of secondary sources into their written work. Students will expand cultural knowledge related to Minnesota and the United States to compose context-appropriate written material. This three-credit course is intended for students who score 86 and above on the ESL Reading Accuplacer and is not intended to replace ENGL 1308, ENGL 1309, or ENGL 1312. To maximize student learning, this course has been developed to be taken with ESOL 1320 and ESOL 1330. This course provides an equitable opportunity for Language Learners to improve their high-level academic skills in English. To fulfill the Goal Area One requirement of the Minnesota Transfer Curriculum or the Associate of Arts Degree, students who take this course must also complete ENGL 1308: Stretch Analytical Writing I and ENGL 1309: Stretch Analytical Writing II. or ENGL 1312.

Student Learning Outcomes:

- * Write essays with basic introductions, thesis statements, and conclusions.
- * Demonstrate the writing process through invention, organization, drafting, revision, editing, and presentation.
- * Employ written organizational standards appropriate to a variety of academic tasks.
- * Use a word processing program to write and format essays.
- * Synthesize information into original academic writing.

- * Select appropriate topics and communication choices for specific audiences.
 - * Employ syntax and usage conventions of academic English for essay writing.
 - * Correct errors in English grammar, semantics, mechanics common to English Language Learners through revision and editing.
 - * Apply the correct use of citation styles.
 - * Incorporate sources through summary, paraphrase, and quotation.
- Prerequisite(s): ESOL0810 or Appropriate Placement Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ESOL 1330 - Speaking and Listening for College

Meets MN Transfer Curriculum Goal Area 1 - Oral Communication. English Language Learners in this course will develop verbal and auditory English communication skills appropriate for academic settings. Students will learn to take notes from lectures, to give academic presentations, and to accurately understand and produce North American English speech patterns and pronunciation. Students will expand cultural knowledge related to Minnesota and the United States to communicate verbally in US academic settings. This three-credit course is intended for students who score 86 and above on the ESL Reading Accuplacer and is not intended to replace CMST 1320, 2300, 2301, 2310, or 2315. To fulfill the Goal Area One requirement of the Minnesota Transfer Curriculum or the Associate of Arts Degree, students who take this course must also complete another Oral Communication Goal Area 1 course. To maximize student learning, this course has been developed to be taken with ESOL 1310 and ESOL 1320. This course provides an equitable opportunity for English Language Learners to improve in high-level academic skills in their non-native language.

Student Learning Outcomes:

- * Recognize organizational patterns, themes, and topics in academic and professional lectures from a variety of disciplines.
- * Analyze topic, main idea, and details in a variety of academic and professional lectures and discussions
- * Produce pronunciation, intonation, rhythm, and stress in speaking appropriate for academic and professional discourse.
- * Distinguish academic language used in various college disciplines.
- * Apply notetaking methods based on college lectures and other academic discourse.
- * Select appropriate vocabulary and language for academic communication.
- * Utilize cultural context clues needed to comprehend academic lectures.
- * Analyze college-level lectures and discussions.
- * Present academic speeches on a variety of topics.
- * Discuss ideas with groups through use of listening skills, critical thinking, and appropriate and respectful responses.

Prerequisite(s): ESOL0830 or Appropriate Placement Score.

(3 C: 3 lect/pres, 0 lab, 0 other)

FBMA 2210 - Current issues- Current Issues in Farm Business Management

This course is designed to develop employee management, mediation and bankruptcy strategies, restructure plans, and mitigate/respond to natural disasters in business management. It provides an opportunity for students to investigate and apply tools that may be effective in improving risk management plans, strategic plans, and business plans in their farm business operations. Emphasis is placed on the research of business management alternatives to meet their business and personal needs. Student and instructor will determine number of credits between one to five and determine current issue(s) topic based on student's need.

Student Learning Outcomes:

- * Identify the current issue(s)
- * Define related terminology
- * Explain concepts of identified current issue(s)
- * Apply current issue(s) to business
- * Analyze the effects of current issue(s) on your business
- * Identify steps of the implementation plan
- * Analyze historic data and/or rationale of changes
- * Identify strengths and weaknesses of business
- * Develop strategic plans or goals related to issue(s)
- * Develop tax management plan related to issue(s)
- * Maintain current accurate farm business records and accounts
- * Develop short term implementation plan
- * Develop long term implementation plan
- * Analyze current financial statement to determine feasibility
- * Predict the effects of the current issue(s) to financial statements

(C: 0 lect/pres, 0 lab, 0 other)

FBMA 2211 - Current Issues in Farm Business Management

This course is designed to develop student skills in farm transition planning, estate planning, regulation and government policy, and government programs. It provides an opportunity for students to investigate and apply tools that may be effective in improving risk management plans, strategic plans, and business plans in their farm business operations. Emphasis is placed on the research of business management alternatives to meet their business and personal needs. Student and instructor will determine number of credits between one to five and determine current issue(s) topic based on student's need.

Student Learning Outcomes:

- * Identify the current issue(s)
- * Define related terminology
- * Explain concepts of identified current issue(s)
- * Apply current issue(s) to business
- * Analyze the effects of current issue(s) on your business
- * Identify steps of the implementation plan
- * Analyze historic data and/or rationale of changes
- * Identify strengths and weaknesses of business
- * Develop strategic plans or goals related to issue(s)
- * Develop tax management plan related to issue(s)
- * Maintain current accurate farm business records and accounts
- * Develop short term implementation plan
- * Develop long term implementation plan
- * Analyze current financial statement to determine feasibility
- * Predict the effects of the current issue(s) to financial statements

(C: 0 lect/pres, 0 lab, 0 other)

FBMA 2212 - Current Issues in Farm Business Management

This course is designed to develop student skills in emerging technologies, expansion and/or contraction strategies, build consumer confidence and environmental stewardship, and target strategic markets. It provides an opportunity for students to investigate and apply tools that may be effective in improving risk management plans, strategic plans, and business plans in their farm business operations. Emphasis is placed on the research of business management alternatives to meet their business and personal needs. Student and instructor will determine number of credits between one to five and determine current issue(s) topic based on student's need.

Student Learning Outcomes:

- * Identify the current issue(s)
- * Define related terminology
- * Explain concepts of identified current issue(s)
- * Apply current issue(s) to business
- * Analyze the effects of current issue(s) on your business
- * Identify steps of the implementation plan
- * Analyze historic data and/or rationale of changes
- * Identify strengths and weaknesses of business
- * Develop strategic plans or goals related to issue(s)
- * Develop tax management plan related to issue(s)
- * Maintain current accurate farm business records and accounts
- * Develop short term implementation plan
- * Develop long term implementation plan
- * Analyze current financial statement to determine feasibility
- * Predict the effects of the current issue(s) to financial statements

(C: 0 lect/pres, 0 lab, 0 other)

FBMA 2213 - Current Issues in Farm Business Management

This course is designed to develop student skills with financial statements and budgeting, marketing, managing cost of production, tax planning management, and maintaining mental health. It provides an opportunity for students to investigate and apply tools that may be effective in improving risk management plans, strategic plans, and business plans in their farm business operations. Emphasis is placed on the research of business management alternatives to meet their business and personal needs. Student and instructor will determine number of credits between one to five and determine current issue(s) topic based on student's need.

Student Learning Outcomes:

- * Identify the current issue(s)
- * Define related terminology
- * Explain concepts of identified current issue(s)
- * Apply current issue(s) to business
- * Analyze the effects of current issue(s) on your business

- * Identify steps of the implementation plan
 - * Analyze historic data and/or rationale of changes
 - * Identify strengths and weaknesses of business
 - * Develop strategic plans or goals related to issue(s)
 - * Develop tax management plan related to issue(s)
 - * Maintain current accurate farm business records and accounts
 - * Develop short term implementation plan
 - * Develop long term implementation plan
 - * Analyze current financial statement to determine feasibility
 - * Predict the effects of the current issue(s) to financial statements
- (C: 0 lect/pres, 0 lab, 0 other)

FBMA 2214 - Current Issues in Farm Business Management

This course is designed to develop student skills in agricultural management within diversifying communities, developing lender relations, advanced record keeping and benchmarking. It provides an opportunity for students to investigate and apply tools that may be effective in improving risk management plans, strategic plans, and business plans in their farm business operations. Emphasis is placed on the research of business management alternatives to meet their business and personal needs. Student and instructor will determine number of credits between one to five and determine current issue(s) topic based on student's need.

Student Learning Outcomes:

- * Identify the current issue(s)
 - * Define related terminology
 - * Explain concepts of identified current issue(s)
 - * Apply current issue(s) to business
 - * Analyze the effects of current issue(s) on your business
 - * Identify steps of the implementation plan
 - * Analyze historic data and/or rationale of changes
 - * Identify strengths and weaknesses of business
 - * Develop strategic plans or goals related to issue(s)
 - * Develop tax management plan related to issue(s)
 - * Maintain current accurate farm business records and accounts
 - * Develop short term implementation plan
 - * Develop long term implementation plan
 - * Analyze current financial statement to determine feasibility
 - * Predict the effects of the current issue(s) to financial statements
- (C: 0 lect/pres, 0 lab, 0 other)

FBMA 2220 - Direct Studies - Current Issues in Farm Business Management

This course is designed to apply employee management, mediation and bankruptcy strategies, restructure plans, and mitigate/respond to natural disasters in business management. It provides an opportunity for students to investigate and apply tools that may be effective in improving risk management plans, strategic plans, and business plans in their farm business operations. Emphasis is placed on the research of business management alternatives to meet their business and personal needs. Student and instructor will determine number of credits between one to five and determine current issue(s) topic based on student's need.

Student Learning Outcomes:

- * Identify the current issue(s)
 - * Define related terminology
 - * Explain concepts of identified current issue(s)
 - * Apply current issue(s) to business
 - * Analyze the effects of current issue(s) on your business
 - * Identify steps of the implementation plan
 - * Analyze historic data and/or rationale of changes
 - * Identify strengths and weaknesses of business
 - * Develop strategic plans or goals related to issue(s)
 - * Develop tax management plan related to issue(s)
 - * Maintain current accurate farm business records and accounts
 - * Develop short term implementation plan
 - * Develop long term implementation plan
 - * Analyze current financial statement to determine feasibility
 - * Predict the effects of the current issue(s) to financial statements
- (C: 0 lect/pres, 0 lab, 0 other)

FBMA 2221 - Direct Studies - Current Issues in Farm Business Management

This course is designed to apply student skills in farm transition planning, estate planning, regulation and government policy, and government programs. It provides an opportunity for students to investigate and apply tools that may be

effective in improving risk management plans, strategic plans, and business plans in their farm business operations. Emphasis is placed on the research of business management alternatives to meet their business and personal needs. Student and instructor will determine number of credits between one to five and determine current issue(s) topic based on student's need.

Student Learning Outcomes:

- * Identify the current issue(s)
 - * Define related terminology
 - * Explain concepts of identified current issue(s)
 - * Apply current issue(s) to business
 - * Analyze the effects of current issue(s) on your business
 - * Identify steps of the implementation plan
 - * Analyze historic data and/or rationale of changes
 - * Identify strengths and weaknesses of business
 - * Develop strategic plans or goals related to issue(s)
 - * Develop tax management plan related to issue(s)
 - * Maintain current accurate farm business records and accounts
 - * Develop short term implementation plan
 - * Develop long term implementation plan
 - * Analyze current financial statement to determine feasibility
 - * Predict the effects of the current issue(s) to financial statements
- (C: 0 lect/pres, 0 lab, 0 other)

FBMA 2222 - Direct Studies - Current Issues in Farm Business Management

This course is designed to apply student skills in emerging technologies, expansion and/or contraction strategies, build consumer confidence and environmental stewardship, and target strategic markets. It provides an opportunity for students to investigate and apply tools that may be effective in improving risk management plans, strategic plans, and business plans in their farm business operations. Emphasis is placed on the research of business management alternatives to meet their business and personal needs. Student and instructor will determine number of credits between one to five and determine current issue(s) topic based on student's need.

Student Learning Outcomes:

- * Identify the current issue(s)
 - * Define related terminology
 - * Explain concepts of identified current issue(s)
 - * Apply current issue(s) to business
 - * Analyze the effects of current issue(s) on your business
 - * Identify steps of the implementation plan
 - * Analyze historic data and/or rationale of changes
 - * Identify strengths and weaknesses of business
 - * Develop strategic plans or goals related to issue(s)
 - * Develop tax management plan related to issue(s)
 - * Maintain current accurate farm business records and accounts
 - * Develop short term implementation plan
 - * Develop long term implementation plan
 - * Analyze current financial statement to determine feasibility
 - * Predict the effects of the current issue(s) to financial statements
- (C: 0 lect/pres, 0 lab, 0 other)

FBMA 2223 - Direct Studies - Current Issues in Farm Business Management

This course is designed to apply student skills with financial statements and budgeting, marketing, managing cost of production, tax planning management, and maintaining mental health. It provides an opportunity for students to investigate and apply tools that may be effective in improving risk management plans, strategic plans, and business plans in their farm business operations. Emphasis is placed on the research of business management alternatives to meet their business and personal needs. Student and instructor will determine number of credits between one to five and determine current issue(s) topic based on student's need.

Student Learning Outcomes:

- * Identify the current issue(s)
- * Define related terminology
- * Explain concepts of identified current issue(s)
- * Apply current issue(s) to business
- * Analyze the effects of current issue(s) on your business
- * Identify steps of the implementation plan
- * Analyze historic data and/or rationale of changes
- * Identify strengths and weaknesses of business
- * Develop strategic plans or goals related to issue(s)

- * Develop tax management plan related to issue(s)
- * Maintain current accurate farm business records and accounts
- * Develop short term implementation plan
- * Develop long term implementation plan
- * Analyze current financial statement to determine feasibility
- * Predict the effects of the current issue(s) to financial statements
(C: 0 lect/pres, 0 lab, 0 other)

FBMA 2224 - Direct Studies - Current Issues in Farm Business Management

This course is designed to apply student skills in agricultural management within diversifying communities, developing lender relations, advanced record keeping and benchmarking. It provides an opportunity for students to investigate and apply tools that may be effective in improving risk management plans, strategic plans, and business plans in their farm business operations. Emphasis is placed on the research of business management alternatives to meet their business and personal needs. Student and instructor will determine number of credits between one to five and determine current issue(s) topic based on student's need.

Student Learning Outcomes:

- * Identify the current issue(s)
- * Define related terminology
- * Explain concepts of identified current issue(s)
- * Apply current issue(s) to business
- * Analyze the effects of current issue(s) on your business
- * Identify steps of the implementation plan
- * Analyze historic data and/or rationale of changes
- * Identify strengths and weaknesses of business
- * Develop strategic plans or goals related to issue(s)
- * Develop tax management plan related to issue(s)
- * Maintain current accurate farm business records and accounts
- * Develop short term implementation plan
- * Develop long term implementation plan
- * Analyze current financial statement to determine feasibility
- * Predict the effects of the current issue(s) to financial statements
(C: 0 lect/pres, 0 lab, 0 other)

FBMA 2930 - Fundamentals of Financial Management as it relates to Risk Management

This course enhances the student's decision-making skills relating to business risk management. The student will further investigate tools available to their business that would be effective in reducing potential risk for their operation. Emphasis will be placed on having the student research risk management options that will meet their business, family, and personal needs.

Student Learning Outcomes:

- * Implement methods of monitoring enterprise budgets to enhance their risk management program
- * Adopt strategies to assist in anticipating business risk
- * Examine methods of determining the ability to absorb risk
- * Examine methods of determining business risk
- * Evaluate risk factors affecting the farm operations
- * Analyze management and business structure to determine if modification is beneficial in reducing risk
- * Revise business, family, and financial goals to help explore risk management techniques
- * Interpret enterprise analysis historical data to enhance decision-making process in risk management strategy
- * Utilize their farm financial ratios to assist in determining risk management needs

(3 C: 0 lect/pres, 0 lab, 3 other)

FBMA 2931 - Applied Financial Management as it Relates to Risk Management

The student will apply concepts in financial management to develop a business risk management program. The student will implement risk management tools to assist in meeting business, family and personal needs.

Student Learning Outcomes:

- * Implement risk management strategies that will meet the goals of the business risk management program.
- * Evaluate information gained from analyzing historical business data in determining risk.
- * Apply knowledge gained from analyzing historical business data in determining

ing risk in the business.

- * Interpret use of risk management tools that will address risk factors effecting the business.
- * Implement a modified management structure for the business that will benefit in reducing business risk.
- * Design a risk management program that meets business, family, and financial goals.
- * Use enterprise analysis data in decision-making process of determining risk management needs.
- * Utilize farm financial ratios of the business in development of risk management program.
- * Utilize financial trends in the development of a risk management program.
(3 C: 0 lect/pres, 0 lab, 3 other)

FBMA 2932 - Fundamentals of Financial Mgmt/Strategic Plan Emphasis

Students will identify the elements necessary to create, evaluate, and implement a strategic plan for the business. Student will utilize financial information and records to develop the strategic plan.

Student Learning Outcomes:

- * Evaluate the impact of the strategic plan affecting the farm financials and operation.
- * Measure the importance of both internal and external environmental monitoring.
- * Identify the action steps necessary to implement the plan.
- * Prioritize the steps necessary to formulate action plans and contingency plans.
- * Compare key financial ratios to identify the ideal business capacity.
- * Identify specific business trends and evaluate business performance.
- * Describe and diagram the primary elements of strategic business plan.
- * Contrast the market forces impacting business capacity.
- * Recognize the components in creating a business mission statement.
(3 C: 0 lect/pres, 0 lab, 3 other)

FBMA 2933 - Applied Financial Management/Strategic Plan Emphasis

This course will provide practical application of strategic planning skills. Students will utilize financial information and records to apply the strategic plan.

Student Learning Outcomes:

- * Revise the current business to reflect implemented strategic plans.
- * Implement a monitoring model which includes the use of business analysis.
- * Prioritize and implement the action plan.
- * Develop strategies to reduce the gap between actual and desired performance.
- * Employ gap analysis and determine measurable difference between future vision and current performance.
- * Assemble and analyze business enterprise and financial data to design specific performance metrics.
- * Identify qualities or attributes that distinguish the business strengths and weaknesses.
- * Participate with the planning team in writing a general mission statement for the business.
- * Examine values and operating philosophy.
(3 C: 0 lect/pres, 0 lab, 3 other)

FBMA 2934 - Fundamentals of Financial Mgmt/Business Plan Emphasis

Students will identify the elements necessary to create, evaluate, and implement a business plan for the business. Student will utilize financial information and records to develop the business plan.

Student Learning Outcomes:

- * Complete an analysis of the business
- * Interpret the analysis and cash flow information to determine the business cash needs for the upcoming production year
- * Revise the cash flow plan after the completion of the annual analysis
- * Monitor and adjust the cash flow plan on a regular basis
- * Determine the strengths and weaknesses of the business
- * Develop a vision statement and revise as necessary for the continuation of the business
- * Develop a mission statement and revise as necessary
- * Determine what changes to make in the business in order to better compete in today's market place
- * Develop a business plan
- * Justify the business plan
(3 C: 0 lect/pres, 0 lab, 3 other)

FBMA 2935 - Applications Financial Management/Business Plan Emphasis

This course will provide practical application of the business plan. Student will utilize financial information and records to apply the business plan.

Student Learning Outcomes:

- * Review and evaluate the goals of the business and family
- * Align the business plan with the business and family goals
- * Evaluate the business plan on a regular basis
- * Implement the personal business plan
- * Determine the strengths and weaknesses of the business
- * Apply the vision statement for the continuation of the business
- * Assess the mission statement for the business
- * Determine the elements of the business that need to be modified
- * Evaluate the comprehensiveness of the business plan

(3 C: 0 lect/pres, 0 lab, 3 other)

FBMA 2936 - Direct Study- Decision Making

This course will examine individual, family and farm business decision-making processes with emphasis on upgrading and improving decision making resources, tools and skills. Particularly, this course will lead the student to critically analyze information, applications, and implications of decision making as it relates to their own situation. Students will evaluate their own decision-making process.

Student Learning Outcomes:

- * Implement decision-making process
- * Use analytical and problem-solving skills in decision making
- * List skills necessary to fulfill business goals
- * Gain knowledge about the differences among global farm economies and understand the implications these have on farm management
- * Recognize and analyze ethical and legal problems within farm business situations and choose a resolution
- * Discuss a complex farm business issue

(2 C: 0 lect/pres, 0 lab, 2 other)

FBMA 2937 - Direct Study- Communications

This course will assist the student in further acquiring and developing a higher level of communication skills. Students will review and evaluate various communication methods and techniques in dealing with and relating to individuals in both the public and private sector. Students will use this information in formulating an effective communication method and style.

Student Learning Outcomes:

- * Communicate appropriately and effectively within various organizational contexts
- * Adjust communication behavior effectively
- * Demonstrate appropriate and effective conflict management strategies
- * Demonstrate the ability to research, analyze, and reason from evidence to reach an effective conclusion or outcome
- * Communicate appropriately and effectively within groups
- * Demonstrate the ability to analyze a problem and devise a solution in a group

(2 C: 0 lect/pres, 0 lab, 2 other)

FBMA 2938 - Direct Study- Modern Agricultural Tech

This course will deal with evaluating modern agricultural technological changes and determining if they fit into an individual's farming operation.

Student Learning Outcomes:

- * Define the enterprise strengths and weaknesses.
- * Prepare a technology needs assessment of the operation
- * Determine the current available technology now employed on site
- * Compare available technologies available to the operation
- * Develop cash flow projections involving technological investments
- * Assess the value of potential investments in technology
- * Implement the technology

(2 C: 0 lect/pres, 0 lab, 2 other)

FBMA 2939 - Direct Study- Enterprise Alternatives

This course will assist those students wanting to make changes in their farm business through enterprise expansion, addition, enhancement, or elimination. The course will develop a set of procedures for exploring and evaluating alternative choices.

Student Learning Outcomes:

- * Define the enterprise strengths and weaknesses.

- * Evaluate the enterprise alternatives.
- * Calculate the cost of implementation of alternative enterprises.
- * Develop a cash flow projection involving enterprise alternatives.
- * Assess the resource requirements of enterprise options.
- * Develop an enterprise budget for each option.

(2 C: 0 lect/pres, 0 lab, 2 other)

FBMA 2940 - Direct Study- Farm Business Family Transition

Students will study the many aspects of farm business and/or family transition which occur in the typical farm business. Both estate planning and transition planning will be explored.

Student Learning Outcomes:

- * Develop a plan to transfer a farm or business.
- * Understand the tax implications of different types of farm transfers.
- * Communicate future farm plans with stakeholders.
- * Prepare a balance sheet to develop values used in the planning process.
- * Determine the needs for retirement incomes and gifting of the business.
- * Determine the best business structure for the transition.

(2 C: 0 lect/pres, 0 lab, 2 other)

FBMA 2941 - Direct Study- Personnel Management

Students will organize skills for effective management of farm employees and agribusiness personnel through development of handbooks, compensation/incentive packages, individual expectations/evaluations, and team meetings.

Student Learning Outcomes:

- * Prepare a job description
- * Develop a compensation package for employees
- * Develop an employee evaluation format
- * Prepare an employee handbook
- * Develop a format for team meetings
- * Develop a list of ways to motivate employees

(2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 1112 - Foundations for Farm Business Management

This course is an overview of the Farm Business Management Program. The student will be introduced to goal setting, business assessment, personal assessment, record keeping, and business projections to provide the foundation for personal and business management progress. Current issues affecting business management are an integral part of the course.

Student Learning Outcomes:

- * Identify your current level of business exposure risk
- * Determine the annual labor needs for your farm business
- * Identify the capital needs of the business (i.e. buildings, land, and equipment)
- * Identify balance sheet ratios
- * Determine the farm credit needs of your operation
- * Construct the cash flow plan
- * Demonstrate preparation for conducting a year-end closeout and analysis
- * Apply enterprise budgeting concepts
- * Identify current issues related to the farm business
- * Assemble business, family, and personal goals
- * Explain Financial Plans with Stakeholders

(4 C: 0 lect/pres, 0 lab, 4 other)

FBMT 1121 - Preparation for Farm Business Analysis

This course will take the student through a step-by-step procedure to close out a complete year of farm business records. This course will emphasize tax planning, completing inputs to livestock and crop enterprises, and emphasizing cash and liabilities accuracy. A completed business and enterprise analysis will be the course focus.

Student Learning Outcomes:

- * Identify credits and deductions for tax management
- * Identify the data necessary to complete a business analysis
- * Examine the compatibility of new technology with existing systems
- * Compare the sources, pricing, and performance of business and production inputs
- * Employ a detailed record keeping system
- * Develop family and personal goals
- * Compare the actual vs. planned cash flow
- * Explain how the farm management cycle pertains to the farm business
- * Examine the implications of asset valuation and depreciation

- * Construct a detailed year-end balance sheet
 - * Construct a tax management plan
 - * Assemble accurate production records
- (4 C: 0 lect/pres, 0 lab, 4 other)

FBMT 1122 - Implementing the System Management Plan

This course continues to build on the foundation of farm business management. The student will complete a farm business financial and enterprise analysis. Sound financial record keeping is an integral component.

Student Learning Outcomes:

- * Compare risk management tools and products
 - * Compare available current agricultural technologies and their effect on different enterprises
 - * Determine benefits of ownership vs. leasing of capital assets
 - * Evaluate available credit options
 - * Create standard operating procedures for labor and management resources
 - * Examine enterprise analysis information
 - * Compile income and expense data for year-end analysis and tax preparation
 - * Revise enterprise budgets
 - * Examine historical farm data
 - * Identify marketing goals
 - * Utilize the farm business financial ratio indicators to assess business health
 - * Identify marketing strategies
- (4 C: 0 lect/pres, 0 lab, 4 other)

FBMT 1131 - Managing and Modifying Farm System Data

This course will help the student refine their farm business data system and assist them in applying year end procedures for farm business analysis. Students improve accuracy in the following: farm enterprise analysis, tax planning, data filing, and cash and liabilities checks

Student Learning Outcomes:

- * Prioritize areas of risk
 - * Refine method(s) of recording family living expenses and nonfarm business transactions
 - * Apply goals to business planning processes
 - * Analyze the advantages and disadvantages of capital asset ownership
 - * Organize paid and unpaid labor and management resources for the farm business
 - * Design a production input acquisition plan
 - * Audit financial data using cash and liability accuracy checks
 - * Determine pre-payment options and implications
 - * Apply marketing strategies to tax planning
 - * Compare business analysis with regional averages
 - * Devise a data filing system
 - * Analyze a tax estimate for the business
- (4 C: 0 lect/pres, 0 lab, 4 other)

FBMT 1132 - Interpreting and Using Farm System Data

This course provides an opportunity for the student to view the farm business and its various components through the application of balance sheets, farm personal and managerial inventories, enterprise reports and historical data.

Student Learning Outcomes:

- * Construct a farm business plan
 - * Create a marketing plan
 - * Compare historical farm data to current performance
 - * Identify key business ratios
 - * Compare business profitability to benchmark data
 - * Interpret current business projections
 - * Revise business goals
 - * Compare ownership options of capital assets within a business
 - * Evaluate a farm risk management plan
 - * Apply enterprise budgeting
 - * Identify business plan templates
 - * Evaluate personal goals
- (4 C: 0 lect/pres, 0 lab, 4 other)

FBMT 1170 - Introduction to Farm Commodities Marketing

This course is designed to introduce students to the various methods and tools to market farm commodities. The students will study types of marketing contracts, cash markets, the roles of brokers and market advisors, and the importance of

insurance.

Student Learning Outcomes:

- * Describe the history of commodity markets.
 - * Identify the influences of supply and demand on prices.
 - * Identify the law of demand.
 - * Identify the law of supply.
 - * List commodities that are traded.
 - * Identify market symbols.
 - * List commodity trading exchanges.
 - * List United States Grain Inspection Service (USGIS) specifications for commodities.
 - * Describe alternative sales tools.
- (3 C: 0 lect/pres, 0 lab, 3 other)

FBMT 1173 - Introduction to Farm Commodities Marketing

This course provides the student with the opportunity to use the various marketing methods and tools. The student will analyze various types of marketing contracts and cash markets. The student will recognize the roles of brokers and market advisors.

Student Learning Outcomes:

- * Calculate a cost of production.
 - * Define price basis for commodity marketing.
 - * Describe contract specifications.
 - * Define and explain cash markets.
 - * Define and explain forward contracts.
 - * Explain basis and recognize the importance on futures markets.
- (2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 1180 - Applying Commodity Marketing Fundamentals

This course is designed to teach students to apply the various methods and tools to market farm commodities. The students will utilize various marketing tools to enhance their farm business operations.

Student Learning Outcomes:

- * Compute storage costs.
 - * Analyze production and storage costs as related to cash flow needs.
 - * Explain hedging contracts.
 - * Explain the roles of brokers and marketing advisors.
 - * Explain what market positions are subject to margin calls.
 - * Identify seasonal marketing trends.
 - * Name primary commodity marketing reports.
 - * Record data to calculate production and storage costs.
 - * Use basis history to enhance commodity selling price.
- (3 C: 0 lect/pres, 0 lab, 3 other)

FBMT 1183 - Direct Study - Applying Commodity Marketing Fundamentals

This course is designed to teach students to apply the various methods and tools to market farm commodities. The students will develop various marketing tools to enhance their farm business operations.

Student Learning Outcomes:

- * Apply selected marketing tools to the farm business.
 - * Summarize current marketing plan.
 - * Develop and define the relationship between the producer and a marketing advisor.
 - * Implement the chosen record keeping format.
 - * Compare/contrast commodity broker services.
 - * Summarize local basis movements.
- (2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 1190 - Evaluating Farm Commodity Marketing Tools

This course is designed to teach students to evaluate the various farm marketing tools and to select the tool appropriate to the present marketing situation. The student will analyze marketing alternatives and apply to farm business marketing.

Student Learning Outcomes:

- * Analyze various farm marketing tools.
- * Calculate price risk.
- * Chart commodity price movement.
- * Develop strategies of use for call options.
- * Develop strategies of use for put options.
- * Interpret farm commodity charts to identify marketing opportunities.

- * Recognize changes in government farm programs.
 - * Recognize changes in insurance.
 - * Relate current government farm programs to the farm business.
- (3 C: 0 lect/pres, 0 lab, 3 other)

FBMT 1193 - Evaluating Farm Commodity Marketing Tools

This course is designed to teach students to implement the various farm marketing tools and to select the tool appropriate to the present marketing situation. The student will utilize Marketing Alternatives and apply to farm business marketing.

Student Learning Outcomes:

- * Develop Strategies of use for call options.
- * Develop strategies of use for put options.
- * Interpret farm commodity charts to identify marketing opportunities.
- * Recognize changes in government farm programs.
- * Recognize changes in insurance.
- * Relate current government farm programs to the farm business.

(2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 1211 - Introduction to Farm Business Management

This course introduces basic farm business management concepts. Students will study the farm management planning cycle and develop an understanding of its relationship to family and farm business goal setting, cash and enterprise accounting principles, and tax planning.

Student Learning Outcomes:

- * Explain the farm business management cycle to include planning, implementation, and controlling
- * Describe a risk management assessment in all aspects of both farm and non-farm operations
- * Explain tax and management depreciation
- * List income and expenses for the tax year
- * Describe characteristics within different farm business enterprises
- * Identify a financial and production record-keeping system
- * Describe the components of a balance sheet
- * Identify available technologies for improving the farm business
- * Identify business, family, and personal goals
- * Identify current enterprise resource needs (i.e. feed, seed, fertilizer)
- * List time management strategies for the operation
- * Recognize how current tax return impacts your farm business

(4 C: 0 lect/pres, 0 lab, 4 other)

FBMT 1213 - Managing a Farm System in a Global Economy

This course assists the students in achieving awareness of the development of agricultural policies and practices throughout the world and assessing the impact of these policies and practices on the profitability and viability of their farm business.

Student Learning Outcomes:

- * Identify global markets and competitors
- * Assess farm technology needs to compete in global markets
- * Identify the competitive advantages of the farm business in a global economy
- * Analyze the impact of global policies and economics on the farm business
- * Relate global environmental issues to the farm business

(2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 1223 - Using System Analysis in Total Farm Planning

This course enables study of concepts related to farm business analysis, and exploration of possible implications and/or solutions to these concepts. A systematic method to assess farm business strengths and weaknesses based on the analysis will be used.

Student Learning Outcomes:

- * Explain selected sections of the farm business analysis
- * Complete and understand the financial scorecard
- * Determine the farm business's strengths and weaknesses
- * Complete a farm business S.W.O.T. analysis using the information from the whole farm and enterprise analysis
- * Compare farm financial scorecard to industry averages
- * Develop enterprise budgets to reflect desired enterprise improvements

(2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 1233 - Application of Productive Enterprise Information

This course describes procedures for applying enterprise information provided by

computerized analysis of farm business accounts.

Student Learning Outcomes:

- * Verify enterprise contributions to farm profitability
- * Benchmark enterprise analysis information
- * Compare enterprise practices and technologies with benchmarks (special sorts)(2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 2141 - Interpreting and Evaluation of Financial Data

This course continues to expand on preparation and evaluation of the farm business analysis. This course provides continued guidance and perfection of business record close out procedures, tax implications of management decisions, and continues to monitor farm business and family goals.

Student Learning Outcomes:

- * Assemble data management system(s) to enhance the farm business analysis process
- * Integrate detailed data management system
- * Analyze enterprise budgets
- * Compare current business projections with historical data
- * Manage labor resources
- * Evaluate impact of personal retirement plans on tax liability
- * Evaluate profitability of new technology systems
- * Demonstrate strategic farm business management decision-making skills
- * Examine farm risk management practices
- * Revise farm business goals
- * Revise personal goals
- * Revise enterprise budget to reflect a current market outlook and pricing

(4 C: 0 lect/pres, 0 lab, 4 other)

FBMT 2142 - Interpreting Trends in Business Planning

This course examines whole farm, enterprise, balance sheet, and inventory trends. Current analysis data is compared to historical data in making future farm business planning decisions. Financial ratios are used to indicate the farm financial structure.

Student Learning Outcomes:

- * Revise financial accounting system(s) for effectiveness and accuracy
- * Compare historical farm data with projected cash flow plans
- * Analyze farm financial measures
- * Interpret trend data for farm business decision-making processes
- * Analyze current working capital position and working capital trend history
- * Analyze current debt to asset percentage and debt to asset trend history
- * Refine business goals in the development of cash flow planning
- * Refine family and personal goals in the development of cash flow planning
- * Compare trend data of current inventories to the current year's balance sheet
- * Integrate risk management and farm production plans
- * Examine trend data to modify farm marketing strategies
- * Utilize the farm analyses to improve its business organization and efficiency

(4 C: 0 lect/pres, 0 lab, 4 other)

FBMT 2151 - Strategies in Farm System Data Management

This course will help the student focus on long term strategies necessary to maintain and enhance the farm business and personal future financial goals. The student will complete the year by developing an accurate, usable business analysis.

Student Learning Outcomes:

- * Evaluate tax management relative to estate planning
- * Analyze capital asset ownership options
- * Evaluate labor and management performance
- * Evaluate financial and production data
- * Evaluate best farm management practices
- * Evaluate farm financial trend data to establish a tax management strategy
- * Relate farm tax laws to the farm business liability
- * Incorporate farm financial trend data in establishing a tax management strategy
- * Manage farm business resources and technologies
- * Evaluate implications of farm tax laws to the overall personal tax liability
- * Assess the profitability of technology investments
- * Evaluate current year tax management plan

(4 C: 0 lect/pres, 0 lab, 4 other)

FBMT 2152 - Integrating System Information for Financial Planning

This course uses farm system information to develop a farm financial plan. Interpretation and analysis of the farm system data will enhance the reliability of the

farm plan. The comprehensive farm plan will integrate historical trends, farm and personal goals, financial and enterprise performance of the farm business.

Student Learning Outcomes:

- * Incorporate a farm risk management plan
- * Develop farm business exit strategies
- * Develop an investment plan for retirement
- * Develop enterprise budgets by using trend data
- * Compare long-range farm business plan options
- * Review farm business, family, and personal goals
- * Review financial plans as required by farm business needs
- * Develop a farm business needs assessment by investigating trend data
- * Analyze income statements
- * Identify individual enterprise performance
- * Incorporate individual enterprise performance into the farm business
- * Modify farm business plan based on enterprise performance

(4 C: 0 lect/pres, 0 lab, 4 other)

FBMT 2161 - Examination of the Context of Farm System Management

This course is designed to assist students in preparation of improved farm system management procedures. Students in this course will evaluate several years of an improved farm system analysis.

Student Learning Outcomes:

- * Prioritize strategies to improve enterprise trend data
- * Predict future changes in financial ratios
- * Prioritize future farm business goals
- * Compare strengths and weaknesses of the farm management system
- * Investigate farm business structure models
- * Explain deferred tax liability
- * Evaluate tax management strategies
- * Appraise the financial and data accounting system
- * Prioritize future personal goals
- * Examine the farm business production records
- * Compare Enterprise Analysis Benchmarking Data
- * Evaluate family living cost

(4 C: 0 lect/pres, 0 lab, 4 other)

FBMT 2162 - Refining Farm System Management

This course is the culmination of activities designed to enable the student to develop and implement a comprehensive farm business strategic plan. The student will use the components of the Farm Business Management Program to develop and support a strategic plan.

Student Learning Outcomes:

- * Evaluate strategic opportunities for current and new enterprises
- * Evaluate business structure and ownership opportunities (i.e. LLC, Partnerships, S or C corp., including new partners or transfer to new potential owners)
- * Create accurate enterprise budgets
- * Evaluate financial ratios
- * Prioritize strategies to improve enterprise trend direction
- * Formulate strategies to improve new and existing enterprise trend directions
- * Assess a farm business risk management plan
- * Evaluate emerging technologies
- * Inventory existing technologies utilized within the farm business
- * Prioritize future technology needs
- * Evaluate benchmark trends
- * Develop a strategic farm business management plan

(4 C: 0 lect/pres, 0 lab, 4 other)

FBMT 2170 - Monitoring Farm Commodity Marketing Plans

This course is designed to revise current farm commodity marketing plans. Emphasis will be placed on current market conditions and pricing opportunities. The student will prioritize and evaluate marketing opportunities and risk.

Student Learning Outcomes:

- * Develop a marketing plan utilizing crop insurance as a risk management tool
- * Assemble discount tables from local cash buyers.
- * Investigate fees and expenses for pricing contracts.
- * Construct marketing plans based on seasonal price trends
- * Construct a marketing plan, using cash sales to reduce market risk.
- * Design option strategies to create minimum prices.

- * Explain technical indicators related to commodity charts
- * Explain the purpose of price limits for futures prices.
- * Interpret tax laws relating to marketing plans.

(3 C: 0 lect/pres, 0 lab, 3 other)

FBMT 2173 - Monitoring Farm Commodity Marketing Plans

This course is designed to justify current farm commodity marketing plans. Emphasis will be placed on current market conditions and pricing opportunities. The student will prioritize and evaluate marketing opportunities and risk.

Student Learning Outcomes:

- * Construct marketing plans based on seasonal price trends.
- * Construct a marketing plan, using cash sales to reduce market risk.
- * Design option strategies to create minimum prices.
- * Explain technical indicators related to commodity charts.
- * Explain the purpose of price limits for futures prices.
- * Interpret tax laws relating to marketing plans.

(2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 2180 - Strategies in Farm Commodity Marketing

This course is designed to plan marketing strategies necessary to achieve farm business. The student will create a year-round marketing plan utilizing a variety of marketing strategies to maximize farm income return.

Student Learning Outcomes:

- * Analyze specialty crop and livestock contracts.
- * Evaluate the financial return to marketing investment.
- * Evaluate various sources of marketing information.
- * Interpret commodity charts to identify fundamental market signals.
- * Interpret commodity charts to identify technical market signals.
- * Interpret technical indicators to develop marketing strategies.
- * Measure intermarket spreads.
- * Measure intra-market spreads.
- * Propose changes to marketing tool usage.

(3 C: 0 lect/pres, 0 lab, 3 other)

FBMT 2183 - Strategies in Farm Commodity Marketing

This course is designed to plan marketing strategies necessary to achieve farm business. The student will implement a year-round marketing plan utilizing a variety of marketing strategies to maximize farm income return.

Student Learning Outcomes:

- * Assess marketing plan in relation to farm business goals.
- * Assess marketing plans as related to cash flow needs.
- * Create a detailed year-round marketing plan.
- * Design a farm business plan with improved marketing strategies.
- * Reevaluate a risk management plan.
- * Revise current production cost and carrying charge calculations.

(2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 2200 - Special Topics- General Farm Management

This course focuses on the analysis of special topics in general farm management for students actively engaged in the operation and management of a farm business. Student and instructor will choose from said topics to best fit student needs.

1. Tax planning
2. Balance sheet development
3. Cash flow planning
4. Analysis - whole farm
5. Enterprise analysis
6. Record keeping
7. Benchmarking
8. Production yields
9. Ratio interpretation
10. Goal setting

Student Learning Outcomes:

- * Determine a general farm management specific focus for the course based on your farm business
- * Investigate information related to the general farm management special focus
- * Develop an implementation plan

(1 C: 0 lect/pres, 0 lab, 1 other)

FBMT 2201 - Special Topics - General Farm Management

This course covers special topics of interest in general farm management.

Student Learning Outcomes:

- * Examine the effects of incorporation into the farm business
 - * Survey the concepts which apply to the farm business
 - * Investigate general farm business management concepts
- (1 C: 0 lect/pres, 0 lab, 1 other)

FBMT 2202 - Special Topics - General Farm Management

This course covers special topics of interest in general farm management.

Student Learning Outcomes:

- * Examine the effects of incorporation into the farm business
 - * Survey the concepts which apply to the farm business
 - * Investigate general farm business management concepts
- (1 C: 0 lect/pres, 0 lab, 1 other)

FBMT 2203 - Special Topics - General Farm Management

This course covers special topics of interest in general farm management.

Student Learning Outcomes:

- * Examine the effects of incorporation into the farm business
 - * Survey the concepts which apply to the farm business
 - * Investigate general farm business management concepts
- (1 C: 0 lect/pres, 0 lab, 1 other)

FBMT 2204 - Special Topics - General Farm Management

This course focuses on the analysis of special topics in general farm management for students actively engaged in the operation and management of a farm business. Student and instructor will choose from said topics to best fit student needs.

1. Tax planning
2. Balance sheet development
3. Cash flow planning
4. Analysis - whole farm
5. Enterprise analysis
6. Record keeping
7. Benchmarking
8. Production yields
9. Ratio interpretation
10. Goal setting

Student Learning Outcomes:

- * Determine a general farm management specific focus for the course based on your farm business
 - * Investigate information related to the general farm management special focus
 - * Develop an implementation plan
- (1 C: 0 lect/pres, 0 lab, 1 other)

FBMT 2205 - Special Topics - General Farm Management

This course focuses on the analysis of special topics in general farm management for students actively engaged in the operation and management of a farm business. Student and instructor will choose from said topics to best fit student needs.

Student Learning Outcomes:

- * Determine a general farm management specific focus for the course based on your farm business
 - * Investigate information related to the general farm management special focus
 - * Develop an implementation plan
 - * Determine the challenges that affect the farm business related to the course focus
 - * Research and implement the opportunities that affect the farm business related to the course focus
 - * Collect and evaluate the plan results
- (2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 2206 - Special Topics - General Farm Management

This course covers special topics of interest in general farm management.

Student Learning Outcomes:

- * Examine the effects of incorporation into the farm business
 - * Survey the concepts which apply to the farm business
 - * Investigate general farm business management concepts
 - * Compare concepts which apply to the farm business
 - * Develop concepts which apply to the farm business
 - * Investigate general farm business concepts
- (2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 2207 - Special Topics - General Farm Management

This course covers special topics of interest in general farm management.

Student Learning Outcomes:

- * Examine the effects of incorporation into the farm business
 - * Survey the concepts which apply to the farm business
 - * Investigate general farm business management concepts
 - * Compare concepts which apply to the farm business
 - * Develop concepts which apply to the farm business
 - * Investigate general farm business concepts
- (2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 2208 - Special Topics - General Farm Management

This course covers special topics of interest in general farm management.

Student Learning Outcomes:

- * Examine the effects of incorporation into the farm business
 - * Survey the concepts which apply to the farm business
 - * Investigate general farm business management concepts
 - * Compare concepts which apply to the farm business
 - * Develop concepts which apply to the farm business
 - * Investigate general farm business concepts
- (2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 2209 - Special Topics - General Farm Management

This course covers special topics of interest in general farm management.

Student Learning Outcomes:

- * Examine the effects of incorporation into the farm business
 - * Survey the concepts which apply to the farm business
 - * Investigate general farm business management concepts
 - * Compare concepts which apply to the farm business
 - * Develop concepts which apply to the farm business
 - * Investigate general farm business concepts
- (2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 2210 - Special Topics-Marketing

This course focuses on the analysis of special topics in marketing management for students actively engaged in the operation and management of a farm business. Student and instructor will choose from said topics to best fit student needs.

Student Learning Outcomes:

- * List factors affecting supply and demand
 - * Identify types of markets
 - * Interpret terms of contracts
- (1 C: 0 lect/pres, 0 lab, 1 other)

FBMT 2211 - Special Topics - Marketing

This course focuses on the analysis of special topics in marketing management for students actively engaged in the operation and management of a farm business. Student and instructor will choose from said topics to best fit student needs.

Student Learning Outcomes:

- * List factors affecting supply and demand
 - * Identify types of markets
 - * Interpret terms of contracts
- (1 C: 0 lect/pres, 0 lab, 1 other)

FBMT 2212 - Special Topics - Marketing

This course focuses on the analysis of special topics in marketing management for students actively engaged in the operation and management of a farm business. Student and instructor will choose from said topics to best fit student needs.

Student Learning Outcomes:

- * List factors affecting supply and demand
 - * Identify types of markets
 - * Interpret terms of contracts
- (1 C: 0 lect/pres, 0 lab, 1 other)

FBMT 2213 - Special Topics - Marketing

Analysis of special topics in marketing for students actively engaged in the operation and management of a farm business.

Student Learning Outcomes:

- * Examine the effects of incorporation into the farm business

- * Survey the concepts which apply to the farm business
 - * Investigate general marketing concepts
- (1 C: 0 lect/pres, 0 lab, 1 other)

FBMT 2214 - Special Topics - Marketing

Analysis of special topics in marketing for students actively engaged in the operation and management of a farm business.

Student Learning Outcomes:

- * Examine the effects of incorporation into the farm business
 - * Survey the concepts which apply to the farm business
 - * Investigate general marketing concepts
- (1 C: 0 lect/pres, 0 lab, 1 other)

FBMT 2220 - Special Topics - Crops

This course focuses on the analysis of special topics in crop management for students actively engaged in the operation and management of a farm business. Student and instructor will choose from said topics to best serve the student needs.

1. Corn
2. Soybeans
3. Alfalfa
4. Mixed grass
5. Small grains
6. Specialty crops (sunflower, berries, seeds, trees, etc.)
7. Pasture
8. Corn silage
9. Cover crops
10. Vegetable crops

Student Learning Outcomes:

- * Determine a crop management specific focus for the course based on your farm business
 - * Investigate information related to the crop management special focus
 - * Develop a crop management implementation plan
 - * Develop enterprise budget
- (1 C: 0 lect/pres, 0 lab, 1 other)

FBMT 2221 - Special Topics-Crops

This course focuses on the analysis of special topics in crop management for students actively engaged in the operation and management of a farm business. Student and instructor will choose from said topics to best serve the student needs.

1. Corn
2. Soybeans
3. Alfalfa
4. Mixed grass
5. Small grains
6. Specialty crops (sunflower, berries, seeds, trees, etc.)
7. Pasture
8. Corn silage
9. Cover crops
10. Vegetable crops

Student Learning Outcomes:

- * Determine a crop management specific focus for the course based on your farm business
 - * Investigate information related to the crop management special focus
 - * Develop a crop management implementation plan
 - * Develop enterprise budget
- (1 C: 0 lect/pres, 0 lab, 1 other)

FBMT 2222 - Special Topics - Crops

This course focuses on the analysis of special topics in crop management for students actively engaged in the operation and management of a farm business. Student and instructor will choose from said topics to best serve the student needs.

1. Corn
2. Soybeans
3. Alfalfa
4. Mixed grass
5. Small grains
6. Specialty crops (sunflower, berries, seeds, trees, etc.)
7. Pasture
8. Corn silage
9. Cover crops

10. Vegetable crops

Student Learning Outcomes:

- * Determine a crop management specific focus for the course based on your farm business
 - * Investigate information related to the crop management special focus
 - * Develop a crop management implementation plan
 - * Develop enterprise budget
- (1 C: 0 lect/pres, 0 lab, 1 other)

FBMT 2223 - Special Topics-Crops

This course covers topics of special interest in crops.

Student Learning Outcomes:

- * Examine the effects of incorporation into the farm business
 - * Survey the concepts which apply to the farm business
 - * Investigate general crop concepts
- (1 C: 0 lect/pres, 0 lab, 1 other)

FBMT 2224 - Special Topics- Crops

This course covers topics of special interest in crops.

Student Learning Outcomes:

- * Examine the effects of incorporation into the farm business
 - * Survey the concepts which apply to the farm business
 - * Investigate general crop concepts
- (1 C: 0 lect/pres, 0 lab, 1 other)

FBMT 2230 - Special Topics - Livestock

This course focuses on the analysis of special topics in livestock management for students actively engaged in the operation and management of a farm business. Student and instructor will choose from said topics to best serve student needs.

1. Beef - cow/calf
2. Dairy
3. Swine
4. Sheep
5. Goat
6. Turkey
7. Chicken
8. Dairy heifers
9. Beef market
10. Specialty livestock (organic, honey bees, deer, elk, etc.)

Student Learning Outcomes:

- * Determine a livestock management specific focus for the course based on your farm business
 - * Investigate information related to the livestock management special focus
 - * Develop an implementation plan
 - * Implement the plan
 - * Evaluate the plan
- (1 C: 0 lect/pres, 0 lab, 1 other)

FBMT 2231 - Special Topics-Livestock

This course focuses on the analysis of special topics in livestock management for students actively engaged in the operation and management of a farm business. Student and instructor will choose from said topics to best serve student needs.

1. Beef - cow/calf
2. Dairy
3. Swine
4. Sheep
5. Goat
6. Turkey
7. Chicken
8. Dairy heifers
9. Beef market
10. Specialty livestock (organic, honey bees, deer, elk, etc.)

Student Learning Outcomes:

- * Determine a livestock management specific focus for the course based on your farm business
- * Investigate information related to the livestock management special focus
- * Develop an implementation plan
- * Implement the plan
- * Evaluate the plan

(1 C: 0 lect/pres, 0 lab, 1 other)

FBMT 2232 - Special Topics-Livestock

This course focuses on the analysis of special topics in livestock management for students actively engaged in the operation and management of a farm business. Student and instructor will choose from said topics to best serve student needs.

1. Beef - cow/calf
2. Dairy
3. Swine
4. Sheep
5. Goat
6. Turkey
7. Chicken
8. Dairy heifers
9. Beef market
10. Specialty livestock (organic, honey bees, deer, elk, etc.)

Student Learning Outcomes:

- * Determine a livestock management specific focus for the course based on your farm business
- * Investigate information related to the livestock management special focus
- * Develop an implementation plan
- * Implement the plan
- * Evaluate the plan

(1 C: 0 lect/pres, 0 lab, 1 other)

FBMT 2233 - Special Topics: Livestock

This course covers topics of special interest in livestock.

Student Learning Outcomes:

- * Examine the effects of incorporation into the farm business
- * Survey the concepts which apply to the farm business
- * Investigate general livestock concepts

(1 C: 0 lect/pres, 0 lab, 1 other)

FBMT 2234 - Special Topics - Livestock

This course focuses on the analysis of special topics in livestock management for students actively engaged in the operation and management of a farm business. Student and instructor will choose from said topics to best serve student needs.

1. Beef - cow/calf
2. Dairy
3. Swine
4. Sheep
5. Goat
6. Turkey
7. Chicken
8. Dairy heifers
9. Beef market
10. Specialty livestock (organic, honey bees, deer, elk, etc.)

Student Learning Outcomes:

- * Develop a nutrient and/or pest management plan
- * Evaluate profitability
- * Develop enterprise budget
- * Develop inventory tracking
- * Generate tracking report for feed fed
- * Prepare animal welfare plan

(1 C: 0 lect/pres, 0 lab, 1 other)

FBMT 2235 - Special Topics-Livestock

This course focuses on the analysis of special topics in livestock management for students actively engaged in the operation and management of a farm business. Student and instructor will choose from said topics to best serve student needs.

1. Beef - cow/calf
2. Dairy
3. Swine
4. Sheep
5. Goat
6. Turkey
7. Chicken
8. Dairy heifers
9. Beef market
10. Specialty livestock (organic, honey bees, deer, elk, etc.)

Student Learning Outcomes:

- * Develop a nutrient and/or pest management plan
- * Evaluate profitability
- * Develop enterprise budget
- * Develop inventory tracking
- * Generate tracking report for feed fed
- * Prepare animal welfare plan

(2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 2236 - Special Topics - Livestock

This course covers topics of special interest in livestock.

Student Learning Outcomes:

- * Examine the effects of incorporation into the farm business
- * Survey the concepts which apply to the farm business
- * Investigate general livestock concepts
- * Evaluate concepts which apply to the farm business
- * Compare concepts which apply to the farm business
- * Develop concepts which apply to the farm business

(2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 2237 - Special Topics - Livestock

This course covers topics of special interest in livestock.

Student Learning Outcomes:

- * Examine the effects of incorporation into the farm business
- * Survey the concepts which apply to the farm business
- * Investigate general livestock concepts
- * Evaluate concepts which apply to the farm business
- * Compare concepts which apply to the farm business
- * Develop concepts which apply to the farm business

(2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 2238 - Special Topics - Livestock

This course covers topics of special interest in livestock.

Student Learning Outcomes:

- * Examine the effects of incorporation into the farm business
- * Survey the concepts which apply to the farm business
- * Investigate general livestock concepts
- * Evaluate concepts which apply to the farm business
- * Compare concepts which apply to the farm business
- * Develop concepts which apply to the farm business

(2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 2239 - Special Topics-Livestock

This course covers topics of special interest in livestock.

Student Learning Outcomes:

- * Examine the effects of incorporation into the farm business
- * Survey the concepts which apply to the farm business
- * Investigate general livestock concepts
- * Evaluate concepts which apply to the farm business
- * Compare concepts which apply to the farm business
- * Develop concepts which apply to the farm business

(2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 2243 - Using Financial Instruments in Farm System Management

This course integrates the application of various financial instruments used in acquiring capital for use in the business and investigates ways in which both earnings and financial progress can be measured.

Student Learning Outcomes:

- * Develop a management (financial and production) portfolio
- * Correlate financial documents for acquiring capital
- * Apply decision-making criteria

(2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 2253 - System Plans and Projections

This course enables the combination of concepts for preparing farm system plans and projections, and the interaction of possible implications and/or solutions of these concepts.

Student Learning Outcomes:

- * Review the farm business plan

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

- * Evaluate business performance in relation to the vision for the future
 - * Revise the farm business plan
- (2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 2263 - Evaluating Farm System Programs

This course develops an awareness of individuals and agencies, both public and private, which have expertise available to assist the farm operator to solve farm systems problems. It enables study and application of farm business evaluation concepts, and exploration of possible implications. Exact subject matter and time spent per topic will vary depending on student need, location, and time.

Student Learning Outcomes:

- * Assemble management resource team
 - * Analyze strengths and weakness of the business with the management resource team
 - * Develop a plan of action for improving the business
- (2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 2950 - Directed Study - Decision Making

This course will examine the individual, family and farm business decision making process with emphasis on upgrading and improving decision making resources, tools and skills. Particularly, this course will lead the student to critically analyze information, applications and implications of decision making as it relates to their own situation. Students will evaluate their own decision making process.

Student Learning Outcomes:

- * Implement the decision making process
 - * Analyze errors in decision-making (detection and avoidance)Evaluate decision-making traps (data vs. intuition)Examine the role of predictions in the decision making process
 - * Define the decision making process
 - * Develop administrative skills as they relate to decision making
 - * Develop analytical and action based decision-making skills
 - * Develop team/project management skills for the decision making process
 - * Apply decision making tools and techniques developed in diploma and certificate programs
- (2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 2951 - Directed Study - Communications

This course will assist the student in further acquiring and developing a higher level of communications skills. Students will review and evaluate various communication methods and techniques in dealing with and relating to individuals in both the public and private sectors. Students will use this information in formulating an effective communication method and style. Additional course content may include student initiated or group activities.

Student Learning Outcomes:

- * Explore and develop means of focusing upon crisis communication techniques
 - * Define methods of consumer education techniques
 - * Explore and develop public and community relation methods
 - * Interpret advantages/disadvantages of various communication methods
 - * Define and apply methods and mechanisms of communication
 - * Develop administrative skills
 - * Develop improved written and oral presentation skills
 - * Develop team/project management skills
 - * Apply communication tools and techniques developed in the diploma programs
- (2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 2952 - Directed Studies in Modern Agricultural Technology

This course will deal with experiencing modern agricultural technological changes and determining if they fit into an individual's farming operation.

Student Learning Outcomes:

- * Lay out an application plan for integrating ag technology into the farming operational goals
- * Determine the advantages and disadvantages of the application of ag technology into the business
- * Investigate the feasibility of the application of technology into the business
- * Examine emerging agricultural technology
- * Promote administrative skills
- * Improve written and oral presentation skills
- * Develop team and/or project management skills

- * Apply tools and techniques developed in diploma and certificate programs
- (2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 2953 - Directed Studies in Farm Business and/or Family Transition

This course will focus on the many methods of farm business and/or family transition problems confronted during transition, family and/or transition needs and concerns, how to plan for farm business and/or family transition, and actually implementing a farm business and/or family transition plan.

Student Learning Outcomes:

- * Layout and implement a family transition plan to address needs, concerns and goals
 - * Analyze strategies for retirement planning as a part of family transition
 - * Classify various farm business structures and how they vary during family transition
 - * Distinguish farm business transfer strategies
 - * Identify family and/or individual transition needs and concerns
 - * Promote administrative skills
 - * Improve written and oral presentation skills
 - * Develop team and/or project management skills
 - * Apply tools and techniques developed in diploma and certificate programs
- (2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 2954 - Directed Study - Personnel Management

This course will organize skills for effective management of farm employees and agribusiness personnel through development of; handbooks, compensation/incentive packages, individual expectations/evaluations, and team meetings.

Student Learning Outcomes:

- * Determine methods for evaluating yourself as a manager of employees and consultants
 - * Conduct team meetings to diagnose and recommend treatment of business needs
 - * Diagram a team concept/approach for determining business needs
 - * Organize essential features for effective employee meetings
 - * Develop employee handbooks specific to the farm business
 - * Determine a procedure for enhancing employee skills through education and training
 - * Develop methods of employee motivation
 - * Develop written guidelines for employee evaluation
 - * Outline complete job descriptions for each employee of the farm business
 - * Develop employee compensation and incentive packages with guidelines for periodic review
 - * Conduct interviews with prospective employees
 - * Apply tools and techniques developed in diploma or certificate programs
- (2 C: 0 lect/pres, 0 lab, 2 other)

FBMT 2955 - Directed Study - Enterprise Alternatives

This course will assist those students wanting to make changes in their farm business through enterprise expansion, addition or enhancement. The course will develop a set of procedures for exploring and evaluating alternative choices.

Student Learning Outcomes:

- * Compose written and oral presentations to promote alternative plans
 - * Select alternatives best suited to personnel and other resources available
 - * Prioritize criteria that affect implementation of alternatives
 - * Compare industry standards to local standards and personal accomplishments
 - * Evaluate industry standards for alternatives
 - * Determine interviewing techniques needed to evaluate enterprise alternatives
 - * Conduct team meetings to evaluate information for enterprise alternatives
 - * Develop team/project skills and procedures needed to assess alternatives
 - * Compare and contrast alternatives available; new, value added, expansion
 - * Apply tools and techniques developed in diploma and certificate programs
- (2 C: 0 lect/pres, 0 lab, 2 other)

FNCR 1201 - Money and Banking

This course introduces students to the economics of money and banking in the United States. The course introduces the student to the role of money, financial markets, financial institutions, and monetary policy in the economy, thus providing a solid foundation for further study or employment in the financial services industry. There are three main components of the course. (1) The role of financial markets in the economy with an emphasis on interest rate determination. (2) The changing role of financial institutions includes bank management, the bank's role

as a creditor, banking relationships, products and services, regulations, and the significance of banking behavior in monetary policy. (3) The workings of fiscal and monetary policy, including money supply and creation, the powers and functions of the Federal Reserve System, and various monetary theories.

Student Learning Outcomes:

- * Explain the role of money in the economy.
- * Describe the workings of fiscal and monetary policy.
- * Analyze the functions of financial markets, depository institutions, and the Federal Reserve System in the U.S. economy.
- * Examine the economics of bank management and its role in affecting money supply.
- * Apply interest rate risk and return structure to bank asset and liability management, portfolio choice, models of the demand for money, and other monetary theory topics.
- * Describe how financial institutions manage assets and liabilities to make a profit.
- * Analyze tools available to financial institution management to uncover and deal with internal problems.
- * Examine the banking industry's legal, ethical, and regulatory environment.

(3 C: 3 lect/pres, 0 lab, 0 other)

FNCR 1215 - Investments

The main objective of this course is to provide students with a framework for making financial decisions related to Investments. The course focuses on stocks, bonds, mutual funds, REITs, annuities, and other investment alternatives. The course will convey practical knowledge of investments to anyone interested in understanding investments and the management of their personal finances. The course will provide students with an understanding of the essential features of various investment instruments, their risk-reward relationships, the appropriateness of the instrument, and how the market operates for buying and selling the various investments. Students will follow and analyze the performance of individual investments and a portfolio of investments with a written analysis report and presentation. Students planning a career in accounting, the financial industry, consulting, and/or general management will find the knowledge acquired in this course very relevant.

Student Learning Outcomes:

- * Understand the basics of investments, including stocks, bonds, and mutual funds.
- * Explain the role and structure of security markets.
- * Recognize the players in the financial markets: Firms, Households, and Government.
- * Apply economic and industry analysis to investment analysis.
- * Determine the value of individual securities, such as stocks and bonds.
- * Explain the role and structure of mutual funds and investment companies.
- * Solve valuation problems using investment models.
- * Conduct primary and secondary investment research while performing investment analysis.
- * Recognize the results of portfolio diversification and asset allocation on risk and returns.
- * Explain the different portfolio theories.
- * Demonstrate knowledge of active investment management to meet specific goals and objectives

Prerequisite(s): CPTR1210.

(3 C: 3 lect/pres, 0 lab, 0 other)

FNCR 1250 - Finance Law, Regulations and Ethics

This course will be a high-level overview of various financial regulations and ethics. The course will provide students with an understanding of the critical legal, regulatory, policy, and ethical issues associated with banking regulation, insurance regulation, and elements of securities regulation. The course covers federal regulation of the investment management industry, focusing primarily on the Investment Company Act and the Investment Advisers Act while examining the impact of other federal laws, including the Securities Act and the Securities Exchange Act. In addition, students will learn how regulatory agencies in the U.S. continually adjust laws and regulations with the emergence of new financial technologies. The course will also focus on finance-related issues surrounding bankruptcy, corporate mergers, anti-trust, contract leases, and the formation of business organizations.

Student Learning Outcomes:

- * Demonstrate an understanding of U.S. financial services and securities laws,

regulations, and standards.

- * Understand the causes, policy responses, and consequences of financial crises within the U.S.
- * Understand how the legal environment views finance-related circumstances and how to apply this knowledge to influence and make informed business decisions.
- * Apply research and historical knowledge to foresee and avoid legal difficulties in the finance-related business environment.
- * Explain the laws affecting real and personal property in buying, selling, owning, and leasing.
- * Compare and contrast sole proprietorships, partnerships, corporations, and limited liability companies and their effect on contract rights and duties.
- * Apply knowledge of the finance law environment to resolve finance-related legal issues.
- * Determine preferable content when negotiating the terms of commercial leases and contracts.
- * Apply business ethics and corporate social responsibility to financial securities laws and transactions.
- * Apply ethical principles to the role of business in society, including reporting financial information and the competing perspectives of the stakeholder and shareholder.
- * Demonstrate an ability to exercise professional judgment consistent with an organization's ethical values and corporate social responsibility.

(3 C: 3 lect/pres, 0 lab, 0 other)

FNCR 1260 - Principles of Risk Management

This course enables students to identify, define, and explain risk situations; develop management concepts, techniques, and processes; and understand the impact of safety and compliance policies. It will provide students with various strategies and techniques used to analyze and manage business risks by examining risk management strategies. Risk management is becoming increasingly important in managing business and personal financial health. Risk management is about insurance and developing policies to mitigate risk. This course is designed to provide students with a solid risk management and insurance background. It discusses all the different types of risks, including property, liability, personal, and financial risks. Students will study how an effective and efficient corporate risk management program will help reduce losses and improve financial performance.

Student Learning Outcomes:

- * Define risk management and study the trends and strategies in the risk management field.
- * Analyze various compliance methods or approaches to risk management.
- * Describe the role of a risk manager.
- * Evaluate various risk exposures.
- * Demonstrate varying problems from a risk management standpoint that can impact an organization.
- * Differentiate between types of insurance companies, their operations, and regulations.
- * Understand the need for and use insurance and apply risk management strategies.
- * Evaluate property and casualty insurance.
- * Analyze Risk Management techniques and processes within managerial situations.
- * Apply techniques and strategies to mitigate risk.

(3 C: 3 lect/pres, 0 lab, 0 other)

FNCR 2240 - Financial Statement Analysis

This course provides students with a framework for analyzing a firm's past performance, estimating its future performance, and valuing its equity. The course integrates key concepts from accounting, finance, economics, and business strategy, applies them to financial decision-making, and teaches students how to interpret numbers in financial statements. The main goal of this course is to give students the ability to generate reasonably accurate forecasts of a firm's future financial performance, including revenues, earnings, asset balances, and free cash flows. As this course is case-oriented, a course project will analyze and compare two corporations in similar businesses. Students planning a career in accounting, the financial industry, consulting, and/or general management will find the knowledge acquired in this course relevant.

Student Learning Outcomes:

- * Define basic accounting terminology and the accounting cycle.

- * Identify the organization and disclosure of information reported in 10-K filings and notes financial statements.
- * Classify accounts reported on all financial statements.
- * Classify assets and liabilities that are NOT reported under accounting rules and determine the importance of these off-balance sheet items for understanding the value of a business.
- * Interpret financial statements, including profit and loss, sales data, inventory turnover, and monthly and year-end reports.
- * Calculate and interpret financial ratios and understand how to use ratios to compare a firm to its competitors and evaluate ratio changes over time.
- * Analyze financial statements to determine return on investment, profitability, and decisions for maximum returns.
- * Examine how accounting errors, whether intentional or unintentional, impact reported income and the book value of equity.
- * Describe the financial variations of legal business forms including sole proprietorship, partnership, and corporation.
- * Analyze business scenarios and case studies using financial problem-solving and critical thinking skills.
- * Utilize technology tools to create and analyze financial statements.

Prerequisite(s): ACCT1215.

(3 C: 3 lect/pres, 0 lab, 0 other)

FNCR 2245 - Consumer Lending

Students will study the essential concepts needed to understand the consumer loan function, including a history of consumer credit, evaluation of credit risks, and the gathering, investigating, and analysis of credit information. Students will study procedures for documenting, servicing, managing, pricing, and marketing flows. Practical examples of loan costs and pricing are provided, along with discussions of different loan products, delivery channels, marketing, and sales.

Student Learning Outcomes:

- * Describe the evolution of consumer credit in the United States, including the development of current lending practices and attitudes.
- * Describe key laws or regulations affecting consumer lending.
- * List the characteristics, benefits, and disadvantages of direct lending.
- * Explain the advantages and disadvantages of indirect lending from bank, dealer, and consumer perspectives.
- * Provide examples of how the effective marketing of loan products can increase outstanding loans and application volume.
- * Describe the primary sources of consumer loan information and the steps taken in the credit verification process.
- * Explain how the five C's of credit are used in credit evaluation and decision-making.
- * List the objectives for the bank's formal loan policy statement.

(3 C: 3 lect/pres, 0 lab, 0 other)

FNCR 2275 - Internship

This course emphasizes the application of classroom skills and concepts to the workplace in the areas of finance and credit. The purpose of the course is to provide the student with practical and relevant business world experience to gain a clearer sense of how to apply what they have learned in the classroom to their internship position. It also will provide students with an opportunity to build professional networks. This course is available only to students who have completed most of the Finance program requirements.

Student Learning Outcomes:

- * Perform duties in the areas of finance, credit, and related tasks within a real-world business environment.
- * Follow all policies and procedures of the internship site.
- * Practice professional business behavior, displaying satisfactory attendance, honesty, and courtesy on the job.
- * Apply knowledge and skills learned in the classroom in a real-world business work environment.
- * Identify personal and professional career goals, knowledge, and skills that will lead to future career success.
- * Increase industry knowledge associated with the student's major and intended profession.
- * Experience the activities and functions of business professionals.
- * Build a professional network.
- * Develop and refine oral and written communication and interview skills with associates, work supervisor, and internship advisors.
- * Complete and submit the required internship packet to the internship advisor.

(3 C: 0 lect/pres, 0 lab, 3 other)

GBUS 1320 - Professional Development I

This course will help students develop team building skills, leadership skills, enhance their personal and professional confidence.

Student Learning Outcomes:

- * Participate in activities to increase their professional development
- * Apply leadership skills outside of class situations
- * Develop professional contacts
- * Experience group and team dynamics

(1 C: 1 lect/pres, 0 lab, 0 other)

GBUS 1324 - Professional Development II

This course will introduce students to total quality management, team building and networking skills. Students will explore their humanitarian responsibility, personal accountability and develop organizational and management skills.

Student Learning Outcomes:

- * Participate in team activities to increase their ability to perform as a team member.

Activities include: fundraising, attending meetings, Parade of Homes, Home Shows, goal setting, and Internet search

(1 C: 1 lect/pres, 0 lab, 0 other)

GEOG 1300 - World Regional Geography

Meets MN Transfer Goals 5 and 8 - History/Social, Behavioral Sciences and Global Perspectives. This course is a survey of the physical, cultural, diverse human experiences, natural resources, topography, climate, economic and political features of the world's geographic regions. Beyond identifying the world's countries and major cities, this course takes you through an in-depth exploration of the world's geographic realms. In this course, students will join Geographers as they peel back physical and cultural layers to better understand why the spatial patterns and unique features we find in the world exist, and how human societies interact with and change the physical and biological environment.

Student Learning Outcomes:

- * Analyze the world's diverse human experiences through the contributions and work of scholars and/or practitioners of color or native origin and other under represented voices.
- * Document the cultural, social, religious and linguistic differences of the world's peoples.
- * Compare cultural elements on an individual and social level that support equitable participation in society.
- * Apply proper techniques to acquire geographic information that includes narratives of indigenous communities from isolated area, satellite imagery and other modern tools.
- * List key concepts, generalizations and methods of inquiry in the study of geography.
- * Distinguish worldwide spatial distributions of landforms, climate, natural resources, demographic, cultural, economic and political attributes.
- * Identify the key components of social and professional responsibility of geographers as is pertains to their community, and the global community in the rapidly changing world.
- * Explain how the industrial revolution has shaped the geographic landscape of various countries.
- * Analyze how colonization has impacted political stability and economic opportunity in former colonies across the globe.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

GEOG 2305 - Introduction to Geographic Information System

This course is designed to introduce students to using Geographic Information System (GIS). A Geographic Information System (GIS) is a computer-based information system used to manage and analyze spatial information. This course introduces students to the theory and techniques of GIS including spatial data capture, management and analysis, and cartographic output. Emphasis is placed on the use of technical analysis and software in order to provide students with skills and a conceptual base on which they can build further expertise in GIS. After completing this course, students will master basic concepts of GIS and hands-on skills with a widely-used GIS software packages.

Student Learning Outcomes:

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

- * Design geospatial technical approaches for problem-solving.
- * Identify geospatial techniques to solve problems with geospatial issues.
- * Present geospatial study findings with oral presentation and written reports.
- * Analyze geospatial data using relevant GIS software.
- * Create maps using GIS software.
- * Explain basic concepts of a map projection.
- * Analyze local and regional features using a topographic map.

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

GEOL 1300 - Geology

Meets MN Transfer Goal 3 - Natural Sciences. Earth is a very small part of a vast universe, but it is our home. Learn about the resources that support our modern society and the ingredients necessary to maintain life. This is an introductory course in Physical Geology designed for non-science majors. The course includes a laboratory component. The focus of the course is to gain an understanding of the basic geological formations and processes that shape our earth. Topics will include; Minerals, Rock Types, The Rock Cycle, Volcanoes, Erosion, Ground Water, Glaciers, Deserts, Shorelines, Plate Tectonics, Earthquakes, Mountain Formation, and Geologic Time.

Student Learning Outcomes:

- * Describe how scientists determine the properties of geological formations and materials
- * Identify basic minerals and rock types, their sources, and their properties
- * Describe and explain the major geological processes that shape the earth
- * Describe geologic time and the earth's evolution through geologic time
- * Apply theoretical geologic processes to current phenomena and explain their causes
- * Describe local landforms and explain their formation
- * Perform measurements and analysis of the properties of earth's materials
- * Document and discuss experimental results
- * Gather and analyze data and draw conclusions from this analysis
- * Demonstrate and apply critical thinking skills to analyze a variety of geological phenomena
- * Work cooperatively and effectively in groups engaged in the process of science and show respect for other people's needs, ideas, and feelings
- * Model professional and responsible behavior by being on time, participating in class discussions and completing assignments on time
- * Demonstrate effective use of resources including faculty, other students, reference materials, industry sources, and the Internet

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(4 C: 3 lect/pres, 1 lab, 0 other)

GERO 1300 - Introduction to Gerontology

Meets Mn Transfer Curriculum Goal Areas 5 and 7A - History/Social, Behavioral Sciences and Human Diversity. This course explores the biological, social, psychological and economic changes that accompany the aging process. Students will explore societal factors affecting resources available to the older adults and possible roles they might fill as family members or professionals caring for the older adults. Throughout the course, we will look carefully at variations in aging and caregiving experiences by race, ethnicity, class, gender, age, and sexualities.

Student Learning Outcomes:

- * Examine the biological, social, psychological, economic, and political aspects of aging using multidisciplinary perspectives.
- * Evaluate methods and theories used by gerontologists to study aging.
- * Analyze who/where the older adults are through an examination of demographic data, historical and current.
- * Identify the impact of the older adults within the family structure and in communities, as well as advocacy roles that family member and professionals can serve.
- * Analyze the social, interpersonal and cultural stereotypes/biases about aging and develop an attitude that values the older adults.
- * Critique the impact of public policy and the availability of community resources for the older adults.
- * Analyze the intersectionality of age, race, ethnicity, sex, gender, sexualities, and class.
- * Apply gerontological concepts and theories by using them to solve institutional problems and/or address challenges involving aging.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

GTEC 1304 - The Automobile in America

Explore the history and future of the automobile and its impact on labor, culture, society, the environment, and the economy of the United States. Analyze the effect of the automobile on your present and future lifestyles.

Student Learning Outcomes:

- * Discuss the impact of the automobile on American culture, society and the economy throughout its history
- * Compare and contrast the effects of World Wars I and II, The Depression, The Industrial Revolution, the GI Bill, and "Baby Boom" generation on the consumer and automobile industry
- * Discuss the history and future impact of the energy crisis, European and Asian Imports, and environmental impact of the automobile on consumers and automobile manufacturers
- * Compare and contrast the attitudes of automobile manufacturers and consumers toward improvements in automobile safety throughout the history of the automobile
- * Research from manufacturer's brochures, automotive and consumer's journals and the Internet to determine quality, safety, ergonomics, pricing, and overall value of automobiles and light trucks
- * Compare and contrast the changing attitudes of labor and management and the role of the United Auto Workers throughout the history of automobile production
- * Discuss the history of minorities and women as labor in automobile production
- * Compare the portrayal of women and minorities in marketing and commercials for automobiles throughout history
- * Describe the changes in automobile production and marketing and the impact on consumers and manufacturers as the industry moves toward a greater global enterprise
- * Compare and contrast styling and design changes of the automobile and their impact on consumers throughout automotive history
- * Compare and contrast the design, production, and marketing of Ford's Model T, the Volkswagen Beetle, the Austin Mini, and Chrysler minivans

(3 C: 3 lect/pres, 0 lab, 0 other)

HART 1502 - Copper and Gas Piping

In this course students will learn to solder, braze, swage and flare copper tubing as used in the HART field. Students will also learn how to cut, deburr, and thread gas piping for the HART field.

Student Learning Outcomes:

- * Demonstrate soldering, and brazing of copper tubing
- * Demonstrate swaging, and flaring of copper tubing
- * Demonstrate proper techniques of bending copper tubing
- * Demonstrate cutting, deburring, and threading of gas pipe

(1 C: 0 lect/pres, 1 lab, 0 other)

HART 1506 - Schematics and Blue Print Reading

In this course students will study, draw and read wiring schematics so they can properly analyze electrical problems in furnaces and air conditioners. Students will also learn to read blueprints to properly size furnace and air conditioners for residential homes.

Student Learning Outcomes:

- * Read wiring schematics for residential furnaces and a/c
- * Draw wiring schematics for residential furnaces and a/c
- * Read and understand blueprints for heating and a/c
- * Properly size furnaces for residential homes
- * Properly size a/c for residential homes
- * Estimate the air flow room-by-room in residential homes

Prerequisite(s): HART1514, HART1518.

(3 C: 2 lect/pres, 1 lab, 0 other)

HART 1510 - Sheetmetal

This course will enable you to use sheet metal hand tools, squaring sheer and brake to make simple sheetmetal fittings. Students will lay out and make many different sheetmetal projects in residential heating and air conditioning.

Student Learning Outcomes:

- * Construct duct work.

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

* Layout sheet metal elbows.
* Assemble sheet metal duct work.
* Operate squaring shears and sheet metal break.
Corequisite(s): HART1502, HART1514, HART1518.
(1 C: 0 lect/pres, 1 lab, 0 other)

HART 1514 - Forced Air Heating

In this course you will study different types of residential furnaces, gas and fuel oil. The function of each component and how they operate together to make the furnace safe and function properly to heat your home.

Student Learning Outcomes:

- * Identify and describe each of the major components of the heat producing system.
- * Identify and describe each of the major components of the heated-air distribution system.
- * Check and set the proper pressures for propane, natural gas and fuel oil coming into a residential forced air-heating system.
- * Check and set the proper pressures for propane, natural gas and fuel oil at the burners of a residential forced air-heating system.
- * Identify and test the operation of all line voltage components of a residential forced air-heating systems.
- * Identify and test the operation of all low voltage components, safety and controlling of a residential forced air-heating systems.
- * Test and set the efficiency of a residential forced air-heating system.
- * Test for carbon monoxide (CO) in residential forced air-heating systems.
- * Calculate sensible heat in British thermal unit (BTU) of a residential forced air-heating system.
- * Calculate the cubic foot per minute (CFM) of a residential forced air-heating system.

Corequisite(s): HART1502, HART1510, HART1518.
(5 C: 3 lect/pres, 2 lab, 0 other)

HART 1518 - Electrical Controls for Heating and A/C

This course will start out with the fundamentals of electricity and take the students through the safety and operative controls in residential heating and air conditioning. Students will learn how they operate, what they control, and what the controls are protecting and how they are protecting the unit, device or structure. Students will develop the skills sought by employers.

Student Learning Outcomes:

- * Define ohms, volts, and amps and show proper use of a VOM.
- * Define a series circuits.
- * Define a parallel circuits.
- * Define switches and loads.
- * Identify safety and control switches.
- * Read and draw basic schematic diagram of a heating and air conditioning system.
- * Locate and identify electrical components and explain their function in residential furnace.
- * Locate and identify electrical components and explain their function in residential air conditioning.

Corequisite(s): HART1502, HART1510, HART15014.
(4 C: 2 lect/pres, 2 lab, 0 other)

HART 1522 - Installation of Heating and A/C

This course will enable you to install furnaces and A/C in residential houses. It also includes gas piping standard and two pound systems. Also the proper venting of standard and high efficiency furnaces. You will be able to correctly install evaporators and condensing units for central A/C.

Student Learning Outcomes:

- * Install condensing units for central a/c in residential houses
- * Install evaporators for central a/c in residential houses
- * Install standard and high efficient furnaces
- * Install venting for standard and high efficient furnaces
- * Install air-to-air heat exchangers
- * Install gas piping for 1/2 lbs and 2 lbs residential systems

Prerequisite(s): HART1502, HART1510, HART1514, HART1518.
(3 C: 2 lect/pres, 1 lab, 0 other)

HART 1526 - Principles of Air Conditioning

In this course you will be introduced to refrigeration systems used in air condi-

tioning. You will also learn the function of the four basic components of the a/c, evaporator, condenser, compressor and metering devices. Also charging, evacuating and reclaiming residential a/c systems.

Student Learning Outcomes:

- * Identify the four basic components of a refrigeration system used in residential a/c
- * Understand the functions of the four basic components of a refrigeration system used in residential a/c
- * Charge a residential a/c system
- * Evacuate a residential a/c system
- * Reclaim a residential a/c system

Prerequisite(s): HART1514, HART1518.

(4 C: 2 lect/pres, 2 lab, 0 other)

HART 1530 - Heat Pumps

In this course you will study fundamentals of heat pump as applied to both heating and a/c. Both air-to-air heat pump and ground source heat pumps and how each work.

Student Learning Outcomes:

- * Understand the operation of a heat pump in the cooling cycle
- * Understand the operation of a heat pump in the heating cycle
- * Understand the operation of a heat pump when it goes into a defrost cycle
- * Charge a heat pump
- * Understand the function of a ground source heat pump and how it takes heat and gives heat to the ground

Prerequisite(s): HART1514, HART1518.

(2 C: 1 lect/pres, 1 lab, 0 other)

HART 1534 - Troubleshooting Heating and A/C

This course will enable students to diagnose malfunctions in residential heating and air conditioning systems by learning the proper troubleshooting techniques, repairing or replacing defective components. Students will learn best practices as identified by industry standards.

Student Learning Outcomes:

- * Diagnose air conditioning systems for proper operation of the electrical system.
- * Diagnose air conditioning systems for proper operation of the refrigeration system.
- * Diagnose heating system for proper operation of the electrical system.
- * Take combustion analysis and check the readings against standards of industry.
- * Analyze and troubleshoot components in residential heating systems.
- * Analyze and troubleshoot components in a residential air conditioning systems.

Corequisite(s): HART1506, HART1522, HART1526, HART1530.

Prerequisite(s): HART1502, HART1510, HART1514, HART1518, HART1540.

(3 C: 1 lect/pres, 2 lab, 0 other)

HART 1538 - HART Job Preparation

This course is designed to prepare students for job seeking skills necessary to complete a resume and job interviews. This course will also cover customer relation and service order documentation skills as it relates to the HVAC industry.

Student Learning Outcomes:

- * Construct a completed resume
- * Create a plan for a job interview
- * Determine the proper information for service orders in repair calls in HVAC
- * Develop a plan for the importance of customer relations for HVAC
- * Respond to customer complaints related to A/C and heating equipment
- * Generate a material orders for HVAC construction jobs

Prerequisite(s): HART1502, HART1510, HART1514, HART1518.

(1 C: 1 lect/pres, 0 lab, 0 other)

HART 1540 - Internship - Residential

This course is designed to allow students to apply the knowledge and skills learned in the classroom and lab. Students will work for a residential heating and air conditioning company.

Student Learning Outcomes:

- * Learn the daily workings of a residential service or installation company.
- * Identify the types of customers a residential company performs services for.
- * Identify the procedures for documenting services performed for customers.

- * Develop the professional approach between customer and service personnel.
- * Identify the techniques and procedures used to perform service and installation of residential equipment.

Prerequisite(s): HART1502, HART1510, HART1514, HART1518.
(2 C: 0 lect/pres, 0 lab, 2 other)

HART 2502 - Commercial Refrigeration II

Students will do an in depth study of commercial refrigeration systems and refrigeration controls. Students will perform control adjustments and installation.

Student Learning Outcomes:

- * Categorize types of supermarket refrigeration cases
- * Determine the piping schemes of heat reclaim systems
- * Determine the operation and controls of an ice machine by reading schematics
- * Demonstrate the operation and controls of a parallel refrigeration system
- * Classify the types of refrigeration systems
- * Determine the accessories and their location on a supermarket rack

Prerequisite(s): HART2506, HART2510, HART2526, HART2530.
(4 C: 2 lect/pres, 2 lab, 0 other)

HART 2506 - Commercial Refrigeration I

Students will study fundamental principles of commercial refrigeration. Students will study accessories and perform troubleshooting on commercial applications.

Student Learning Outcomes:

- * Determine the types and reasons for high side pressure control devices
- * Compare the laws of thermodynamics as they apply to refrigeration systems
- * Determine the proper procedures and requirements for converting CFC refrigerants to a HFC or HCFC refrigeration system
- * Determine the causes of low temperature systems failures
- * Determine and install appropriate refrigeration accessories based on system requirements

Prerequisite(s): HART1506, HART1522, HART1526, HART1530, HART1534.
(4 C: 2 lect/pres, 2 lab, 0 other)

HART 2510 - Commercial Electrical and Controls

Students will study the operation and troubleshooting of commercial electrical controls as they relate to commercial refrigeration, heating and air conditioning systems. Students will perform troubleshooting and installation of controls.

Student Learning Outcomes:

- * Classify all types of single phase and three phase power supplies, their correct voltages and wiring configuration
- * Determine the correct settings of operating and safety controls that are commonly associated with commercial refrigeration, heating and air conditioning equipment
- * Conclude the operation of electrical controls and interpret their functions on electrical schematics

Prerequisite(s): HART1506, HART1522, HART1526, HART1530, HART1534.
(3 C: 2 lect/pres, 1 lab, 0 other)

HART 2514 - Compressor Operation and Troubleshooting

Students will study in-depth the operation and the troubleshooting skills for refrigeration and air conditioning compressors. Students will perform operational checks and teardown of compressors.

Student Learning Outcomes:

- * Classify the types of mechanical action used for compressors
- * Compare the types of compressor failures
- * Analyze the internal operation of a compressor for normal operation using the proper tools
- * Distinguish the types of compressor cooling
- * Demonstrate the removal and replacement of a failed compressor
- * Demonstrate the replacement of failed internal compressor valves

Prerequisite(s): HART2506, HART2510, HART2526, HART2530.
(3 C: 1 lect/pres, 2 lab, 0 other)

HART 2518 - Commercial Troubleshooting

Students will use knowledge and tools to troubleshoot commercial refrigeration, air conditioning and heating equipment. Students will use refrigeration theory and electrical diagrams to troubleshoot equipment.

Student Learning Outcomes:

- * Demonstrate the proper techniques to find power circuits shorts

- * Test for open safeties using hopscotch method of electrical troubleshooting
- * Determine system failures by understanding systems sequence of operation
- * Determine and identify mechanical failures of systems accessories

Prerequisite(s): HART2506, HART2510, HART2526, HART2530.
(2 C: 1 lect/pres, 1 lab, 0 other)

HART 2522 - Commercial Air Conditioning

Students will service and install commercial air conditioning systems. Students will do an in-depth study of controls and types of air conditioning systems as they relate to the commercial field.

Student Learning Outcomes:

- * Determine if an air conditioning system that is low on refrigerant, recover the refrigerant, repair the leak and properly recharge system
- * Analyze the operation capacity control devices, properly adjust, and troubleshoot each type of capacity control device
- * Demonstrate the ability to troubleshoot and repair or replace failed electrical components of commercial air conditioning systems
- * Evaluate the affects of commercial air conditioning systems on room comfort and system performance with the use of psychrometric charts
- * Analyze commercial air conditioning system failures and conclude the probable cause

Prerequisite(s): HART2506, HART2510, HART2526, HART2530.
(3 C: 2 lect/pres, 1 lab, 0 other)

HART 2526 - Commercial Heating and HVAC Systems

Students will use their skills and knowledge to troubleshoot, perform maintenance and install commercial heating and HVAC systems. Students will do an in-depth study of controls and design of commercial heating and HVAC systems.

Student Learning Outcomes:

- * Take combustion analysis and check the readings against standards of industry
- * Determine components and operation of hot water heating systems
- * Examine the operation and recommended use of make-up air heating systems
- * Analyze drawings and duct layout to determine the types of air handling systems
- * Determine the components and operation of steam heating systems

Prerequisite(s): HART1506, HART1522, HART1526, HART1530, HART1534.
(3 C: 2 lect/pres, 1 lab, 0 other)

HART 2530 - Commercial Load Calculating

Students will properly select the correct refrigeration equipment to load demands. Students will also determine the proper piping size and accessories for the equipment selected.

Student Learning Outcomes:

- * Determine the proper BTU loads for various sizes of walk-in coolers and freezers
- * Calculate the amount of BTU's required for storage of various types of products
- * Determine the proper refrigeration equipment and accessories for specified BTU loads
- * Design properly functioning refrigeration systems, to include pipe size, layout and installation requirements
- * Calculate BTU load of residential house, size and design ductwork layout

Prerequisite(s): HART1506, HART1522, HART1526, HART1530, HART1534.
(2 C: 1 lect/pres, 1 lab, 0 other)

HART 2534 - Commercial HVAC Controls

Students will use their knowledge of commercial heating, air conditioning systems and ventilation to perform service, installation and maintenance on equipment. Students will study the design and controls of commercial HVAC equipment.

Student Learning Outcomes:

- * Determine the operation of a two position control system and proportional control system
- * Determine the use and operation of limit controls
- * Demonstrate basic operation of a digital control system
- * Analyze pneumatic stats for proper calibration and operation

Prerequisite(s): HART2506, HART2510, HART2526, HART2530.
(2 C: 1 lect/pres, 1 lab, 0 other)

HART 2540 - Internship - Commercial

This course is designed to allow students to apply the knowledge and skills learned in the classroom and lab. Students will work for commercial heating, air conditioning, and refrigeration companies.

Student Learning Outcomes:

- * Examine the daily workings of a commercial service or installation company
- * Determine the types of customers a commercial company performs services for
- * Identify the procedures for documenting services performed for customers
- * Relate the professional approach between customer and service personnel
- * Identify the techniques and procedures used to perform service and installation of commercial equipment

Prerequisite(s): HART1506, HART1522, HART1526, HART1530, HART1534.
(2 C: 0 lect/pres, 0 lab, 2 other)

HASL 1300 - American Sign Language I

Meets Mn Transfer Curriculum Goal Area 7A - Human Diversity. This course is an introduction to beginning ASL (American Sign Language) sign vocabulary. Students will learn grammatical features and classifiers with an emphasis on visual American Sign Language. This course is an immersion in ASL. It promotes an increased understanding and appreciation of Deaf culture.

Student Learning Outcomes:

- * Recognize the difference between affirmative and negative.
- * Convert from yes/no questions to wh-word questions and vice-versa.
- * Demonstrate directional verbs.
- * Project sensitivity to cultural tips.
- * Identify verb/noun pairs.
- * Utilize negative incorporations.
- * Respond to commands.
- * Demonstrate respect for a no-sound environment.
- * Describe Deaf Culture.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

HASL 1404 - American Sign Language II

Review and expansion of basic vocabulary and grammatical structure, conversational practice. Must be taken in sequence.

Student Learning Outcomes:

- * Introduce the student to expansion of beginners' vocabulary of ASL
- * Utilize American Sign Language and fingerspelling in both expressive and receptive ways with more facial expression and body movements
- * Develop more active listening behaviors
- * Participate fully in the classroom such as: small group work, group discussion, and whole class discussion

Prerequisite(s): HASL1300.
(3 C: 3 lect/pres, 0 lab, 0 other)

HASL 1408 - American Sign Language III

Meets MN Transfer Goal 8 - Global Perspective. Continuation of American Sign Language expansion of intermediate vocabulary, grammar and visual language with increased speed and clarity of fingerspelling and signing.

Student Learning Outcomes:

- * Introduce the student to intermediate vocabulary of ASL
- * Utilize American Sign Language fluently in both expressive and receptive ways
- * Interact with deaf people and to understand their signing styles
- * Know ethical dilemmas common in communicating
- * Participate fully in the classroom such as: small group work, group discussion, and whole class discussion
- * Increase signing and fingerspelling speed and clarity

Prerequisite(s): HASL1404.
(3 C: 3 lect/pres, 0 lab, 0 other)

HASL 1412 - American Sign Language IV

Meets Mn Transfer Goal 8 - Global Perspective. Intense study of intermediate + (or intermediate plus) vocabulary and ASL grammatical structures, in-depth descriptive classifiers, with few repetitions and students' self critique. Knowledge of political corrections signs. Primarily for intermediate sign language students.

Student Learning Outcomes:

- * Introduce the student to intermediate vocabulary of ASL
- * Utilize American Sign Language fluently in both expressive and receptive ways with few repetitions
- * Interact with deaf people and recognize their signing styles
- * Identify political corrections signs
- * Participate fully in the classroom such as: small group work, group discussion, and whole class discussion
- * Self-critique of signing and fingerspelling speed and clarity for self and others
- * Utilize in-depth classifiers describing things, persons or places

Prerequisite(s): HASL1408.

(3 C: 3 lect/pres, 0 lab, 0 other)

HCCC 1410 - Behaviors for Success in the Healthcare Industry

This module focuses on the requirements needed by healthcare workers to effectively work in a variety of health care settings. This includes types of health care facilities and systems, applying for employment, accountability and responsibility; standards of dress, workplace behavior, and approaches needed to assist clients; expectations of teams and team members; common health care facility policies and requirements; and selected medical and departmental abbreviations. Also included is discussion about how health care workers can impact the quality of health care and balance their work and personal life to maintain personal wellness. Must be taken Pass/Fail.

Student Learning Outcomes:

- * Discuss ways healthcare personnel can balance their work and personal life to maintain personal wellness
- * Describe the expectations employees have of healthcare personnel
- * Identify quality issues in healthcare facilities relating to how they impact workers and delivery of care
- * Describe the common policies and requirements for various healthcare facilities
- * Identify selected organizational, financial structures, departments, services and requirements for various types of healthcare personnel
- * Using a problem solving process applied to a healthcare situation, describe behaviors for success in healthcare

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or appropriate placement score.
(0.50 C: 0 lect/pres, 0 lab, 0.5 other)

HCCC 1415 - Intro to Healthcare Careers I

This course explores Behaviors for Success in the Healthcare Industry, Awareness and Sensitivity for Clients' Needs, and Communication in Healthcare with clients, families, and among the healthcare team.

Student Learning Outcomes:

- * Discuss ways healthcare personnel can balance their work and personal life to maintain personal wellness
- * Describe the expectations employees have of healthcare personnel
- * Identify quality issues in healthcare facilities relating to how they impact workers and delivery of care
- * Describe the common policies and requirements for various healthcare facilities
- * Identify selected organizational, financial structures, departments, services and requirements for various types of healthcare personnel
- * Using a problem solving process applied to a healthcare situation, describe behaviors for success in healthcare
- * Describe the major stages of human development to include basic health needs
- * Discuss the needs of clients of different age groups and how those needs can affect behaviors, attitudes and service strategies for quality of care
- * Describe the types of emotional, spiritual and social needs of clients and their families
- * Explain how different diseases can influence the functioning, behaviors and attitudes of individuals
- * Define the stages of death and dying and the influence those stages have on clients and their families
- * Applying a problem solving process, describe how healthcare workers can be aware and sensitive to their clients' needs
- * Describe components of effective verbal and non-verbal communication
- * Explain how active listening skills can improve communication
- * Discuss the use of a variety of communication techniques to achieve effective interpersonal and team communication

- * Describe communication skills that are important when managing conflict
- * Explain components of accurate, appropriate communication to include common medical abbreviations
- * Apply a problem solving process in healthcare situations and describe how effective communication will occur between clients, individuals and team members

Corequisite(s): HCCC1425

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or appropriate placement score.
(2 C: 2 lect/pres, 0 lab, 0 other)

HCCC 1420 - Awareness and Sensitivity to Clients' Needs

This module presents challenges and issues related to the awareness and sensitivity needed to understand the healthcare needs of clients. Included is the impact disease has on individuals; the emotional, spiritual, and social needs of clients; as well as the type of care needed by different age groups. Also included is the process of death and dying and how that affects clients and their families. Must be taken Pass/Fail.

Student Learning Outcomes:

- * Describe the major stages of human development to include basic health needs
- * Discuss the needs of clients of different age groups and how those needs can affect behaviors, attitudes and service strategies for quality of care
- * Describe the types of emotional, spiritual and social needs of clients and their families
- * Explain how different diseases can influence the functioning, behaviors and attitudes of individuals
- * Define the stages of death and dying and the influence those stages have on clients and their families
- * Applying a problem solving process, describe how healthcare workers can be aware and sensitive to their clients' needs

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or appropriate placement score.
(0.50 C: 0 lect/pres, 0 lab, 0.5 other)

HCCC 1425 - Intro to Healthcare Careers II

This course explores Respect for Client and Staff Diversity, Healthcare Safety and Standard Precautions, Legal Issues in Healthcare, and Healthcare Ethics.

Student Learning Outcomes:

- * Compare one's personal belief system and practices with those of other cultures
- * Explore personal responsibilities to respect people as individuals
- * Discuss workplace expectations for interaction between team members, clients and individuals from diverse cultures, gender, age and sexualities
- * Following a problem solving approach, describe how healthcare employees can respect client and staff members
- * Discuss agencies with requirements for safety standards in healthcare facilities, their employees, clients and individuals
- * Explain requirements to maintain standard procedures and precautions in healthcare facilities
- * Describe process that healthcare facilities use to achieve safety in various areas
- * Describe the principles and standards of infection control
- * Identify the ways in which healthcare workers can demonstrate personal and client safety
- * Explain the laws related to healthcare and their influence on the healthcare delivery system
- * Define Vulnerable Adult Law as it relates to abuse, neglect, and exploitation
- * Discuss healthcare providers and facilities to ensure clients and workers' rights
- * Describe confidentiality and its impact on all concerned
- * Explain the problem solving process concerning the law and legal rights
- * Describe dimension of values as they impact healthcare
- * Describe basic principles of professional relationships
- * Discuss aspects of ethical decision making in healthcare
- * Discuss ethical decision making models applied to healthcare

Corequisite(s): HCCC1415

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or appropriate placement score.
(2 C: 2 lect/pres, 0 lab, 0 other)

HCCC 1430 - Respect for Client and Staff Diversity

This module provides a framework for dealing with diverse residents, clients and

staff. Included are belief systems, cultural practices, and respect and sensitivity to cultural and gender issues. Emphasis is placed on awareness and use of effective strategies to appropriately deal with diversity in the workplace. Must be taken Pass/Fail.

Student Learning Outcomes:

- * Compare one's personal belief system and practices with those of other cultures
- * Explore personal responsibilities to respect people as individuals
- * Discuss workplace expectations for interaction between team members, clients and individuals from diverse cultures, gender, age and sexualities
- * Following a problem solving approach, describe how healthcare employees can respect client and staff members

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or appropriate placement score.
(0.50 C: 0 lect/pres, 0 lab, 0.5 other)

HCCC 1440 - Communication in Healthcare

This module emphasizes the importance of effective communication between and among healthcare workers and their clients. Included are verbal and nonverbal communication, listening skills, interpersonal communication, team communication, documentation and reporting, and the use of electronic communication devices in healthcare facilities. Focus is on the development of effective communication skills to support quality client care. Must be taken Pass/Fail.

Student Learning Outcomes:

- * Describe components of effective verbal and non-verbal communication
- * Explain how active listening skills can improve communication
- * Discuss the use of a variety of communication techniques to achieve effective interpersonal and team communication
- * Describe communication skills that are important when managing conflict
- * Explain components of accurate, appropriate communication to include common medical abbreviations
- * Apply a problem solving process in healthcare situations and describe how effective communication will occur between clients, individuals and team members

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or appropriate placement score.
(1 C: 1 lect/pres, 0 lab, 0 other)

HCCC 1450 - Healthcare Safety and Standard Precautions

This module focuses on the rules and standards related to regulatory policies required of healthcare facilities, as well as personal safety standards and requirements to work in healthcare settings. Included are the principles and standards of infection control; standard precautions; healthcare facility safety policies and strategies to ensure personal, client and resident safety; and procedures to respond to emergencies. Must be taken Pass/Fail.

Student Learning Outcomes:

- * Discuss agencies with requirements for safety standards in healthcare facilities, their employees, clients and individuals
- * Explain requirements to maintain standard procedures and precautions in healthcare facilities
- * Describe process that healthcare facilities use to achieve safety in various areas
- * Describe the principles and standards of infection control
- * Identify the ways in which healthcare workers can demonstrate personal and client safety

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or appropriate placement score.
(0.50 C: 0 lect/pres, 0 lab, 0.5 other)

HCCC 1460 - Legal Issues in Healthcare

This module focuses on the legal issues related to clients and healthcare workers. Such areas as healthcare laws, client rights and responsibilities, confidentiality, liability, documentation, and regulation are explored. The relationship between ethics and legal issues is discussed, as well as the impact law and regulation has on healthcare systems. Must be taken Pass/Fail.

Student Learning Outcomes:

- * Explain the laws related to healthcare and their influence on the healthcare delivery system
- * Define Vulnerable Adult Law as it relates to abuse, neglect, and exploitation
- * Discuss healthcare providers and facilities to ensure clients and workers' rights

- * Describe confidentiality and its impact on all concerned
 - * Explain the problem solving process concerning the law and legal rights
- Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or appropriate placement score.
(0.50 C: 0 lect/pres, 0 lab, 0.5 other)

HCCC 1470 - Healthcare Ethics

This module emphasizes the use of sound ethical practices in healthcare. Included are ethical principles and standards as they relate to the care of clients and interactions with peers, colleagues, and team members. Ethical frameworks are provided for discussion on understanding the types of ethical challenges in healthcare and the difficult decisions that need to be made. Must be taken Pass/Fail.

Student Learning Outcomes:

- * Describe dimension of values as they impact healthcare
 - * Describe basic principles of professional relationships
 - * Discuss aspects of ethical decision making in healthcare
 - * Discuss ethical decision making models applied to healthcare
- Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or appropriate placement score.
(0.50 C: 0 lect/pres, 0 lab, 0.5 other)

HIST 1310 - American History Until 1877

Meets MN Transfer Goals 5 and 9 - History and the Social and Behavioral Sciences and Ethical and Civic Responsibility. This course will examine major trends and events from the early European explorations until the Compromise of 1877. Topics will include historical methods, the indigenous peoples and their cultures, the European background, colonial government and culture, the Industrial Revolution, the American Revolution, establishment of the Constitution, the young republic, territorial expansion, slavery, immigration, sectional divisions, the Civil War, and Reconstruction of the South.

Student Learning Outcomes:

- * Acquire basic knowledge and understanding of American history until the end of Reconstruction, including but not limited to the topics mentioned in the description
- * Gain appreciation for the ways the study of past is related to the contemporary situation
- * Acquire a basic understanding of the discipline of history and historical knowledge
- * Develop a greater interest and curiosity for the study of history
- * Develop enhanced college-level skills in analysis, writing, research, and oral presentations

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

HIST 1311 - The United States Since 1877

Meets MN Transfer Goals 5 and 9 - History and the Social and Behavioral Sciences and Ethical and Civic Responsibility. This course will examine trends and events from the end of Reconstruction until the present, including topics such as industrial modernization, imperialism, Jim Crow, progressivism, the two world wars, the Great Depression, the New Deal, the Cold War, the Korean and Vietnam Wars, the Civil Rights movement, Great Society reforms, the impact of 9/11/01, America's changing role in the world, and continuing political controversies.

Student Learning Outcomes:

- * Acquire basic knowledge and understanding of American history since the end of Reconstruction, including but not limited to the topics mentioned in the description
- * Gain appreciation for the ways the study of past is related to the contemporary situation
- * Acquire a basic understanding of the discipline of history and historical knowledge
- * Develop greater interest and curiosity about the study of history
- * Develop enhanced college-level skills in analysis, writing, research, and oral presentations

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

HIST 1320 - World History to 1500

Meets Mn Transfer Curriculum Goal Areas 5 and 8 - History and the Social and Behavioral Sciences and Global Perspective. This survey course examines the history of major world civilizations from about 4000 BCE to 1500 CE. The course explores the history of the cultural, religious, economic, political, ecological and social aspects of the ancient civilizations of Mesopotamia, Egypt, Greece and Rome, the Islamic World, medieval Europe, West Africa, China, India, southeast Asia, Oceania, and the Pre-Columbian Americas.

Student Learning Outcomes:

- * Outline and describe the methods and data that historians use to investigate major world civilizations from the dawn of the historic age (ca. 4000 BCE) to 1500 CE.
- * Recognize and explain the key political, economic, and cultural trends in world civilizations from ca. 4000 BCE to 1500 CE.
- * Examine and interpret the major religious, artistic, social, economic, environmental and political trends of world civilizations from ca. 4000 BCE to 1500 CE.
- * Identify and summarize the cultural, social, religious and linguistic contributions of the various population groups that shaped world history from ca. 4000 BCE to 1500 CE.
- * Analyze specific historical international problems and critique the solutions utilized by and the alternatives available to major world population groups from ca. 4000 BCE to 1500 CE
- * Assess and evaluate the influence of historical civilizations on contemporary global issues and on modern world citizenship.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

HIST 1321 - World History Since 1500

Meets Mn Transfer Curriculum Goal Areas 5 History and the Social and Behavioral Sciences, and 8 Global Perspective - This survey course examines modern world history from the Columbian exchange to the present era (ca. 1500 to the present). The course explores the trend of European exploration and the subsequent intercultural interaction on a global scale. Moreover, the course explores the growth of navigation, colonization, trade and industrialization. Also included in course topics are European imperialism in the modern era, the two world wars, the Cold War, and the rise of the Third World. Finally, contemporary globalism and international relations will also be examined.

Student Learning Outcomes:

- * Describe the methods and data that historians use to investigate major world civilizations from 1500 CE to the present.
- * Explain the key political, economic, and cultural trends in world civilizations from 1500 CE to the present.
- * Examine the major religious, artistic, social, economic, environmental and political trends of world civilizations from 1500 CE to the present.
- * Summarize the cultural, social, religious and linguistic contributions of the various population groups that shaped world history from 1500 CE to the present.
- * Analyze specific historical international problems and critique the solutions utilized by and the alternatives available to major world population groups from 1500 CE to the present.
- * Evaluate the influence of historical civilizations on contemporary global issues and on modern world citizenship.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

HIST 1330 - World War II

Meets MN Transfer Goals 5 and 8 - History and the Social and Behavioral Sciences and Global Perspective. This course describes and analyzes the most violent and destructive war in human history, including its causes, Fascism, the Third Reich, Soviet Communism, war aims of participating countries, campaigns and battles, strategies and tactics, technologies, political and military leadership, home fronts, diplomacy, genocide, final victory, trials for war crimes, and the consequences of the war on subsequent developments.

Student Learning Outcomes:

- * Acquire basic knowledge and understanding of the war, including the topics in the description
- * Gain appreciation for the ways the study of past is related to the contemporary

situation

- * Acquire a basic understanding of the discipline of history and historical knowledge
- * Develop greater interest and curiosity about WW II and subsequent history
- * Gain enhanced college-level skills in analysis, writing, research, and oral presentations

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 1210 - Health Information Foundations

This course introduces the student to the health information management profession by covering topics fundamental to the field such as the purpose and use of health information, regulatory requirements, electronic health records and various job functions associated with managing health information. Students will explore the history of maintaining health records including collection, filing, storage and retention of health data. Exploration of the various stakeholders in the health industry will be covered. Students will also be introduced to various types of health records, clinical classification systems and reimbursement practices. This course is a foundational course that paves the way for more advanced health information courses.

Student Learning Outcomes:

- * Summarize the development of health information management as a profession and benefits of professional membership.
- * Describe the internal and external stakeholders of health information organizations and health data.
- * Explain the uses and values of health records in paper or electronic format.
- * Distinguish among the content of health records in various departments and facilities.
- * Identify methods for collecting, filing, storage and retention according to compliance requirements.
- * Differentiate among quantitative, qualitative, and statistical analysis of health records.
- * Apply policies to the process of managing health information
- * Articulate the usability and accessibility of health information by patients, including current trends and future challenges.
- * Identify quality and performance standards and their sources who measure data.
- * Discover current trends and future challenges in health information exchange.
- * Identify Health Information job functions, how they relate to each other, and how they are achieved in the electronic environment.

(2 C: 2 lect/pres, 0 lab, 0 other)

HITM 1220 - Legal Aspects of Health Information

This course covers the application of ethical and legal principles and standards pertaining to the patient/provider relationship and the Health Information profession. Topics of study include an overview of the legal system, including professional liability and medical malpractice prevention. Students will apply regulations surrounding the Health Insurance Portability and Accountability Act (HIPAA), as well as documentation/retention guidelines, patient rights/physician duties, and bioethical practices. Application of the ethical decision-making process is applied through the use of case studies.

Student Learning Outcomes:

- * Explain the trial process, including jurisdiction and levels of courts in the US.
- * Assess ethical standards of practice as relevant to the patient/provider relationship and the HIM profession.
- * Apply legal concepts and principles to the practice of HIM.
- * Differentiate among various regulations affecting the medical profession, including Medical Staff Bylaws, Accreditation requirements, Agency regulations, State and Federal laws.
- * Compare the components of a legal health record versus a designated record set.
- * Apply HIPAA privacy and security strategies to Health Information.
- * Utilize legal documents appropriately in the healthcare environment including Consent for Treatment, Release of Information, Power of Attorney, Advanced Directive, HIPAA Privacy Practices, etc.
- * Identify compliance requirements throughout the health information life cycle, including data collection, storage, retention and destruction.
- * Identify the components of risk management related to health information management.

Prerequisite(s): HITM1210.
(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 1226 - CPT Coding

The course introduces the basic principles, guidelines and conventions of Current Procedural Terminology (CPT) coding, including Evaluation/Management (E/M) and Healthcare Common Procedure Coding System (HCPCS). Coursework is organized by body system for application of appropriate CPT codes. Students will apply their knowledge of anatomy and medical terminology, and will discover how coding is used in the delivery of healthcare. Application of evaluation/management coding is reinforced through the use of case studies. Knowledge of CPT coding is critical as the student progresses into advanced coding classes.

Student Learning Outcomes:

- * Describe the history of the CPT classification system, including current use in the delivery of healthcare. (IV.2)Analyze code descriptions using Medical Terminology, Anatomy and Physiology knowledge for appropriate classification. (IV.1)Validate assignment of procedural and service codes in accordance with official CPT guidelines. (IV.1)Determine the appropriate Evaluation and Management (E/M) visit codes by classifying the clinical information according to the E/M guidelines. (IV.1 RM)Determine the appropriate CPT/HCPCS code and/or modifier based on CPT Coding guidelines. (IV.1 RM)Compare and Contrast modifier descriptions for appropriate assignment. (IV.1)Evaluate code assignment and sequencing using official coding guidelines and National Correct Coding Initiative (NCCI) edits. (IV.3 RM)Comply with AHIMA standards of ethical coding. (VI.7)Prerequisite(s): HITM1230 and one of the following: BLGY1321, HITM1244 or BLGY2310, BLGY2320.

(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 1227 - ICD-CM Coding

This course covers the basics of coding with the International Classification of Diseases-Clinical Modification (ICD_CM) coding system, including the basic principles, guidelines, and conventions of ICD_CM coding. Course work includes classification and indexing of diagnoses for each body system and condition type, as well as external causes. Knowledge of CM coding is critical as the student progresses into advanced coding classes.

Student Learning Outcomes:

- * Describe the history of ICD_CM classification system, as well as current use in the delivery of healthcare.
- * Analyze code descriptions using Medical Terminology, Anatomy and Pathophysiology knowledge for appropriate classification. (IV.1)
- * Validate assignment of diagnosis and external cause codes in accordance with official ICD-CM guidelines. (IV.1)
- * Determine the appropriate ICD-CM code based on official CPT Coding guidelines. (IV.1 RM)
- * Determine code selection based on various reimbursement methodology regulations for risk adjustment and payment. (IV.1 RM)Comply with American Health Information Management Association (AHIMA) standards of ethical coding. (VI.7)Prerequisite(s): HITM1230.

(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 1228 - Administrative Medical Terminology

This is an applied medical vocabulary course that introduces terms related to the various body systems, including directional, anatomical, and procedural terms. Students apply their knowledge to medical scenarios, including taking telephone calls, auditing reports for errors, and correctly reading medical records. The course is designed to prepare students for various professional careers in the health information field. Emphasis is placed on building terms using word parts, including proper spelling, pronunciation, and defining the medical terms.

Student Learning Outcomes:

- * Demonstrate knowledge of medical words as related to anatomy, disease processes, and surgical procedures for various body systems.
- * Show understanding of various directional/positional terms of the body.
- * Build medical terms for given definitions.
- * Define, pronounce, and spell anatomy, disorder, surgical, and complementary terms for the body systems.
- * Demonstrate the ability to research medical term meanings using legitimate Internet sites.
- * Read medical documents and interpret medical terminology contained in them.
- * Interpret meanings of medical terms and abbreviations as relevant to the body systems.

Corequisite(s): HITM1244.
(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 1230 - Pathophysiology and Pharmacology

This course will introduce students to the physiologic changes that occur within the body as a result of specific disease processes and to provide a basic understanding of the medications used to treat or affect these disease processes. Focus will be on the signs and symptoms, etiology, diagnostic procedures and treatment of common diseases and how the medications used to treat those diseases work in the human body. Knowledge of pathophysiology and pharmacology is crucial as the student progresses to advanced coding classes.

Student Learning Outcomes:

- * Determine how and why alterations in body structure and function lead to the signs and symptoms of disease
- * Investigate the signs/symptoms, etiology, diagnostic tests and latest treatments (including surgical, immunotherapy, and radiologic) for diseases and conditions of the following body systems: Endocrine, Integumentary, Musculoskeletal, Digestive, Respiratory, Circulatory, Urinary, Reproductive, Neurologic, and Immune
- * Apply knowledge to diagnose diseases based on symptoms
- * Identify the various risk factors contributing to diseases
- * Link health conditions with healthcare services and treatments
- * Define controlled substances and categories of controlled substances
- * Identify drugs by categories, trade name and generic name
- * Describe drug interactions with foods, beverages, herbals, supplements, and other medications
- * Investigate how common medications work in the body to treat common diseases and conditions of the body systems listed above.

Corequisite(s): HITM1228.
(4 C: 4 lect/pres, 0 lab, 0 other)

HITM 1236 - ICD-10-PCS Coding

This course covers the basics of coding with the International Classification of Disease-Procedure Coding System (ICD-PCS). It introduces basic principles and guidelines of ICD-PCS coding. Coursework includes analyzing medical documentation to identify patient procedures and services and assigning correct codes according to the ICD-PCS guidelines. Students will apply coding principles to actual case scenarios including specialty healthcare settings.

Student Learning Outcomes:

- * Describe the history of the ICD-PCS classification system, as well as current use in the delivery of healthcare. (IV.2)
- * Analyze code descriptions using Medical Terminology, Anatomy and Pathophysiology knowledge for appropriate classification. (IV.1) Validate assignment of procedural and service codes in accordance with official ICD-PCS guidelines. (IV.1) Determine the appropriate ICD-PCS code based on ICD-PCS Coding guidelines. (IV.1 RM) Identify specific coding requirements for specialty healthcare settings including medical/surgical, obstetrics, osteopathic, chiropractic, nuclear medicine, rehabilitation, and mental health. (IV.1 RM) Comply with American Health Information Management Association (AHIMA) standards of ethical coding. (VI.7) Prerequisite(s): BLGY1321 or BLGY2320 or HITM1244.

(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 1240 - Computerized Health Information

This course covers the basic concepts of an information system and the life cycle of information systems. The course also covers integration of clinical data from source applications in electronic health records (EHRs). Security measures to protect organization-wide information systems, measures to protect data integrity and validity are discussed. Students will utilize a variety of health information systems that are currently used in the industry.

Student Learning Outcomes:

- * Identify the initiatives and framework of the electronic health record, including supplemental technologies. (III.1) Demonstrate knowledge of inpatient clinical information systems, management support systems, and outpatient information systems. (III.2) Discuss the aspects of standardized healthcare data sets and standards in the electronic environment. (I.5, I.6, III.7) Identify steps taken in the planning, design, selection, implementation, integration, testing, evaluation, and support for organization-wide information systems. (II.3) Investigate the use of audit trails in EHRs. (II.2) Investigate the personal health record (PHR) and its integration into EHRs. (III.2) Engage in the use of multiple EHR

applications used in the industry to perform a variety of health information tasks. (II.3, III.6 DM) Determine data dictionary element's compliance with governance standards. (I.6 DM) Demonstrate a conceptual and practical understanding of data warehousing and data validity. (I.3, I.6 DM) Analyze the information life cycle, including how data is acquired, used, stored, retrieved and validated in the electronic health record system. (III.6) Compare and contrast interoperability standards for various health systems (III.7.DM) Prerequisite(s): HITM1210.

(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 1244 - Anatomy and Physiology for Health Information

The course introduces the basic structures of the human body from the cellular level, to the tissue level and finally to the organs comprising various systems of the body. The student will develop a basic understanding of the normal structure and function of the anatomy and physiology of the major body systems including: integumentary, musculoskeletal, nervous, endocrine, blood, cardiovascular, lymphatic, digestive, respiratory, urinary and reproductive systems. This course is vital in understanding and interpreting clinical data needed for proper medical coding.

Student Learning Outcomes:

- * Define the anatomical and physiological terms associated with each system of the body.
- * Identify the basic structures of the human body.
- * Describe the function of each system of the body.
- * Relate anatomical structures to the physiology associated with each system.
- * Differentiate between normal functions and disease of each system of the body.
- * Analyze the effects of aging on each system of the body.

Corequisite(s): HITM1228.
(4 C: 4 lect/pres, 0 lab, 0 other)

HITM 2200 - Quality Management of Health Information

This course covers the components of quality improvement models using practical tools for problem solving, decision making, goal setting, and implementation. Students will explore risks that are managed using performance improvement activities in a Health Information department, including the various health record requirements, their sources, and reasons for the requirements. Students will also identify how technology affects the quality of documentation, and procedures to ensure quality documentation is generated. Activities include applying documentation policies through chart analysis, and creating a quality improvement process to improve the documentation.

Student Learning Outcomes:

- * Define different performance improvement and quality improvement models. (VI.4)
- * Compare performance improvement standards from various healthcare organizations. (VI.3)
- * Define a sentinel event vs. near-miss and their impact on risk management. (V.3)
- * Compare and Contrast the compliance requirements from various regulatory sources. (I.2, I.4) Summarize the impact of quality outcomes on cost-effective healthcare. (VI.4, V.4)
- * Define various data set criteria and their impact on quality of care. (I.6) Apply data collection and quality improvement tools. (VI.4)
- * Identify utilization management components. (IV.2) Evaluate records for clinical documentation improvement opportunities (IV.3)
- * Recommend process improvement activities for change management (VI.2) Explain Institutional Review Board policies and procedures. (III.5) Prerequisite(s): HITM1210.

(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 2209 - HIT Professional Practice Experience

This course prepares students for entry into the health information management field, offering an applied application of day-to-day tasks, policies and procedures related to Health Information. Students will interact with the Professional Practice Experience (PPE) supervisor and staff in the Health Information department during the practice experience. The course also offers PPE activities to prepare for and simulate on-the-job tasks. This course is a capstone course and should be completed after completing the first year of the Health Information Technology program. Students who completed BUSM 1290 as part of the Medical Coding Diploma may take this course for 1 credit and are exempt from outcome #1.

Student Learning Outcomes:

- * Demonstrate professional job-seeking skills.
 - * Apply soft skill sets with a balance of confidence and humility.
 - * Demonstrate networking skills when interacting with health information professionals.
 - * Apply safety, confidentiality, ethical standards and security guidelines of the PPE facility.
 - * Demonstrate teamwork while working with a variety Health Information Technology departments at the PPE facility.
 - * Prioritize job functions and activities under PPE Supervision.
 - * Demonstrate ability to perform HIT functions under PPE supervision.
- (C: 0 lect/pres, 0 lab, 0 other)

HITM 2210 - Medical Billing and Reimbursement

This course provides a study of the entire revenue cycle process, from the scheduling of the appointment to the receipt of payment. Students will explore numerous health insurance plans, reimbursement methodologies, and compliance strategies. Students will learn about the current healthcare reimbursement systems used in outpatient and inpatient settings. Students will adhere to current regulations and guidelines for insurance coverage, claim submission, and denial management.

Student Learning Outcomes:

- * Distinguish how different Reimbursement Methodologies operate. (IV.3)
- * Compare the purpose and benefits of different third party payers, including government-sponsored health programs. (IV.2)
- * Evaluate revenue cycle processes. IV.2 RM
- * Evaluate the accuracy of diagnostic/procedural groupings for medical necessity. IV.3 RM
- * Identify procedures for obtaining patient demographic information, insurance verification, authorizations and collecting time-of-service payments (IV.2)
- * Interpret reimbursement monitoring reports. (IV.2)
- * Demonstrate ability to correctly complete various medical insurance billing forms. (IV.3)Corequisite(s): HITM2224

Prerequisite(s): HITM1210.

(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 2215 - HIT Management and Supervision

This class examines the many aspects of management of health information services. It introduces the general principles of management. Leadership theory and change management are examined. Work design and performance improvement specific to the Health Information Management (HIM) field are discussed. Human resource management concepts including position descriptions, performance standards, interview techniques, building effective teamwork, staff training and development, laws affecting organization workforce, and financial management functions of HIM profession are introduced. The steps and scope of project management are discussed. HIM strategic management processes are explored.

Student Learning Outcomes:

- * Identify the impact of organizational change. (VI.2)Demonstrate fundamental leadership skills. (VI.1)Identify key activities associated with human resource management. (VI.3)Identify workforce training processes for health care organizations. (VI.9)Describe and apply financial management functions (VI.5)Describe and apply the elements of project management. (VI.2)Examine behaviors that embrace cultural diversity (VI.6)Prerequisite(s): HITM1210.

(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 2224 - Advanced Medical Coding

In this course, students will integrate their coding knowledge from CPT, ICD-10-PCS and ICD-10-CM courses to coordinate the various classification systems needed to code encounters for inpatient and outpatient settings across all major specialties. Students will use an electronic application (encoder application software) as an aid in the selection of appropriate codes. They will evaluate and audit the revenue cycle processes, including compliance with coding guidelines, payer policies and reimbursement methodologies. Students will also identify clinical documentation improvement opportunities and recommend solutions.

Student Learning Outcomes:

- * Determine clinical documentation to assign appropriate diagnostic, service and procedure codes and groupings in accordance with coding guidelines and payer policies. IV.1 RM
- * Evaluate denials by analyzing documentation, coding guidelines and payer policies to identify resolutions. IV.2 RM

- * Ensure coding compliance by auditing coded encounters. IV.3 RM
 - * Assess the completeness of data and data sources for the billing process. IV.2 RM
 - * Determine clinical documentation improvement strategies to improve reimbursement. IV.2 RM
 - * Ensure codes are applied according to various reimbursement methodology regulations for risk adjustment and payment. (IV.2 RM)Demonstrate the ability to communicate professionally and effectively with internal and external customers.
 - * Evaluate revenue cycle processes using electronic resources such as encoders and grouper software. IV.3 RM
 - * Comply with American Health Information Management Association (AHIMA) standards of ethical coding. (VI.7)Corequisite(s): HITM2210, HITM1236
- Prerequisite(s): HITM1226, HITM1227.
- (3 C: 3 lect/pres, 0 lab, 0 other)

HITM 2231 - Healthcare Statistics

This course will explore the procedures associated with statistics in healthcare, with emphasis on the application of data to evaluate quality outcomes. Students will learn calculation processes for a variety of descriptive statistics found in the Health Information Management department including vital statistics, productivity, staffing and budgets. The course will also explore inferential statistics, sampling, hypothesis testing, probability and inference. Students will learn about different types of research design and the role of the Institutional Review Board in research with healthcare facilities.

Student Learning Outcomes:

- * Define how healthcare statistics are used in connection with healthcare quality outcomes. (VI.4)
- * Apply commonly-used descriptive healthcare statistics using Excel functions. (III.3)Compare and contrast between descriptive and inferential statistics (III.3)Utilize descriptive and predictive healthcare statistics. (III.3)Apply statistical results to patient care, budget, staffing, and quality. (III.3)
- * Interpret quantitative data through the appropriate use of data presentation methods (III.4)Explain basic research methods. (III.5)Prerequisite(s): HITM1210

(2 C: 2 lect/pres, 0 lab, 0 other)

HITM 2240 - Health Data Analytics

This course provides a hands-on approach to learning how to conduct health data analytics. Students will explore a variety of different statistical software to import, extract, transform, visualize and analyze data. These foundational skills will equip students with the basic knowledge of how to use data for performance improvement efforts in the healthcare industry.

Student Learning Outcomes:

- * Evaluate data sets for compliance with data governance standards (I.6DM) Manage data in a relational database (III.6)Illustrate how metadata and standards are used to promote interoperability (III.7DM)Adhere to security and data integrity requirements when importing, extracting, and transforming health data (I.3)Construct database queries using statistical platform scripts to generate structured query reports using health data sets (III.6DM)Apply descriptive and predictive statistical research methods to health care data sets (III.5)Evaluate data from secondary databases to identify the relevance and significance of the data (I.3)Summarize data using data visualization tools and techniques (III.4)Compare various data analysis programs to manage health data as a secondary data source (III.6DM)Prerequisite(s): MATH1351.
- (3 C: 3 lect/pres, 0 lab, 0 other)

HITM 2244 - HIT Capstone

This course will assist the student in understanding the process to become credentialed as an R.H.I.T. (Registered Health Information Technician) and continued re-certification requirements. Students will evaluate their ability to apply the knowledge obtained in the program using real-world case studies and practice tests. Students will learn study tips, time management skills, and how to create a study plan after analyzing their current knowledge about the field of Health Information Technology. These activities will assist the student in identifying what area of Health Information they would like to pursue a career in upon graduation.

Student Learning Outcomes:

- * Describe the RHIT certification and re-certification process.
- * Analyze personal level of knowledge for each RHIT Exam Domain
- * Apply acquired program knowledge to real-world cases.

- * Develop a personal study plan for RHIT Exam success.
 - * Identify career options supported by interests and skill level.
- (1 C: 1 lect/pres, 0 lab, 0 other)

HLTH 1402 - Nursing Assistant

The student will be introduced to concepts of basic human needs for a variety of populations with emphasis on the geriatric population. The student will also be introduced to safe environment, emergency measures and basic nursing skills. Skills are performed in a supervised laboratory and in the clinical setting. This course is intended to prepare students for employment as Nursing Assistants. The Federal and State Omnibus Budget Reconciliation Act (OBRA) laws and Minnesota Department of Health requirements are met in this course.

Student Learning Outcomes:

- * Summarize acceptable behavior which complies with the Resident Bill of Rights, Vulnerable Adult Act, ethics and etiquette
- * Demonstrate effective communication and observation skills through conversation, active listening and gathering of facts related to resident's care
- * Demonstrate appropriate resident unit order to meet safety needs of the resident and staff.
- * Examine the importance of adequate food and fluid balance with elimination
- * Demonstrate safe care of the resident when meeting their basic needs during activities of daily living (ADLs) which will include special populations

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 1 lect/pres, 2 lab, 0 other)

HLTH 1440 - Medical Terminology

Medical Terminology is a vital foundational course introducing students to medical terms required in the study of human body systems. This course supports students in learning information needed to complete the more advanced health science courses. Medical Terminology institutes the building of medical words through the use of prefixes, suffixes and combining forms from Greek and Latin word parts. This course requires significant memorization of medical word parts essential in creating and interpreting medical terminology related to each body system. Medical Terminology presents medical terms within the context of basic Anatomy and Physiology. In Medical Terminology, the student will acquire the tools necessary to communicate effectively in a professional healthcare environment.

Student Learning Outcomes:

- * Distinguish medical terms with Latin and Greek origins, eponyms and modern English
- * Explain the differences between the four basic word parts, prefixes, suffixes, root words and combining vowels.
- * Construct medical terms using word parts for 13 body systems and anatomical body regions.
- * Label anatomical diagrams of the 13 body systems.
- * Identify system disease/disorders, laboratory/diagnostic procedures and medical/surgical procedures related to the 13 body systems

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(1 C: 1 lect/pres, 0 lab, 0 other)

HLTH 1490 - Nursing Assistant Skills Refresher

This 16-hour Nursing Assistant Skills Refresher course will help students fine tune skills needed to work as a Nursing Assistant and prepare them for the MN Nurse Aide Competency Examination. Demonstrations of the 21 skills students may encounter during the state exam will be provided with time allowed for supervised practice and coaching in the lab setting.

Student Learning Outcomes:

- * Apply knowledge to competent performance of Nursing Assistant skills included in the MN Nurse Aide Competency Exam.
- (0.50 C: 0 lect/pres, 0 lab, 0.5 other)

HPER 1305 - Drugs, Alcohol and Tobacco

This course is designed to explore relevant issues of alcohol, drug and tobacco use and abuse in society. Specifically, the course will research and investigate the effect these substances have on student life and learning. In addition, student participation patterns in high-risk situations and relationships will be explored. Strategies for reducing and preventing accidents that are drug, alcohol, and tobacco related will also be addressed.

Student Learning Outcomes:

- * Review the history of drug use in the United States.
- * Analyze the extent of use of licit and illicit drugs within various populations in the United States.
- * Evaluate the variety of cultural influences, including family, peers, and media, on the use of selected drugs.
- * Describe the nature and characteristics of dependence and addiction.
- * Research the major drug classifications and their physiological effects.
- * Critique the social, economic, political, psychological, and pharmacological consequences of drug misuse on the American society.
- * Explain the current efforts to control drug use and suggest alternative approaches to controlling drug use.
- * Identify the physiological, social, and treatment aspects of alcohol and tobacco use in the United States.
- * Compare and contrast the major illicit drugs, their prevalence, physiological effects, and treatment strategies.
- * Differentiate between the major types of prescription and over-the-counter drugs, specifically regarding their use and misuse and their effects on medical advertising and regulation.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(2 C: 2 lect/pres, 0 lab, 0 other)

HPER 1310 - Life Wellness

This course is designed to provide information and practical application of the seven domains of wellness. Each student will receive relevant information on how to live a happier, healthier life using the Seven Domains (Physical, Emotional, Intellectual, Interpersonal, Spiritual, Environmental, and Financial/Occupational). The interconnectedness of these domains will be discussed, with a special emphasis on how a deficiency in one domain can negatively influence the other domains. Finally, the course will provide information for students to design their own wellness plan.

Student Learning Outcomes:

- * Analyze wellness, fitness, and the parameters that comprise good physical health.
- * Explain cardiovascular endurance, muscular strength, muscular endurance and flexibility as important components of fitness and healthy body composition.
- * Analyze personal diet to identify what changes would conform to healthy lifestyle principles.
- * Identify the risk factors and warning signs for various forms of cancer, diabetes, and heart disease.
- * Identify potential stressors on the body and strategies to reduce stress.
- * Design a personalized plan with goals for developing and maintaining a healthy lifestyle.
- * Examine the meaning and interconnectedness of the seven domains of wellness.

(2 C: 2 lect/pres, 0 lab, 0 other)

HPER 1311 - Applied Nutrition

This course is an option to fulfill the 2 credit Wellness Requirement for the AA Degree. Students will learn about nutritional requirements, the recommended amounts of micro and macro nutrients and healthy alternatives to typical American diet. Nutrition is part of a holistic approach to health. A sound working knowledge of human nutrition is essential for any student wanting to lead a healthy life, parent healthy children and contribute in careers that focus on health. Students will learn what and how much to eat, they will learn the science behind our nutritional needs, become informed consumers, and become valuable care givers for their families and for those with nutritional concerns. This class does not include a laboratory (lab) component.

Student Learning Outcomes:

- * Identify macro and micro nutrients utilized in the human body.
- * Evaluate deficiencies and excesses in a dietary analysis.
- * Explain how food is marketed to increase sales.
- * Evaluate nutritional sources for accuracy and bias.
- * Plan the components of daily living including appropriate activity level, energy and nutrient intake related to holistic health.
- * Identify obstacles to healthy eating and develop a positive relationship with food and themselves.
- * Describe how food is grown, processed and manufactured and the progress of food sustainability.

- * Define Spiritual Nutrition and how the foods consumed affect the mind, body and spirit.
 - * Discuss the benefits of cooking and eating with family and friends in improve the quality of meals and relationships.
- (2 C: 2 lect/pres, 0 lab, 0 other)

HPER 1325 - Psychology of Sports and Coaching

The course will provide an overview of the growing field of Sports Psychology, which involves applying psychological science to sports. Students will be able to define sports psychology, describe characteristics of an individual, and identify and apply sports psychological theories. The course will illustrate goal setting, explain imagery and hypnosis in sport, and define the psychology behind exercise. Students will analyze the importance of attention and concentration in sports and be able to discuss the importance of youth sports.

Student Learning Outcomes:

- * Define sports psychology
 - * Describe characteristics of an individual
 - * Interpret a multitude of sports psychological theories
 - * Illustrate goal setting
 - * Explain imagery and hypnosis in sport
 - * Define the psychology behind exercise
 - * Analyze the importance of attention and concentration in sports
 - * Discuss the importance of youth sports
- (3 C: 3 lect/pres, 0 lab, 0 other)

HPER 1330 - Coaching Methods

This course will cover coaching philosophies, behavior management in sports, teaching progression, game and practice management, psychology of coaching and fundamentals of physical training. This class is part of the Coaching Certificate.

Student Learning Outcomes:

- * Develop a coaching philosophy
 - * Acquire knowledge of various coaching styles
 - * Analyze motivational techniques
 - * Apply techniques to appropriately manage athletes' behavior
 - * Model communication skills with athletes, officials, fans, parents, and facility managers
 - * Develop out of season practice and training programs
 - * Illustrate knowledge of physiological principles
 - * Identify organizations and resources that will provide reliable information to the coaching field
- (3 C: 3 lect/pres, 0 lab, 0 other)

HPER 1351 - Coaching Theory, Skills and Officiating

This course is designed to introduce the fundamentals of coaching strategy, skills and officiating knowledge for a variety of sports. Student will learn the rules, offensive and defensive strategies, application of teaching technical skills, officiating, and proper etiquette as well and an appreciation for a lifetime of activity, coaching and officiating. This class is part of the SCTCC Coaching Certificate.

Student Learning Outcomes:

- * Apply basic coaching fundamentals and knowledge of skills
 - * Demonstrate basic knowledge of sports
 - * Illustrate basic offensive and defensive strategies
 - * Demonstrate knowledge in sport specific training techniques
 - * Apply knowledge of scoring and officiating
- (2 C: 2 lect/pres, 0 lab, 0 other)

HPER 1360 - Weight Training and Conditioning

This physical education course is an activity class, which emphasizes proper strength training and cardiovascular development through continuous aerobic activity for overall fitness. This class will also cover appropriate nutrition for weight control and body composition. Students will have the information to design their own total fitness program.

Student Learning Outcomes:

- * Explain the concepts of weight training.
- * Determine workout intensity, body composition, and resting heart rate.
- * Improve body composition.
- * Improve muscular development and cardiovascular fitness through duration and intensity.
- * Design a personal program for developing and maintaining a healthy lifestyle.

- * Develop skills for life long physical fitness.
- (1 C: 1 lect/pres, 0 lab, 0 other)

HPER 1370 - Intercollegiate Baseball I

Participation in SCTCC baseball is required. Fundamentals, techniques, strategy, practice, and competition in SCTCC intercollegiate baseball will be taught. Recent participant at the high school level or high level of fitness and athleticism in addition to recommended baseball skills and abilities are required.

Student Learning Outcomes:

- * Perform beginning techniques of baseball.
 - * Demonstrate basic skills and knowledge of the rules and strategies of baseball.
 - * Demonstrate emerging sportsmanship.
 - * Begin to identify and demonstrate maintenance of proper nutrition, muscular strength and endurance, and cardiovascular fitness throughout the preseason, in-season, and postseason.
 - * Identify academic excellence to achieve NJCAA eligibility standards.
- (1 C: 0 lect/pres, 1 lab, 0 other)

HPER 1373 - Intercollegiate Baseball II

Participation in SCTCC baseball is required. Fundamentals, techniques, strategy, practice, and competition in SCTCC intercollegiate baseball will be taught. Recent participant at the high school level or high level of fitness and athleticism in addition to recommended baseball skills and abilities are required.

Student Learning Outcomes:

- * Perform beginning techniques of baseball.
 - * Demonstrate basic skills and knowledge of the rules and strategies of baseball.
 - * Demonstrate emerging sportsmanship.
 - * Begin to identify and demonstrate maintenance of proper nutrition, muscular strength and endurance, and cardiovascular fitness throughout the preseason, in-season, and postseason.
 - * Identify academic excellence to achieve NJCAA eligibility standards.
- (1 C: 0 lect/pres, 1 lab, 0 other)

HPER 1375 - Intercollegiate Women's Basketball I

Participation in SCTCC Basketball is required. Fundamentals, techniques, strategy, practice, and competition in SCTCC intercollegiate basketball will be taught. Recent participant at the high school level or high level of fitness and athleticism in addition to recommended basketball skills and abilities are required.

Student Learning Outcomes:

- * Perform beginning techniques of basketball.
 - * Demonstrate basic skills and knowledge of the rules and strategies of basketball.
 - * Demonstrate emerging sportsmanship.
 - * Begin to identify and demonstrate maintenance of proper nutrition, muscular strength and endurance, and cardiovascular fitness throughout the preseason, in-season, and postseason.
 - * Identify academic excellence to achieve NJCAA eligibility standards.
- (1 C: 0 lect/pres, 1 lab, 0 other)

HPER 1378 - Intercollegiate Women's Basketball II

Participation in SCTCC Basketball is required. Fundamentals, techniques, strategy, practice, and competition in SCTCC intercollegiate basketball will be taught. Recent participant at the high school level or high level of fitness and athleticism in addition to recommended basketball skills and abilities are required.

Student Learning Outcomes:

- * Perform beginning techniques of basketball.
 - * Demonstrate basic skills and knowledge of the rules and strategies of basketball.
 - * Demonstrate emerging sportsmanship.
 - * Begin to identify and demonstrate maintenance of proper nutrition, muscular strength and endurance, and cardiovascular fitness throughout the preseason, in-season, and postseason.
 - * Identify academic excellence to achieve NJCAA eligibility standards.
- (1 C: 0 lect/pres, 1 lab, 0 other)

HPER 1380 - Intercollegiate Men's Basketball I

Participation in SCTCC Basketball is required. Fundamentals, techniques, strategy, practice, and competition in SCTCC intercollegiate basketball will be taught. Recent participant at the high school level or high level of fitness and athleticism in addition to recommended basketball skills and abilities are required.

Student Learning Outcomes:

- * Perform beginning techniques of basketball.
 - * Demonstrate basic skills and knowledge of the rules and strategies of basketball.
 - * Demonstrate emerging sportsmanship.
 - * Begin to identify and demonstrate maintenance of proper nutrition, muscular strength and endurance, and cardiovascular fitness throughout the preseason, in-season, and postseason.
 - * Identify academic excellence to achieve NJCAA eligibility standards.
- (1 C: 0 lect/pres, 1 lab, 0 other)

HPER 1383 - Intercollegiate Men's Basketball II

Participation in SCTCC Basketball is required. Fundamentals, techniques, strategy, practice, and competition in SCTCC intercollegiate basketball will be taught. Recent participant at the high school level or high level of fitness and athleticism in addition to recommended basketball skills and abilities are required.

Student Learning Outcomes:

- * Perform beginning techniques of basketball.
 - * Demonstrate basic skills and knowledge of the rules and strategies of basketball.
 - * Demonstrate emerging sportsmanship.
 - * Begin to identify and demonstrate maintenance of proper nutrition, muscular strength and endurance, and cardiovascular fitness throughout the preseason, in-season, and postseason.
 - * Identify academic excellence to achieve NJCAA eligibility standards.
- (1 C: 0 lect/pres, 1 lab, 0 other)

HPER 1385 - Intercollegiate Softball I

Participation in SCTCC Softball is required. Fundamentals, techniques, strategy, practice, and competition in SCTCC intercollegiate softball will be taught. Recent participant at the high school level or high level of fitness and athleticism in addition to recommended softball skills and abilities are required.

Student Learning Outcomes:

- * Perform beginning techniques of softball.
 - * Demonstrate basic skills and knowledge of the rules and strategies of softball.
 - * Demonstrate emerging sportsmanship.
 - * Begin to identify and demonstrate maintenance of proper nutrition, muscular strength and endurance, and cardiovascular fitness throughout the preseason, in-season, and postseason.
 - * Identify academic excellence to achieve NJCAA eligibility standards.
- (1 C: 0 lect/pres, 1 lab, 0 other)

HPER 1388 - Intercollegiate Softball II

Participation in SCTCC Softball is required. Fundamentals, techniques, strategy, practice, and competition in SCTCC intercollegiate softball will be taught. Recent participant at the high school level or high level of fitness and athleticism in addition to recommended softball skills and abilities are required.

Student Learning Outcomes:

- * Perform beginning techniques of softball.
 - * Demonstrate basic skills and knowledge of the rules and strategies of softball.
 - * Demonstrate emerging sportsmanship.
 - * Begin to identify and demonstrate maintenance of proper nutrition, muscular strength and endurance, and cardiovascular fitness throughout the preseason, in-season, and postseason.
 - * Identify academic excellence to achieve NJCAA eligibility standards.
- (1 C: 0 lect/pres, 1 lab, 0 other)

HPER 1390 - Intercollegiate Volleyball I

Participation in SCTCC Volleyball is required. Fundamentals, techniques, strategy, practice, and competition in SCTCC intercollegiate volleyball will be taught. Recent participant at the high school level or high level of fitness and athleticism in addition to recommended volleyball skills and abilities are required.

Student Learning Outcomes:

- * Perform beginning techniques of volleyball.
- * Demonstrate basic skills and knowledge of the rules and strategies of volleyball.
- * Demonstrate emerging sportsmanship.
- * Begin to identify and demonstrate maintenance of proper nutrition, muscular strength and endurance, and cardiovascular fitness throughout the preseason, in-season, and postseason.

- * Identify academic excellence to achieve NJCAA eligibility standards.
- (1 C: 0 lect/pres, 1 lab, 0 other)

HPER 1393 - Intercollegiate Volleyball II

Participation in SCTCC Volleyball is required. Fundamentals, techniques, strategy, practice, and competition in SCTCC intercollegiate volleyball will be taught. Recent participant at the high school level or high level of fitness and athleticism in addition to recommended volleyball skills and abilities are required.

Student Learning Outcomes:

- * Perform beginning techniques of volleyball.
 - * Demonstrate basic skills and knowledge of the rules and strategies of volleyball.
 - * Demonstrate emerging sportsmanship.
 - * Begin to identify and demonstrate maintenance of proper nutrition, muscular strength and endurance, and cardiovascular fitness throughout the preseason, in-season, and postseason.
 - * Identify academic excellence to achieve NJCAA eligibility standards.
- (1 C: 0 lect/pres, 1 lab, 0 other)

HPER 2017 - Injury Prevention, Care, 1st Aid and CPR In Sports

This course is designed to provide participants with the knowledge of what they are to do in an athletic related emergency before medical help arrives. Participants will be instructed to recognize and respond to athletic emergencies. This course will focus on cardiopulmonary resuscitation (CPR), automated external defibrillator (AED) use, how to respond in a choking situation, and basic first aid related to athletic competition. Students will have the opportunity to earn American Heart Association 1st Aid, CPR and AED certification. This course will provide introductory skills needed by coaches expected to provide initial care of injured athletes. Areas covered by this course will include Anatomy and Kinesiology. Participants will gain knowledge of injury prevention and care and rehabilitation. Practical skills in taping, splinting, wrapping, CPR/AED, choking and spine stabilization will be demonstrated.

Student Learning Outcomes:

- * Identify ways to prevent injury and/or illness in an athletic setting.
 - * Assess sports related emergencies.
 - * Respond appropriately to sports related emergencies.
 - * Administer CPR and choking intervention.
 - * Provide basic care for an athletic injury or sudden illness.
 - * Communicate effectively in an emergency.
 - * Demonstrate the correct use of AED.
 - * Demonstrate knowledge of care and prevention for athletic injuries.
 - * Apply proper taping, bandaging, wrapping, and bracing techniques for athletic injuries.
 - * Analyze legal issues in caring for athletic injuries.
 - * Examine specific injuries to the human anatomy.
 - * Recognize emergency and environmental conditions.
 - * Manage the healing process of athletic injuries.
- (4 C: 4 lect/pres, 0 lab, 0 other)

HUMN 1305 - Introduction to Latin American Studies

Meets MN Transfer Curriculum Goal Areas 5 and 8 - History and the Social and Behavioral Sciences and Global Perspectives. This course provides a panoramic view of Latin America from Pre-Columbian times to the present. Students will examine the history of Latin America, including Mexico, Central and South America, and the Caribbean. The course will focus on the civilization and rich culture of the areas, as well as explore contemporary relations with global powers. Through the literature, art, music, and video components, students will be able to analyze and understand important aspects of Latin American history and cultures. The course provides a historical look (pre-Hispanic to present) at the various cultures/civilizations of Latin America, but specific countries may vary each semester.

Student Learning Outcomes:

- * Identify the countries and cultures that constitute Latin America.
- * Distinguish the history of the three most populous indigenous empires (Aztec, Maya, and Inca).
- * Compare and contrast viewpoints of the events surrounding the Mexican Conquest.
- * Identify major events and figures in Latin American history.
- * Describe how key issues in Latin America shape current identities and experiences.

- * Apply a comparative perspective to the social, economic, religious and political experiences of various Latin American cultures.
- * Examine cultural production in its socio-historical context.
- * Respond critically to literary texts, films, art, and music about and from Latin America.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

HUMN 1320 - Holocaust and Genocide Studies

Meets Mn Transfer Curriculum Goal Areas 6 and 9 - Humanities and Ethical and Civic Responsibility. This course provides a broad introduction to the Holocaust and contemporary genocide studies. Through readings, films and discussion students can analyze the Holocaust and other contemporary genocide literature. Historical events and perspectives which surround the contemporary genocides will be examined. Students will explore the Genocide Watch website and study ongoing global conflicts leading to genocide and related to past genocides.

Student Learning Outcomes:

- * Compare and contrast the Holocaust and other genocides studies.
- * Explore Holocaust and genocide literature through survivor memories
- * Identify themes in Holocaust and genocide literature.
- * Examine themes in specific literary pieces of Holocaust and genocide literature.
- * Explore the use of propaganda and its contribution to the mind-set of hate.
- * Identify historical events and people surrounding the Holocaust and other contemporary (20th and 21st Century) genocides.
- * Define Holocaust and genocide terms.
- * Identify current conflicts that are or could be genocidal.
- * Outline current recommendations and resources to enable continued participation in genocide awareness and prevention.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

HUMN 1340 - Middle Eastern Cultures

Meets MN Transfer Curriculum Goal Areas 6 and 8 - Humanities and Global Perspectives. This course aims to expand students' knowledge of the various cultures within the Middle East. It examines how the region's cultural values have been influenced by their shared history since the 19th century, as well as by their major religion of Islam. Students thus achieve a thorough understanding of the various cultures within the region by examining the customs and rituals, critiquing culturally influenced political systems, and gaining insight from speakers and field trips.

Student Learning Outcomes:

- * Analyze the factors that led to the creation of the current borders within the Middle Eastern countries.
- * Analyze, synthesize, and critically examine cultural roots and literacy.
- * Research the role of Islam and colonialism in shaping the Middle East region
- * Differentiate between primary and secondary identities to understand the dynamics of national unity.
- * Evaluate colonial attitudes and their impact on today's stereotypes about the Middle East.
- * Critically evaluate how culture and language shape our thoughts, behaviors, and attitudes
- * Identify the geographical distribution of ethnic groups by colonialist powers
- * Evaluate a current conflict in the Middle East using a historical and social perspective to gain deeper understanding.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

HUMN 2350 - Film and United States Culture

Meets MN Transfer Curriculum Goal Area 6. This course examines how the Hollywood film industry has affected U.S. culture, and continues to influence our society. By watching, discussing, and writing about films you will investigate the culture in which we live and the movies our culture produces. The history of the movie industry is an intriguing subject that reveals the evolving interaction of society and the film industry. Topics such as the early star and studio system, the Hollywood style, and narrative offer a base to explore various film genres, and explain how movies both influence and exhibit American culture.

Student Learning Outcomes:

- * Explain United States film history within historical and social contexts.
- * Develop cinematic literacy via film critiques, analyses and discussions.
- * Describe how the technology of movies has influenced the United States film industry.
- * Explain Hollywood film industry's place in United States popular culture.
- * Analyze the role of genre in United States film history, and the relationship between genre and United States social history.
- * Illustrate "realism" and how it relates to motion pictures
- * Evaluate our roles as passive spectators of the medium.
- * Critically analyze films to appreciate the medium as art and an industry.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

HUMN 2352 - Holocaust Field Studies

Meets MN Transfer Goal Area 6 - Humanities. This course will introduce students to the United States Holocaust Memorial Museum and give them an opportunity to tour the museum. The tour will give the students a chance to view primary documentation and actual Holocaust artifacts. Students will also have the privilege to meet and interact with a Holocaust survivor and hear his/her experience firsthand.

Student Learning Outcomes:

- * Acquire information on Judaism by visiting a Synagogue and speaking with a Rabbi
- * Attend and tour a traveling Holocaust exhibit in the Twin Cities
- * Read a Holocaust survivor's memoir and then discuss with the survivor his/her experience
- * Discover the mindset and main events surrounding and including the Holocaust and its aftermath by touring the National Holocaust Memorial Museum in Washington DC
- * Discuss the permanent exhibit in the National Holocaust Memorial Museum
- * Research and then prepare a formal presentation of the information learned from the permanent exhibit tour. The presentation will be given to members of the college community

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(1 C: 1 lect/pres, 0 lab, 0 other)

ICVT 1422 - Cardiovascular Instrumentation

Cardiovascular Instrumentation is a study of concepts that serve as the foundation for the cardiovascular technology field. This course covers in detail biological effects of radiation, radiation safety, x-ray tubes and image intensifiers. Students explore benefits, risks, and indications of physiologic monitoring. Learners will be able to identify parts and address the function of the physiologic monitoring transducer.

Student Learning Outcomes:

- * Define selected terms related to the cardiac field.
- * Categorize phases of systolic and diastolic ventricular function.
- * Describe the function of the fluid-filled physiologic monitoring transducer system.
- * Identify the parts and functions of the Wheatstone bridge.
- * Differentiate between physics principles of positive/negative hydrostatic pressure head.
- * Describe the functions of an x-ray tube and image intensifier.
- * Identify the structures of an x-ray tube and image intensifier.
- * Describe the origin of scatter radiation and methods used to control scatter radiation.
- * List the biological effects of radiation exposure and techniques for reducing radiation exposure.
- * Comprehend the benefits of monitoring arterial pressure, central venous pressure (CVP), and pulmonary artery pressure.

Prerequisite(s): ICVT1445.

(3 C: 3 lect/pres, 0 lab, 0 other)

ICVT 1424 - Catheterization Lab Fundamentals I

Catheterization Lab Fundamentals I focuses on diagnostic procedures performed in the Cardiac Catheterization lab. Students will learn the history of Coronary Angiograms, Myocardial Circulation, catheter recognition as well as basic catheterization techniques for right and left heart catheterization. Learners will discuss

vascular approaches for different procedures. Students will have the opportunity to calculate Fick cardiac output measurements for evaluation.

Student Learning Outcomes:

- * Define selected terms related to cath lab procedures, hemodynamic monitoring, and coronary angiography.
- * Analyze hemodynamic data needed for Fick cardiac output calculations.
- * Calculate cardiac output values using the Fick cardiac output principles.
- * Identify catheter bends used for Angiogram procedures.
- * Select the appropriate catheter for stated procedures.
- * Describe the techniques used in completing a routine right heart Cath on the normal adult patient.
- * Describe the techniques used in completing a routine left heart Cath with coronaries and ventriculography on the normal adult patient.
- * Summarize the history of cardiac catheterization and the progression of the procedures over time.

Corequisite(s): ICVT1443

Prerequisite(s): ICVT1445.

(3 C: 3 lect/pres, 0 lab, 0 other)

ICVT 1430 - EKG Interpretation

EKG Interpretation provides a detailed understanding of the components and make-up of the cardiac conduction system. This course covers the physiologic components of an EKG, from basic to advanced concepts. Students will have the opportunity to perform, analyze, and interpret 12-lead EKGs performed on fellow classmates or other living patients. Additional focus will include normal rhythms, atrial rhythms, ventricular rhythms, heart blocks, and acute myocardial infarction recognition and location.

Student Learning Outcomes:

- * Describe phases in the action potential of the cardiac cell
- * Label Einthoven's triangle as it pertains to limb leads and augmented leads
- * Identify P wave, QRS complex, T wave, ST segment, PR interval, and PR segment on a normal EKG
- * Demonstrate proper 12-lead EKG patch placement on a living patient (classmate, family member, etc.) Interpret EKG rhythm strips containing normal sinus rhythms, atrial rhythms, junctional rhythms, ventricular rhythms, and AV(atrioventricular) blocks.
- * Identify temporary and permanent pacemaker indications
- * Recognize the location of myocardial infarction based on EKG interpretation.

Prerequisite(s): ICVT1445.

(1 C: 1 lect/pres, 0 lab, 0 other)

ICVT 1441 - Introduction to Clinics

Introduction to Clinics explores the main ideas and basic concepts of an entry-level CVT (Cardiovascular Tech). Learners will perform tasks related to vital signs, sterile technique, and patient transfers. Additional topics will include death and dying, universal precautions, and ethical theory and concepts. Lecture and simulated laboratory experience prepare the student to perform patient care utilizing critical thinking and clinical skills.

Student Learning Outcomes:

- * Identify current safety and infection control standards established by OSHA, CDC, and other agencies.
- * Compare and contrast the links of the chain of infection and their role in the disease process.
- * Describe the correct patient-transfer methods utilizing proper body mechanics.
- * Demonstrate how to measure vital signs.
- * Demonstrate an understanding of universal precautions.
- * Identify responsibilities in various medical situations, i.e., emergencies, dressings and drains, latex allergies.
- * Demonstrate basic sterile technique by performing open gloving technique, establishing, and maintaining a sterile field as well as introducing items on the sterile field.
- * Differentiate between "confidential information" and "confidentiality".
- * Distinguish between ethical situations and ethical problems.
- * Define patient confidentiality.
- * Explain the main ideas of the basic concepts an entry-level CVT will acquire, i.e., basic knowledge of EKG, basic knowledge of radiation, catheterization lab etiquette, CVT job roles, and sheath insertion.

(3 C: 3 lect/pres, 0 lab, 0 other)

ICVT 1443 - Cardiovascular Clinical I

Cardiovascular Clinical I introduces the aspects of cardiac catheterization lab in a hospital or simulated clinical laboratory setting. Using hands-on tools, learners perform sterile techniques, hand washing, entry-level scrubbing, circulating, monitoring, and lab set-up. Learners will use the simulator to learn catheter manipulation techniques and perform diagnostic angiograms.

Student Learning Outcomes:

- * Prepare the physiologic monitor for use and troubleshoot common machine errors.
- * Record, analyze, and process hemodynamic data for interpretation in the simulated cath lab setting.
- * Demonstrate appropriate surgical scrub and hand washing technique.
- * Demonstrate proper gowning and gloving technique.
- * Prepare a sterile table for routine cardiac cath procedure.
- * Assist in performing right heart cardiac cath procedures.
- * Assist in performing left heart cardiac cath procedures, including coronaries.
- * Demonstrate set-up and operation of basic contrast injector systems.
- * Demonstrate Endovascular Basic skills using the simulator.
- * Perform diagnostic procedures using the simulator.
- * Demonstrate an understanding of team communication during procedures.
- * Perform sterile table setup in the allotted time.

Corequisite(s): ICVT1424

(5 C: 0 lect/pres, 5 lab, 0 other)

ICVT 1445 - Cardiovascular Anatomy and Physiology

Cardiovascular Anatomy and Physiology studies the anatomy, physiology, and structural relationships of the human heart and vascular system. Students learn cardiac terminology that serves as a foundation for all CVT courses. The lab component focuses on heart and torso models, angiographic views, Wiggers diagram and heart dissection.

Student Learning Outcomes:

- * Define selected terms related to the cardiovascular system.
- * List the components and function of the blood.
- * Describe the structures and function of the cardiovascular system including the heart, major vessels, and coronary vasculature.
- * Identify the hemodynamic waveforms and pressure values of each of the cardiac chambers and major vessels.
- * Describe the structure and function of the conduction system.
- * Distinguish angiographic views and coronary anatomy within those views.
- * Summarize the cardiac physiology of one cardiac cycle using the Wiggers diagram.

Prerequisite(s): BLGY2310.

(3 C: 2 lect/pres, 1 lab, 0 other)

ICVT 2405 - Cardiovascular Pathology

Cardiovascular Pathology is an in-depth study of the pathologies of the cardiac and vascular systems, their physiologic symptoms and outcomes. This course includes discussion of acquired diseases, embryological development of the heart, fetal circulation, and congenital heart defects. This course will cover in detail the atherosclerotic process of heart disease and how it relates to myocardial infarction. Additional focus will include heart failure and valve disease.

Student Learning Outcomes:

- * Define selected terms related to diseases and congenital anomalies of the cardiovascular system.
- * Identify cardiac valvular disease processes, including their hemodynamic changes.
- * Identify the pathologic changes that occur in coronary artery disease and myocardial infarction; summarize treatment and intervention modalities.
- * Compare and contrast forward failure and backward failure.
- * Identify physiologic changes that occur in select acquired cardiac diseases.
- * Describe the embryologic development of the heart and great vessels.
- * Identify the blood flow pathway in fetal circulation.
- * Describe the congenital anomalies of the heart and great vessels, identifying shunt, prognosis and palliative and definitive surgical repairs.
- * Describe the clinical significance of both left-to-right and right-to-left shunts.
- * Analyze hemodynamic data to calculate intracardiac shunt measurements.

(3 C: 3 lect/pres, 0 lab, 0 other)

ICVT 2427 - Catheterization Lab Fundamentals II

Catheterization Lab Fundamentals II is a continuation of ICVT 1424 Catheter-

ization Lab Fundamentals I. Learners will gain in-depth knowledge of cardiac medications and use. This course has additional emphasis on heart failure, advanced cardiovascular diagnostic and therapeutic procedures, percutaneous coronary intervention procedures, cardiac surgical procedures, pacemakers, and electrophysiology.

Student Learning Outcomes:

- * Define selected terms related to percutaneous coronary interventions and cardiac surgical procedures.
- * Compare and select appropriate interventional tools for the stated procedure.
- * Describe the CVT role in angioplasty/stent placement and other interventional procedures.
- * Describe the proper use of cardiac medications during a cardiac cath procedure.
- * Describe the CVT role in a variety of electrophysiology studies and temporary and permanent pacemaker procedures.
- * Identify the use and function of an intra-aortic balloon pump.
- * Analyze hemodynamic data required to calculate valve areas.
- * Identify surgical instruments used in permanent pacemaker implantation.

Corequisite(s): ICVT2446

Prerequisite(s): ICVT1424.

(3 C: 3 lect/pres, 0 lab, 0 other)

ICVT 2446 - Cardiovascular Clinical II

Cardiovascular Clinical II is a continuation of Cardiovascular Clinical I. Students will gain practical training with a focus on completing and becoming proficient in all duties of the cardiovascular technologist in the catheterization lab. The Learner will perform diagnostic and interventional procedures in the scrub, circulator and hemodynamic monitoring role. This course will include instruction from field experts in areas of structural heart, ventricular assist devices, and interventional tools. Learners will use the simulator to manage cases that include interventional techniques.

Student Learning Outcomes:

- * Record hemodynamic data for interpretation.
- * Prepare catheters on a sterile field for interventional cardiac cath procedure.
- * Assist in performing balloon angioplasty/stent placement procedures
- * Demonstrate set-up and operation of advanced contrast injector systems.
- * Demonstrate proper use of the simulator to perform interventional cases and right heart procedures.
- * Demonstrate an understanding of team communication during procedures.
- * Perform sterile table setup in the allotted time.

Corequisite(s): ICVT2427

Prerequisite(s): ICVT1443.

(5 C: 0 lect/pres, 5 lab, 0 other)

ICVT 2450 - Applied Clinical Internship

Students will participate in an advanced and intense internship in a hospital or clinic setting. Specific detailed learning objectives are developed for each course by the college faculty. Students will broaden and perfect their skills through hands-on participation. Students will be able to carry out the everyday duties of the technologist when their clinical experience is complete. Time is spent preparing for the national registry exam post-graduation.

Student Learning Outcomes:

- * Define selected terms related to clinical cardiac physiology and pathophysiology.
- * Perform day-to-day cardiac cath lab operations (patient/staff interaction, restocking, etc.).
- * Identify cardiac pathology from cardiac cath lab findings.
- * Perform advanced measurements and calculations to quantify the severity of cardiac disease states.
- * Work as a team member within the cardiac cath lab; displaying professionalism, courtesy to patients and clinical staff, and a willingness to learn.
- * Adhere to HIPAA and patient confidentiality policies of clinical sites.

Prerequisite(s): ICVT2427, ICVT2446.

(13 C: 0 lect/pres, 0 lab, 13 other)

INTS 1150 - On Course

Strategies (including tools and skill development) to help students create greater success in college and in life are introduced in this course. The course provides an interactive environment for students to identify their motivations and opportunities for personal growth, engage in academic and career goal and decision

making, and explore campus resources and services. Through these tools, skills, resources, and services, students are empowered to take ownership and control of their academic and personal life outcomes and experiences.

Student Learning Outcomes:

- * Recognize how to take personal responsibility, gaining greater control over the outcomes and experiences created both in college and in life
- * Contrive greater inner motivation by discovering their own personally meaningful goals
- * Identify and employ numerous strategies for taking control of their time and energy, allowing them to move more effectively and efficiently toward the accomplishment of their goals and dreams
- * Create and develop mutually supportive relationships that will support them to achieve their goals and dreams as they assist others to achieve theirs
- * Identify and revise self-defeating patterns of behavior, thought, and emotion as well as unconscious limiting beliefs
- * Recognize and use effective strategies for managing distressing emotions and increasing an inner sense of well being and happiness
- * Describe how to develop self-acceptance, self-confidence, self-respect, self-love, and unconditional self-worth
- * Demonstrate improved writing skills through the extensive writing practice offered by guided journal entries
- * Define methods, tools, and thinking skills essential for analyzing and solving problems in academic, professional, and personal lives
- * Identify the personal qualities and skills that employers identify as essential for excelling in the world of work
- * Synthesize identified services, resources, tools, and skills for individual success

(1 C: 1 lect/pres, 0 lab, 0 other)

INTS 1165 - Student Success Seminar

This course is designed to bridge the transition into the college experience for incoming students. During this course, students are introduced to the culture of higher education through learning to set goals, staying motivated, developing effective study habits and time management skills, balancing responsibilities, building connections, and creating a plan for success from college to career.

Student Learning Outcomes:

- * Create a plan for success from college to career.
- * Apply effective learning strategies for academic success.
- * Demonstrate short-term, mid-term, and long-term goal setting
- * Demonstrate time management by assessing and prioritizing commitments to maximize college success.
- * Identify campus and community support services.
- * Understand the role of financial literacy in a plan for success from college to career
- * Develop strategies to build and maintain motivation
- * Integrate the seven dimensions of wellness into the student's academic plan
- * Demonstrate strategies to communicate effectively and proactively with instructors and other support staff.
- * Navigate online learning platforms.

(3 C: 3 lect/pres, 0 lab, 0 other)

ITEC 1100 - Software Support

This course will provide practical knowledge of installing and configuring operating systems, including Windows, iOS, Android, Apple OS X and Linux, Microsoft Office (Word, PowerPoint, Excel and Outlook, software installation, and utility management are needed to provide technical support for computer users. It also addresses security and the fundamentals of cloud computing and operational procedures. This course will help students prepare for careers such as Computer Support Specialist, PC Repair Technician, Network Administrator, Network Engineer, Systems Analyst, and Systems Engineer. This course addresses many of the objectives of the CompTIA A+ Essentials (220-902) Certification Exam and completes the preparation for the full A+ certification exam.

Student Learning Outcomes:

- * Identify the basic components of a desktop computer.
- * Demonstrate the fundamental use of Microsoft Office products.
- * Install operating systems using appropriate methods based on a given scenario.
- * Summarize the properties and purpose of services provided by the host network.
- * Perform common preventative maintenance procedures using the appropriate OS tools.

- * Deploy security best practices on a workstation based on a given scenario.
(3 C: 2 lect/pres, 1 lab, 0 other)

ITEC 1110 - Introduction to Computer Security

This course develops students' knowledge and skills in security principles, technologies, and procedures for defending networks. It focuses on the latest operational skills and knowledge students need for real-world jobs where computer security is everyone's responsibility. The content and materials are designed to help prepare students for the Cybersecurity Essentials certification.

Student Learning Outcomes:

- * Understand the most common threats, attacks, and vulnerabilities.
- * Gain insights into how businesses protect their operations from attacks.
- * Understand security controls for networks, servers, and applications.
- * Implement proper procedures for data confidentiality and availability.
- * Develop critical thinking and problem-solving skills using physical equipment and Cisco Packet Tracer.

(2 C: 1 lect/pres, 1 lab, 0 other)

ITEC 1120 - Windows Desktop Operating System

Students will study the skills needed to effectively manage the current Microsoft Windows desktop Operating System (OS). Topics include installing the OS and applications, using functions and utilities, managing security, and the importance of managing the computer through the command line environment. By completing this course, students are prepared to troubleshoot a Windows desktop system successfully. This course also prepares students for the current Microsoft desktop OS configuration exam. Completing this course helps prepare a student for a career in systems administration, network administration, information security, or technology support.

Student Learning Outcomes:

- * Perform an installation and upgrade of the Windows desktop OS.
- * Configure devices and device drivers.
- * Control access to local hardware and applications.
- * Configure Windows settings for network connectivity
- * Apply security and access settings for shared resources.
- * Configure a Windows computer for remote access and mobility.
- * Configure system and data recovery.

(3 C: 2 lect/pres, 1 lab, 0 other)

ITEC 1130 - Introduction to Networks I

Introduction to Networks I covers the architecture, structure, functions, and components of the Internet and other computer networks. Students will discover how networks operate and how to build simple Local Area Networks (LAN), perform basic configurations for routers and switches, and implement Internet Protocol (IP).

Student Learning Outcomes:

- * Describe how physical and data link layer protocols support the operation of Ethernet in a switched network.
- * Explain how the upper layers of the Open Systems Interconnect (OSI) model support network applications.
- * Troubleshoot connectivity in a small network.
- * Describe the operation of protocols at the (OSI) Data Link Layer and explain how they support communications.
- * Use Cisco command-line interface (CLI) commands to perform basic router and switch configurations and analyze the operations and features of common OSI Application Layer protocols.

(2 C: 1 lect/pres, 1 lab, 0 other)

ITEC 1200 - Hardware Support

Students learn the functionality of hardware components and suggested best practices in maintenance and safety issues. Students will learn to diagnose, troubleshoot, and maintain desktop and server computer components and computer technology fundamentals, such as Personal Computer (PC) installation, configuration, mobile devices, networking, safety procedures, and prohibited content. Topics include hardware compatibility, system architecture, memory, storage, expansion devices, peripherals, customer service, safety, and preventative maintenance. This course will help students prepare for careers such as Computer Support Specialist, PC Repair Technician, Network Administrator, Network Engineer, Systems Analyst, and Systems Engineer. This course addresses many of the objectives of the CompTIA A+ Essentials (220-901) Certification Exam and prepares students for the first of two exams required for the A+ certification.

Student Learning Outcomes:

- * Explain computer components, importance, purpose, and properties.
- * Configure appropriate media storage devices.
- * Troubleshoot common problems related to motherboards, Random Access Memory (RAM), Central Processing Unit (CPU), and power with appropriate tools based on a given scenario.
- * Troubleshoot and repair common mobile device issues while following appropriate procedures.
- * Summarize topical information and explain its importance in the technology field.

(2 C: 1 lect/pres, 1 lab, 0 other)

ITEC 1220 - Microsoft Server I

Microsoft Server I is the first in a series of courses that prepares students to plan, implement, and manage a Windows Server environment. By providing the backbone of an enterprise-level environment, students will bring sought-after systems administration and skills to the workplace. The Microsoft Server I course is designed to provide comprehensive hands-on learning in system installation, configuration, and feature management based on the needs and goals of an organization. The training from this course helps prepare students for careers in network administration, systems administration, systems analyst, and technology support.

Student Learning Outcomes:

- * Implement the installation and upgrade of the Microsoft Server Operating System (OS).
- * Configure server roles.
- * Configure local and remote storage solutions.
- * Evaluate routing and remote access authentication and encryption options.
- * Create group policy objects to satisfy various scenarios.
- * Implement server virtualization with Hyper-V.
- * Apply proper networking configuration for successful network communication.

Prerequisite(s): ITEC1120, MSNA1214

(3 C: 2 lect/pres, 1 lab, 0 other)

ITEC 1230 - Introduction to Networking II

Introduction to Networks II covers the architecture, structure, functions, and components of the Internet and other computer networks. Students perform basic configurations for routers and switches and implement Internet Protocol (IP).

Student Learning Outcomes:

- * Configure switches and end devices with security best practices to access local and remote network resources.
- * Configure routers with security best practices to enable end-to-end connectivity between remote devices.
- * Design, calculate, and apply subnet masks and IPv4 and IPv6 addresses to fulfill given requirements and verify connectivity between devices.
- * Utilize standard network utilities to verify small network operations, analyze data traffic, and troubleshoot network problems.

Prerequisite(s): ITEC1130, MSNA1230

(2 C: 1 lect/pres, 1 lab, 0 other)

ITEC 1240 - Introduction to Virtualization

Introduction to Virtualization focuses on server virtualization, how it has helped so many enterprises, and what students need to test and deploy it. We examine VMware and Microsoft's virtualization offerings available today and administer a virtual enterprise environment. The course allows students to build and manage a virtual environment for hands-on training and experimentation.

Student Learning Outcomes:

- * Evaluate the differences in cloud services.
- * Summarize cloud characteristics and terms.
- * Deploy virtual machines and devices.
- * Explain the benefits of virtualization in a cloud environment.
- * Prioritize resources using best practices.
- * Diagnose system performance issues.

(2 C: 1 lect/pres, 1 lab, 0 other)

ITEC 1250 - Linux Operating System

The Linux course introduces students to the knowledge and skills to manage Linux server and workstation distributions. This course explores the tools and techniques used by Linux system administrators and end users to achieve their

day-to-day work in a Linux environment. Hands-on lab work in the Linux Server course prepares students to resolve real-world issues through graphical and command line interfaces. Concepts such as file and service management, performance tuning, and problem resolution are implemented through engaging, real-world scenarios. Students completing this course are prepared for the CompTIA Linux+ certification exam.

Student Learning Outcomes:

- * Determine and configure hardware settings.
- * Install boot management tools.
- * Apply package management processes.
- * Utilize the Linux command line.
- * Perform basic file management.
- * Resolve technical issues.

(3 C: 2 lect/pres, 1 lab, 0 other)

ITEC 2100 - Introduction to Helpdesk

The course provides students with the fundamentals to provide basic help desk services. Students will learn to perform activities associated with real-world customer support operations. The focus of this course will be on the development of interpersonal skills and communication with end-users to troubleshoot and resolve real-world issues, as well as to identify user hardware and software requirements. Students will also develop end-user training and written documentation for clients. Students completing this course will be prepared to receive requests for technical assistance and respond professionally and efficiently to those requests.

Student Learning Outcomes:

- * Investigate hardware and software problems.
- * Demonstrate effective interpersonal and communication skills when working with end-users.
- * Document end-user technical requirements.
- * Prepare hardware and software technical specifications for purchasing new systems.
- * Document problem circumstances and resolutions to assist in resolving future occurrences.
- * Create training plans and reference materials.

Prerequisite(s): ITEC1130, MSNA1230

(3 C: 2 lect/pres, 1 lab, 0 other)

ITEC 2120 - Microsoft Server II

Students will study the skills necessary to install and deploy Microsoft Active Directory in an on-premises and cloud-based environment. This course will prepare students for typical server operations such as installing, configuring, and maintaining the Active Directory (AD) environment and protecting the environment through management best practices. Windows Server II will help validate the skills and knowledge necessary to administer a Windows Server infrastructure in an enterprise environment. With a focus on real skills for real jobs, this course prepares students to prove mastery of core services such as user and group management, network access, and data security.

Student Learning Outcomes:

- * Install and configure AD in Microsoft Server
- * Evaluate AD environment on-premises and in Azure.
- * Configure AD based on a given set of requirements.
- * Design security using authentication and encryption techniques.
- * Implement backups of critical server components and data.
- * Develop and apply group policies based on security and access criteria.

Prerequisite(s): ITEC1220, MSNA1213

(3 C: 2 lect/pres, 1 lab, 0 other)

ITEC 2130 - Advanced Networking

This course describes the architectures and considerations for designing, securing, operating, and troubleshooting enterprise networks. This course covers Wide-Area Network (WAN) technologies and Quality of Service (QoS) mechanisms for secure remote access. It also introduces software-defined networking, virtualization, and automation concepts that support the digitalization of networks. Students gain skills to configure and troubleshoot enterprise networks and learn to identify and protect against cybersecurity threats. Students are introduced to network management tools and learn key software-defined networking concepts, including controller-based architectures and how Application Programming Interfaces (APIs) enable network automation.

Student Learning Outcomes:

- * Configure single-area Open Shortest Path First version 2 (OSPFv2) in both point-to-point and multiaccess networks.
- * Explain how to mitigate threats and enhance network security using access control lists and security best practices.
- * Implement standard Internet Protocol version 4 (IPv4) Access Control Lists (ACLs) to filter traffic and secure administrative access.
- * Configure Network Address Translation (NAT) services on the edge router to provide IPv4 address scalability.
- * Explain techniques to address scalability and secure remote access for Wide Area Networks (WANs).
- * Explain how to optimize, monitor, and troubleshoot scalable network architectures.
- * Explain how networking devices implement Quality of Service (QoS).
- * Implement dynamic protocols to automate the management of a network.
- * Explain how virtualization, software-defined networking, and automation affect evolving networks.

Prerequisite(s): ITEC1230, MSNA1255

(3 C: 2 lect/pres, 1 lab, 0 other)

ITEC 2240 - Artificial Intelligence Tools and Automation

Artificial Intelligence (AI) Tools and Automation is designed to provide students with a foundational understanding of Artificial Intelligence (AI) and automation. Students will explore key concepts, tools, and techniques, including machine learning, data processing, Robotic Process Automation (RPA), and AI model development. Through hands-on projects and real-world applications, this course emphasizes ethical considerations, industry trends, and the integration of AI with emerging technologies like the Internet of Things (IoT). By the end of the course, students will have the knowledge and skills to design, implement, and analyze AI-driven solutions for various challenges.

Student Learning Outcomes:

- * Understand the core concepts, types, and applications of artificial intelligence (AI) and automation, including their impact on industries and society.
- * Evaluate basic Artificial Intelligence (AI) models using machine learning algorithms and tools.
- * Demonstrate proficiency in data collection, preprocessing, and analysis to support Artificial Intelligence (AI) and automation projects.
- * Implement simple automated workflows using robotic process automation (RPA) tools and integrate Artificial Intelligence (AI) with other technologies.
- * Critically analyze ethical, societal, and economic implications of Artificial Intelligence (AI) and automation while considering future trends and advancements in the field.

Prerequisite(s): ITEC1250, MSNA2211

(3 C: 2 lect/pres, 1 lab, 0 other)

ITEC 2250 - Information Technology Internship

This course emphasizes interaction between the student and internship site, emphasizing applying the learned classroom curriculum in an on-the-job environment. The internship program will be available to students who have demonstrated readiness and willingness to learn in an on-the-job situation and have successfully completed at least 50% of their program coursework. Students will learn from hands-on training and real-world application in a day-to-day work environment, emphasizing the program's computer and network installation, configuration, maintenance, administration, and repair skills. The internship is considered a second-year class.

Student Learning Outcomes:

- * Adhere to the attendance policy and follow the rules and policies of the internship organization.
- * Apply knowledge and skills learned at college to meet job requirements.
- * Demonstrate job skills necessary to accomplish assigned tasks.
- * Demonstrate dependability, initiative, and ethical behaviors while performing assigned tasks.
- * Observe and record job tasks, work standards, and policies at the internship site.

(2 C: 0 lect/pres, 0 lab, 2 other)

ITEC 2260 - Capstone

The Capstone course is taken in the final semester of Network Administration and Cybersecurity programs as a culminating experience where students demonstrate their knowledge, skills, and abilities to perform outcomes from their previous

coursework. In addition to demonstrating mastery of the technical skills in the program, students will also exhibit their ability to manage projects, problem solve, work in teams, and communicate to accomplish the outcomes of this course. Scheduled class meetings will be used to perform and validate these skills and be supplemented with discussions on related industry topics and trends.

Student Learning Outcome:

- * Design and construct a local-area network and configure network resources and hosts as directed by the instructor.
 - * Resolve network connectivity problems on a local-area network using a systematic troubleshooting approach.
 - * Differentiate the specialized functions of the network server and the conditions required for a secure network server room.
 - * Apply all relevant workplace safety and environment standards during computer maintenance.
 - * Utilize a customer-oriented approach to resolve user problems.
- (2 C: 1 lect/pres, 1 lab, 0 other)

LCOM 0001 - Learning Community

The goal of the learning community at SCTCC is to promote student success. In their first two semesters, students participating in the learning community will take courses that establish a foundation for all of their remaining college course work. As part of the learning community they will have increased opportunities to make the social connections that support student success. In addition, faculty teaching classes offered as part of the learning community will coordinate assignments and class activities to provide additional reinforcement for learning. Prerequisite(s): ENGL0300, READ0300 or Appropriate Placement Score. (C: 0 lect/pres, 0 lab, 0 other)

LSCE 1502 - Surveying Principles I

The students will study error analysis and measurements, random errors, survey standards and specifications. Focus will also be on state plane coordinate calculations, development of coordinate geometry, trigonometric solutions, geodetic surveying problems, and positioning of corners per Public Land Survey System. Students will study historical development, description and land boundary elements related to platting, deed interpretation and boundary systems.

Student Learning Outcomes:

- * Calculate positions of government and property corners according to Federal, State, and local established guidelines.
 - * Analyze traverse adjustments and section breakdowns.
 - * Examine the Public Land Survey System, convergence, and error propagation.
 - * Review historical land surveys.
 - * Apply coordinate geometry functions.
 - * Interpret boundary rights.
- (3 C: 1 lect/pres, 2 lab, 0 other)

LSCE 1506 - Advanced Survey

Students will study advanced distance, angle and elevation work, including traverse layout, topographic data collection, x-sections and profiles, horizontal and vertical curves, property line surveying, and precise leveling. This course includes practical field applications including conventional total station, robotic total station, GPS, data collector, and data transfer. This course includes extensive fieldwork.

Student Learning Outcomes:

- * Complete basic and complex field surveys.
- * Analyze precise level loops and traverses.
- * Perform topographic surveys with total stations and controllers.
- * Transfer field collected data to computer for use in design.
- * Calculate survey closures, levels of classification, and coordinate geometry solutions.
- * Convert field data to record data in the form of drawings, sketches, and field book files.
- * Demonstrate ability to effectively communicate with others in a group situation.

Prerequisite(s): LSCE1530.

(5 C: 1 lect/pres, 4 lab, 0 other)

LSCE 1510 - Civil Drafting Methods

Students will be introduced to key concepts of the surveying and civil engineering industry related to drafting and design methods using Computer Aided Draft-

ing Design (CADD) software. Students will input drafting commands to develop civil/survey drawings, store data and produce digital drawings. Students will be introduced to drafting software and drafting applications.

Student Learning Outcomes:

- * Apply computer aided drafting design (CADD) methods and skills.
 - * Apply fundamental CADD editing techniques to modify drawings to accurately convey information.
 - * Create digital drawings using drafting and design software programs.
 - * Employ correct drafting tools and use of scaling devices accurately.
 - * Apply fundamental CADD drafting methods to draft survey linework.
- (3 C: 2 lect/pres, 1 lab, 0 other)

LSCE 1514 - Civil CADD I

Students will continue to develop Computer Aided Drafting Design (CADD) knowledge of system configuration, hardware operations, and interactive graphics software. They will develop technical skills in map making and construction document drafting along with civil engineering drafting techniques.

Student Learning Outcomes:

- * Apply advanced CADD drafting methods to create drawings.
- * Exhibit knowledge in survey and construction terms associated with cross sections, profiles, grades, and coordinates.
- * Create contour, profile, and cross section drawings.
- * Create civil engineering CADD details.
- * Insert survey field data collector files into CADD drawings.
- * Model the ability to cooperatively work with group members.

Prerequisite(s): LSCE1510 Or Instructor Permission.

(3 C: 1 lect/pres, 2 lab, 0 other)

LSCE 1518 - Materials, Estimating, and Specifications

Students will study and practice procedures for estimating quantities and costs as they relate to public works projects. Topics include concrete and asphalt estimating in the preliminary, final, and as-built phases of construction. Students will be introduced to materials testing as well as study construction materials, construction methods, inspection, and quality control. Students will explore standard contracts and specification documents.

Student Learning Outcomes:

- * Review construction and material terms.
 - * Interpret plans and specifications.
 - * Perform materials testing procedures.
 - * Analyze testing results through written reports.
 - * Identify construction procedures as related to civil engineering and land surveying.
 - * Estimate cost and materials for civil engineering projects.
 - * Determine technician, designer, and inspector duties as required for civil engineering.
 - * Compute earthwork, area, volume, and linear distances as related to civil engineering.
- (3 C: 1 lect/pres, 2 lab, 0 other)

LSCE 1527 - Technical Computations II

Students will perform calculations related to the civil engineering and land surveying industry. These include: geometry, trigonometry, volumes, bearings/azimuths, latitudes/departures, and area traverse calculations. Students will learn terminology regarding horizontal and vertical curves, and also learn how to calculate key stations and elevations along these curves.

Student Learning Outcomes:

- * Calculate geometry and trigonometry problems frequently used in the civil engineering and land surveying field.
- * Examine horizontal and vertical curve terminology.
- * Calculate vertical curve stations and elevations.
- * Determine horizontal curve geometry and stations.
- * Compute traverse adjustments.
- * Apply industry standards to highway design computations.

Prerequisite(s): MATH1360 or TECH1545.

(3 C: 2 lect/pres, 1 lab, 0 other)

LSCE 1530 - Survey Fundamentals

Students will study surveying with practical applications in horizontal distance, angle and vertical measurement, introduction to total station/data collection, traverse angle, and distance measurement methods. Students will learn how to

operate a total station, theodolite, and leveling instruments. This course includes extensive fieldwork.

Student Learning Outcomes:

- * Perform distance measurements related to plane surveying and apply appropriate corrections.
 - * Perform angle measurements and apply appropriate corrections.
 - * Perform vertical distance measurements and apply appropriate corrections.
 - * Apply mathematical computations to deal with measurement uncertainties.
 - * Operate leveling instrument and transfer elevations.
 - * Demonstrate respectful communication and proper interaction when working in a group environment.
 - * Identify Minnesota tree types for surveying and civil engineering applications.
 - * Create survey field notes to industry standards.
- (5 C: 1 lect/pres, 4 lab, 0 other)

LSCE 2502 - Control and Digital Surveys

Students will focus on preliminary and final survey procedures in gathering information through total station and automated data collection procedures. Subjects include centerline profiles, cross sections, radial topography, Alberta (ALTA) requirements, CADD drafting, advanced traversing, triangulation, resection, areas, volumes, section breakdown and subdivision surveys. Field projects will use conventional total station, robotic total station, GPS and data collection procedures.

Student Learning Outcomes:

- * Demonstrate ability to perform ALTA surveys.
- * Examine ALTA survey requirements and calculations.
- * Perform leveling processes, procedures and adjustments.
- * Model effective communication in assigned work groups.
- * Calculate metes and bounds property locations.
- * Break down Public Land Survey System (PLSS) standard section.
- * Evaluate PLSS and GPS practices.
- * Compute calculations concerning PLSS property locations.
- * Prepare electronic CADD drawings from data collection.
- * Apply CADD drafting information to field operations.

Prerequisite(s): LSCE1506.

(5 C: 1 lect/pres, 4 lab, 0 other)

LSCE 2507 - Construction Design and Surveying

Students focus on construction survey techniques and systems used in construction projects. Students will use practical field techniques for staking centerline profile, slope and grade staking, sanitary and storm sewer, curb and gutter, water mains and some aspects of platting. Emphasis will be on construction staking with the total station, GPS systems, and traditional surveying methods.

Student Learning Outcomes:

- * Generate calculations required prior to staking a project and those required after staking a project.
- * Stake an underground utility project.
- * Stake road grades and curbing.
- * Stake various building pads and site work.
- * Conduct field survey of subdivision lots.
- * Demonstrate respectful communication and proper interaction in a work group environment.

Prerequisite(s): LSCE2502.

(3 C: 1 lect/pres, 2 lab, 0 other)

LSCE 2510 - Surveying Principles II

Students study Minnesota State Statutes, and county and city ordinances relating to platting and surveying methods, along with techniques for record research. Emphasis is also on writing land descriptions and easement descriptions. Students study professional duties of the land surveyor and civil engineer. Topics include re-tracing land boundaries, riparian rights, land and easement descriptions, platting, survey evidence, metes and bounds and Public Land Survey Systems.

Student Learning Outcomes:

- * Read, interpret and prepare land descriptions.
- * Identify client-consultant-agency-contractor expectations and requirements.
- * Demonstrate fundamentals of the Public Land Survey System (PLSS).
- * Examine professional practices and ethics relating to civil engineering and land surveying.
- * Determine boundary control and legal principles and their relationship to the

land survey.

- * Analyze research methods used in property retracement.

Prerequisite(s): LSCE2526.

(3 C: 1 lect/pres, 2 lab, 0 other)

LSCE 2514 - Civil CADD II

Students will focus on interactive Computer Aided Drafting and Design software (Autodesk Civil3D) applications as they relate to basic principles of drawing and design of civil/survey projects. Students will focus on coordinate geometry, mapping, digital terrain modeling, platting, detail drafting and design using CADD methods.

Student Learning Outcomes:

- * Draw survey plat maps using coordinate geometry.
- * Analyze field survey data using various automated mapping tools.
- * Create triangulated irregular network (TIN) models.
- * Modify surfaces with breaklines.
- * Produce description key symbols.
- * Create utility drawings using pipe networks.
- * Design roadway alignments and profiles.

Prerequisite(s): LSCE1514.

(3 C: 1 lect/pres, 2 lab, 0 other)

LSCE 2518 - Utility Design I

Students will study fluid mechanics. The focus will be on fluid flow characteristics of gravity sanitary sewer and storm sewer systems. Students will study storm water hydrology, storm water management, and various wetland issues. Students will design storm sewer systems including piping, inlet structures, storm water facilities, storm water treatment pond, and prepare plan and profile documents.

Student Learning Outcomes:

- * Assess various hydrology methods used to estimate watershed runoff.
- * Calculate pipe flow and open channel flow geometry and flow quantities.
- * Design storm water collection system and create plan and profile drawings and related appurtenance details.
- * Design a storm water treatment pond based on site runoff.
- * Create sanitary sewer and watermain plan and profile drawings.
- * Interpret construction specifications.

Prerequisite(s): LSCE1527.

(3 C: 1 lect/pres, 2 lab, 0 other)

LSCE 2522 - Civil CADD III

Students will perform civil engineering and land surveying design tasks using AutoCAD Civil 3D engineering and surveying software. Topics include advanced principles of coordinate geometry, digital terrain modeling, roadway plan and profile, cross sections, and earthwork design.

Student Learning Outcomes:

- * Manipulate grading design functions.
- * Create grading plans and earthwork functions to compute earthwork volumes.
- * Build assemblies and roadway corridors.
- * Produce survey documents.
- * Design urban street - plan and profile construction documents.
- * Create utility plan and profile construction documents.

Prerequisite(s): LSCE2514.

(3 C: 1 lect/pres, 2 lab, 0 other)

LSCE 2526 - Subdivision Design

Students will focus on subdivision design. Topics include plat layout, grading and earthwork, hydrology, road design, and storm water management. Students will study wetland issues, existing land use factors, zoning considerations, Minnesota State Statutes and local ordinances as they relate to platting. Techniques for record research will also be discussed.

Student Learning Outcomes:

- * Analyze subdivision design constraints found in the State Statutes and in various County, City and local ordinances.
- * Apply design constraints to develop sketch plats.
- * Design a preliminary plat.
- * Design horizontal and vertical alignment of roadways, including vertical curves, horizontal curves and other geometric elements of roadway design.
- * Produce grading plans and roadway construction documents.
- * Interpret construction specifications.

Prerequisite(s): LSCE1502.

(4 C: 3 lect/pres, 1 lab, 0 other)

LSCE 2530 - Utility Design II

Students will study fluid mechanics and flows in both gravity and pressure systems. Focus is on flow characteristics in sanitary sewer systems, storm water systems, and water supply systems. Students will design a storm sewer drainage system and model storm water runoff. Students will calculate a quantity takeoff and cost estimate for their housing subdivision.

Student Learning Outcomes:

- * Design a sewer collection system for an engineered project, selecting proper materials, slopes, quantities, capacities and system sizing.
- * Design a water distribution system for an engineered project, selecting proper materials, slopes, quantities, capacities and system sizing.
- * Design a storm water collection system for an engineered project, selecting proper materials, slopes, quantities, capacities and system sizing.
- * Develop construction documents for a utility construction project.
- * Produce a drainage report for a housing subdivision project.
- * Prepare a quantity takeoff and cost estimate of their housing subdivision.

Prerequisite(s): LSCE2518, LSCE2526.

(3 C: 1 lect/pres, 2 lab, 0 other)

LSCE 2540 - LSCE Internship

This course is designed to allow students to apply the knowledge and skills learned in the classroom and during surveying labs outside. Students will contact and work for surveying, civil engineering, and materials testing companies. Once the internship is complete, students will explain and present about their work experiences.

Student Learning Outcomes:

- * Interpret construction plans and specifications.
- * Apply knowledge and skills learned in the classroom and during surveying.
- * Identify the techniques and procedures used to perform tasks in our surveying and civil engineering industry.
- * Prepare daily journal of work performed.
- * Demonstrate respectful communication and proper interaction in a work group environment.

Prerequisite(s): LSCE2502.

(2 C: 0 lect/pres, 0 lab, 2 other)

MACH 1517 - Print Reading I

This course will cover the basic principles of print reading. This will include three view drawings, the types of lines and view arrangements, dimensioning, tolerancing, surface textures and classification of fits.

Student Learning Outcomes:

- * Interpret different lines.
- * Understand view arrangements.
- * Interpret dimensioning.
- * Interpret surface texture callout.
- * Interpret classification of fits.

Corequisite(s): MACH1518, MACH1522, MACH1526, MACH1527

(1 C: 1 lect/pres, 0 lab, 0 other)

MACH 1518 - Machine Tool Technology I

This course will address the operations of a drill press, pedestal grinder, vertical mill, lathe and band-saws. Machine safety, machine component identification, as well as turning, milling, sawing, bench, drilling and off-hand grinding projects are also included in the components listed above. The student will also learn the care and use of inspection and layout tools.

Student Learning Outcomes:

- * Manufacture projects to print specifications on the vertical mill.
- * Create projects to print specifications on the engine lathe.
- * Construct bench projects by utilizing hand tools.
- * Fabricate drilling projects on the drill press.
- * Produce projects using the band-saws.
- * Construct and examine various machine setups.
- * Create precision cutting edges on tools using the pedestal grinder.
- * Inspect features on parts produced in the lab utilizing linear measuring tools, such as scales, micrometers and calipers.
- * Develop safe work habits around all metalworking equipment and co-workers.

Corequisite(s): MACH1517, MACH1522, MACH1526, MACH1527

(3 C: 1 lect/pres, 2 lab, 0 other)

MACH 1519 - Print Reading II

The student will interpret intermediate level blueprints involving orthographic views, section views and cutting planes. Special views, datums, welding symbols and sketching are also emphasized.

Student Learning Outcomes:

- * Interpret revolved and removed sections.
- * Interpret multiple view drawings.
- * Develop understanding of tolerancing methods.
- * Interpret projection views.
- * Interpret primary and auxiliary views.
- * Interpret datums and applications.
- * Interpret assembly drawings.

Corequisite(s): MACH1523, MACH1529, MACH1533, MACH1534

Prerequisite(s): MACH1527

(1 C: 1 lect/pres, 0 lab, 0 other)

MACH 1522 - Machining Math

This applied mathematics course is for students pursuing a diploma in Machine Tool Technology. The primary goals of this course are to help individuals acquire a solid foundation of basic skills in algebra, geometry and trigonometry as applied to the machining field. Problem solving will be emphasized in the geometry, trigonometry, compound angle and numerical control sections.

Student Learning Outcomes:

- * Solve problems that involve combined operations of fractions and decimals.
- * Compute ratio and proportions.
- * Perform arithmetic operations with imperial and metric linear units and compound numbers.
- * Simplify and solve Algebraic expressions that involve combined operations.
- * Apply geometric principles to solve practical problems involving circles and common polygons.
- * Calculate angles and sides of right triangles using the functions of Trigonometry.
- * Determine program dimensions using incremental and absolute positioning.

(1 C: 1 lect/pres, 0 lab, 0 other)

MACH 1523 - Machine Tool Technology II

This course will cover additional skill development in the setup and operation of saws, milling machines, lathes, surface grinders, and drill presses. More complex machining tasks using advanced tooling will be included in mill machining and lathe machining projects. Introductory open setup inspection and layout exercises will be performed in the inspection area. Additional inspection tools and equipment will be used as they relate to checking project dimensions.

Student Learning Outcome:

- * Produce milling projects that contain components in drilling, boring, parallel and step milling operations.
- * Generate lathe projects performing facing, turning, external threading, taper turning operations.
- * Construct drilling projects utilizing the upright drill press and radial drill press.
- * Create precision layouts using a height gage.
- * Develop skills in surface grinder operation.
- * Determine the correct speeds and feeds for different materials.
- * Inspect projects produced on metalworking equipment utilizing direct and indirect measurement.

Corequisite(s): MACH1519, MACH1529, MACH1533, MACH1534

Prerequisite(s): MACH1527.

(3 C: 1 lect/pres, 2 lab, 0 other)

MACH 1525 - Geometric Dimensioning and Tolerancing

This course is designed to allow students to interpret the latest ANSI Y 14.5 drawing standards. Students will learn the symbols, rules and geometric controls shown on current prints. Students will be given prints and exercises to enhance their skills in print reading.

Student Learning Outcomes:

- * Understand ANSI Y 14.5 standards that affect Geometric Dimensioning and Tolerancing (GDandT).
- * Apply GDandT symbols and controls.
- * Read blueprints that utilize GDandT controls.
- * Decipher how piece-parts must be inspected if the features have GDandT symbols and controls.

- * Demonstrate an awareness of the shortcomings of any drawing, which has been produced in conventional drawing practices, and provide alternative solutions with G&DandT.

Corequisite(s): MACH2505, MACH2507, MACH2504, MACH1532

Prerequisite(s): MACH1534.

(1 C: 1 lect/pres, 0 lab, 0 other)

MACH 1526 - Introduction to CNC Milling

This is a basic programming and milling course. Students will learn the Computer Numerically Controlled (CNC) word address programming language. The primary activities of this course are to program, set up and operate a CNC milling machine. Programming will involve drilling and milling operations and using manual and Computer-Aided Manufacturing (CAM) methods. Students will input programs using manual data input or download through a personal computer. Programs will be input, saved and simulated on a personal computer prior to downloading into the CNC mill.

Student Learning Outcomes:

- * Understand a CNC milling machine and its control.
- * Demonstrate CNC word address language and formatting in writing a CNC program.
- * Demonstrate setup of CNC milling machine to perform milling and drilling programs.
- * Utilize CNC programming software to write basic milling and drilling programs and to simulate the same.
- * Document CNC program via setup sheets.

Corequisite(s): MACH1517, MACH1522, MACH1518, MACH1527

(4 C: 1 lect/pres, 3 lab, 0 other)

MACH 1527 - Introduction to CNC Turning

This is a basic programming and Computer Numerically Controlled (CNC) lathe operation course. The student will learn the basics of the word address system as applied to CNC turning centers. Programs will be written manually and with Computer-Aided Manufacturing (CAM) and proved out using simulation software prior to running on the CNC turning center. Students will machine their own parts and inspect for dimensional accuracy using appropriate precision tools.

Student Learning Outcomes:

- * Understand CNC turning centers and their contribution to the machining industry.
- * Demonstrate basic CNC turning center setup and external machining operations.
- * Fill out a setup sheet which identifies the tools, their offsets and their purpose in a CNC Program.
- * Utilize computer-assist programming software to properly input a G and M code program and simulate same using the correct controller.
- * Utilize CNC control buttons and knobs to effectively move the machine component, which readies the CNC machine for operation of the program.
- * Set up external tooling and cutting inserts for turning center operation.

Corequisite(s): MACH1517, MACH1522, MACH1526, MACH1518

(4 C: 1 lect/pres, 3 lab, 0 other)

MACH 1528 - Jigs and Fixtures

This course is designed to familiarize the student with basic types and functions of jigs and fixtures used in metalworking industries. Various workholding types from simple soft jaws to modular workholding systems will be examined. Design principles, which explore simplicity and economy, are considerations, which are discussed in the course.

Student Learning Outcomes:

- * Understand the various types of drill jigs used in production drilling applications.
- * Understand the various types of fixtures used in production machining applications.
- * Proficiency in using the correct jig or fixture for the part being machined.
- * Experience in determining how soft jaws must be bored or machined to hold any part configuration.
- * Describe the type of steel or metal which should be used to build various jigs and fixtures.
- * Ability to identify all common types of locators and supports used with jigs and fixtures.
- * Experience in deciphering various screws and pins used in conjunction with jigs and fixtures.

(1 C: 1 lect/pres, 0 lab, 0 other)

MACH 1529 - CNC Turning Set-Up and Operation

This course is a continuation of programming and set up of Turning Centers (TCs) with emphasis on production and operation skills. The students will advance and reinforce the word address system as applied to TCs. Students will set up and operate TCs to machine parts they manually programmed and parts pre-programmed with Computer Aided Manufacturing (CAM). Students will safely prove their programs and set ups using simulation, single block and machine offsets with the end goal of producing quality first run parts. The students will then create and systematically organize their own programs and setup sheets to be run again by other students later in the course.

Student Learning Outcomes:

- * Program multiple operation parts on TCs.
- * Set up multiple operation parts on TCs.
- * Correctly and safely complete quality first run parts.
- * Create and organize programs and setup sheets for future operation by other students.
- * Set up and safely complete quality first run parts based on classmates' program and setup sheets.

Corequisite(s): MACH1533, MACH1534, MACH1519, MACH1523

Prerequisite(s): MACH1527.

(4 C: 1 lect/pres, 3 lab, 0 other)

MACH 1532 - CAM I

Students will gain an introductory level understanding of Computer Assisted Machining (CAM) software. The student will create geometry and progress into toolpaths.

Student Learning Outcomes:

- * Demonstrate the ability to open and save files.
- * Create two dimensional lines and arcs of part geometry.
- * Modify two dimensional geometry, deleting, chamfering, filleting.
- * Utilize levels and other organizational features of the software.
- * Create G and M code NC code with Post Processor

Corequisite(s): MACH2505, MACH1525, MACH2507, MACH2504

Prerequisite(s): MACH1534.

(1 C: 1 lect/pres, 0 lab, 0 other)

MACH 1533 - CNC Milling Set-Up and Operation

This course is a continuation of programming and set up of Vertical Machining Centers (VMCs) with emphasis on production and operation skills. The students will advance and reinforce the word address system as applied to VMCs. Students will set up and operate VMCs to machine parts they manually programmed, and parts preprogrammed with Computer Assisted Machining (CAM). Students will safely prove their programs and set ups using simulation, single block, and machine offsets with the end goal of producing quality first run parts. The students will then create and systematically organize their own programs and setup sheets to be run again by other students later in the course.

Student Learning Outcome:

- * Program multiple operation parts on VMCs.
- * Set up multiple operation parts on VMCs.
- * Complete quality first run parts.
- * Create and organize programs and setup sheets for future operation by other students.
- * Set up and safely complete a quality first run part based on classmates' program and setup sheets

Corequisite(s): MACH1519, MACH1523, MACH1529, MACH1534

Prerequisite(s): MACH1527.

(4 C: 1 lect/pres, 3 lab, 0 other)

MACH 1534 - Essentials of Solidworks

This course teaches learners how to use the Solidworks mechanical design automation software to build parametric models of parts and assemblies and how to make drawings of those parts and assemblies.

Student Learning Outcomes:

- * Demonstrate Solidworks user interface skills.
- * Practice proper sketching principles.
- * Create basic part models.
- * Use symmetry and draft functions.

- * Use patterning functions.
- * Create revolved features.
- * Complete simulated design changes and error corrections.
- * Create prints.

Corequisite(s): MACH1519, MACH1523, MACH1529, MACH1533

Prerequisite(s): MACH1527.

(1 C: 1 lect/pres, 0 lab, 0 other)

MACH 1540 - CNC Fundamentals

This is an introduction to programming and set up of CNC vertical milling centers (VMCs) and turning centers (TCs) course. The students will learn the basics of the word address system as applied to CNC machines. Students will set up and operate CNC machines to machine parts they manually programmed. Students will safely prove their programs and set ups using simulation, single block and machine offsets with the end goal of producing quality first run parts.

Student Learning Outcomes:

- * Program straight line external contour milling/turning with and without cutter compensation.
- * Program drilling with and without canned cycles.
- * Load, locate and input tool offsets.
- * Locate and input work offsets.
- * Safely prove their programs and set ups using simulation, single block and machine offsets to produce quality first run parts.

(2 C: 1 lect/pres, 1 lab, 0 other)

MACH 2504 - CNC Milling/Turning

This course will advance learners' operational capabilities of Computer Numeric Control (CNC) Vertical Milling Centers (VMCs) and Turning Centers (TCs). Students will continue to learn the word address system as applied to VMCs and TCs. Students will plan machining operations. They will set up and operate equipment to machine parts they manually or Computer Assisted Machining (CAM) programmed. Students will safely prove their programs and setups using simulation, single block and machine offsets with the end goal of producing quality first run parts.

Student Learning Outcomes:

- * Program straight line external and internal contour milling and turning with and without cutter compensation.
- * Program drilling, tapping, threading, and boring with and without canned cycles.
- * Program bolt patterns and pocket milling with and without canned cycles.
- * Load and set up work holding devices for VMCs and TCs.
- * Choose appropriate tooling and work holding devices from multiple styles of VMC and TC work.
- * Load and set up work holding devices in VMCs and TCs.
- * Load, locate, and input tool offsets into VMCs and TCs.
- * Locate and input work offsets into VMCs and TCs.
- * Safely prove their programs and set ups using simulation, single block and machine offsets to produce quality first run parts.

Corequisite(s): MACH1525, MACH2505, MACH2507, MACH1532

Prerequisite(s): MACH1534.

(4 C: 1 lect/pres, 3 lab, 0 other)

MACH 2505 - Swiss Turning

This course is an introduction course to Swiss machining and programming. Upon completion of this course the student will be familiar with Swiss turning machine equipment, components, features, tooling, set-up, and programming. Several units of advanced inspection procedures and equipment will be part of this course.

Student Learning Outcomes:

- * Develop and apply safe work habits around Swiss turning equipment and co-workers.
- * Compare the difference between conventional turning and the concepts of Swiss Machining.
- * Set up Swiss machines and bar feeder
- * Identify tool holding components, tool holding devices, and equipment used in Swiss machining.
- * Create programs manually and using Computer Assisted Machining (CAM) software that will machine a part to the blueprint specifications.
- * Inspect machine parts and edit programs and offsets to machine the part to the blueprint specifications.

- * Demonstrate the ability to use the computer to send and receive programs to the CNC machine.

Corequisite(s): MACH2507, MACH1525, MACH1532, MACH2504

Prerequisite(s): MACH1534.

(3 C: 1 lect/pres, 2 lab, 0 other)

MACH 2507 - Machine Tool Technology III

This course will address the advanced operations and setups of milling machines, lathe, and surface grinders. Machine safety and machine component identification are also a part of the components listed above. The student will perform part layout, as well as slot and pocket milling, taper turning, boring, drilling, and grinding projects. The student will also learn the care and use of different tooling used in the lathe, milling machines, and surface grinders.

Student Learning Outcome:

- * Produce projects requiring indexing, keyway cutting, radius, boring, pocket, and slot milling utilizing a milling machine
- * Create projects on the engine lathe that will produce tapers, external, and internal threads and bored features.
- * Construct setups and precision grind surfaces on projects utilizing a surface grinder.
- * Manufacture milling projects that require surface, side, and angular milled features utilizing a milling machine.
- * Demonstrate competency in using measurement standards during machine setups.
- * Inspect part features using inside-, depth, and height measuring equipment to include optical measuring devices.
- * Develop and apply safe work habits around all metalworking equipment and co-workers.

Corequisite(s): MACH1525, MACH1532, MACH2505, MACH2504

Prerequisite(s): MACH1534.

(4 C: 1 lect/pres, 3 lab, 0 other)

MACH 2510 - Cutting Tool Technology

This course will emphasize the identification and use of standard and special cutting tools. Conventional cutting tools will be examined as to their application in machining. Carbides, cermets, diamond and cubic boron carbide type cutting inserts will be examined as to their use in machining and manufacturing.

Student Learning Outcomes:

- * Understand the various grades and number system of carbide cutting tools.
- * Proficiency in using the correct carbide tool for the material being machined.
- * Experience in determining which cutting tool will work best to machine features found on the blueprint.
- * Decipher the identification of lathe toolholders and their correct inserts.
- * Identify all common cutting tools used in lathe, mill and drill machining applications.
- * Proficiency in identifying and using a broach and shims to produce an internal keyway.
- * Experience in determining cutting speeds and feeds for a variety of cutting tools used in the machining industry.

(1 C: 1 lect/pres, 0 lab, 0 other)

MACH 2512 - CAM II 3D/Solid Modeling/Turning

This course advances the geometry creation techniques covered in CAM I 2D. 3D geometry creation is used extensively as well an introduction to 3D Solid Modeling creation and uses. More advanced design and toolpath techniques are covered. Geometry creation for the lathe will be covered. This geometry will be required for CNC Turning centers.

Student Learning Outcomes:

- * Create two dimensional lines and arcs of part geometry silhouette needed for turning.
- * Modify two dimensional geometry, deleting, chamfering, filleting.
- * Create G, M code NC code with Post Processor.
- * Create 3D Solid part model using: Revolve, Extrude, Fillet and Boolean operators.
- * Generate toolpaths from 3D solid models.
- * Apply CAM high feed functionality.
- * Create tool lists and active reports for set-up documentation.

Prerequisite(s): MACH1532.

(2 C: 2 lect/pres, 0 lab, 0 other)

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

MACH 2514 - Metallurgy

This course will examine various steels and non-steel metals and their mechanical properties. Other types of materials such as castings, forgings and powdered metal (P/M) materials will also be analyzed. Lab work will consist of performing a tensile test on a metal, hardness testing, and the heat-treat of a steel workpiece. Heat treat applications will also be an important segment of the course.

Student Learning Outcomes:

- * Understand steel types and their application in the metalworking industry.
- * Proficiency in using correct tests to determine tensile strength and hardness of metals and materials.
- * Experience in determining which hardness scale to use for different hardness and types of metals and non-metals.
- * Conduct simple tests to determine relative hardness and composition of various metals.
- * Utilize charts to distinguish hardness scales for unlike metals.
- * Proficiency in recognizing different methods of producing parts including castings, forgings, weldments, machined bar stock, extrusions and powdered metals.

(1 C: 0 lect/pres, 1 lab, 0 other)

MACH 2516 - CAM III Multi-Axis Programming

This course introduces 4 and 5 axis milling and multiaxis Mill-Turn equipment programming. Emphasis will be towards the advanced milling and turning requirements of the modern machining industry. Fewer setups for finished parts, machining of multiple sides of a part, reduced second operations and mill-turn specialized requirements will be covered.

Student Learning Outcomes:

- * Analyze imported solid geometry.
- * Interpret geometry levels and solid creation history.
- * Establish stock setup settings.
- * Generate toolpaths for 5 axes of CNC Machining.
- * Inspect toolpath simulations using three methods to check for accuracy.
- * Create set-up geometry for live tooling turning centers.
- * Generate toolpaths for live tooling turning.

Prerequisite(s): MACH2512

(2 C: 2 lect/pres, 0 lab, 0 other)

MACH 2520 - Advanced CNC Milling

This course will cover more advanced Computer Numeric Control (CNC) set-up and operation techniques. Emphasis will be on the use of fixtures and the reduction of second operation requirements through multi-axis operations. Industry standard production fixtures will be manufactured and used.

Student Learning Outcome:

- * Explain multiple fixture offsets.
- * Explain tool length offsets.
- * Prepare stock blanks for production run of parts.
- * Produce Soft Jaw fixturing.
- * Produce plate fixture.
- * Solve multiple part set-up procedures.
- * Design set-ups for multi-axis machining.
- * Prepare documentation of set-up, tooling and inspection

Corequisite(s): MACH2544

Prerequisite(s): MACH2507.

(4 C: 1 lect/pres, 3 lab, 0 other)

MACH 2523 - High Performance Manufacturing

This course is designed to help students understand how high performance manufacturing facilities are able to operate. The practical use of basic quality management as well as production tools and procedures will be explored. Students will engage in the use of various statistical process control methods.

Student Learning Outcomes:

- * Identify how tools and equipment are used in high performance manufacturing.
- * Explain the purpose of preventative and predictive maintenance.
- * Explain the need for equipment standards.
- * Identify the key elements of production planning.
- * Explain the concept of work flow.
- * Identify the costs of inventory.
- * Specify what should be included in a time and cost estimate of production.

- * Identify the key differences between a push and pull system.
- * Identify the purpose of a control chart.
- * Explain the key element of a quality system.

(1 C: 1 lect/pres, 0 lab, 0 other)

MACH 2524 - Advanced CNC Turning

This course will cover more advanced Computer Numeric Control (CNC) lathe set-up and operation techniques. Emphasis will be on multi-operation parts. Specialized soft jaw turning and boring, tailstock relocation, live tooling, and stock advancement with stops will be covered.

Student Learning Outcomes:

- * Explain multiple fixture offsets.
- * Explain tool radius, wear and geometry offsets.
- * Prepare stock blanks for production run of parts.
- * Produce Soft Jaw fixturing.
- * Set up multiple end-cut procedures.
- * Complete live tooling programming and operation.
- * Prepare documentation of set-up, tooling, and inspection.

Corequisite(s): MACH2520, MACH2544

Prerequisite(s): MACH2507

(4 C: 1 lect/pres, 3 lab, 0 other)

MACH 2528 - Introduction to Electrical Discharge Machining

Students in this course will explore the technology of EDM. Students will setup, operate and program these machines to produce parts to blueprint requirements.

Student Learning Outcomes:

- * Demonstrate safety habits consistent with industry standards and college policy.
- * Set-up and operate CNC EDM and Manual EDM machines.
- * Setup and operate EDM sinker machines.
- * Program CNC Wire EDM machines.
- * Explain the code necessary for programming multiple axes for CNC wire machines.
- * Explain the reasons for using different electrodes to cut various materials.

(2 C: 1 lect/pres, 1 lab, 0 other)

MACH 2531 - Multiaxis VMC

This course will add 5 axis Machining center programming and setup techniques. The student will determine, identify and indicate X-Y-Z-A and B axis datum for multiple setups.

Student Learning Outcomes:

- * Explain multiple fixture offsets.
- * Examine part set-up requirements.
- * Calculate work offset shifts in A and B axes.
- * Determine tooling requirements.
- * Determine fixturing for Multiaxis environments.
- * Solve multiple part set-up procedures.
- * Design set-ups for 5 axis machining.
- * Prepare documentation of set-up, tooling and inspection.

Prerequisite(s): MACH2504

(2 C: 0 lect/pres, 2 lab, 0 other)

MACH 2535 - Live Tooling Turning Centers

This course will introduce Live Tooling and Multi-axis turning, programming and setup techniques.

Student Learning Outcomes:

- * Explain multiple axis tooling offsets.
- * Explain tool radius, wear and geometry offsets.
- * Prepare stock blanks for production run of parts.
- * Produce Soft Jaw fixturing.
- * Explain C-Axis indexing.
- * Prepare documentation of set-up, tooling and inspection.

Prerequisite(s): MACH2504

(2 C: 0 lect/pres, 2 lab, 0 other)

MACH 2539 - Advanced Electrical Discharge Machining

This course is intended to give the student an opportunity to learn advanced concepts and machining techniques associated with electrical discharge machines. Students will setup, operate and program these machines to produce parts to blueprint requirements.

Student Learning Outcomes:

- * Demonstrate safety habits consistent with industry standards and college policy.
- * Program using CAM software and two and four axis programs.
- * Setup and operate EDM manual sinker machines.
- * Program CNC wire EDM CNC machines.
- * Perform setups using sinker and wire EDM tooling.
- * Build electrodes for EDM sinker operations using reference system chuck adapter.
- * Generate sinker EDM programs using special electrodes.

Prerequisite(s): MACH2528

(1 C: 0 lect/pres, 1 lab, 0 other)

MACH 2540 - Advanced Swiss CNC Turning

This course is intended to give the student an in-depth experience in Swiss cnc turning. The students time will be spent learning the programming software and advanced programming language necessary to complete multi-axis and multi-operations on the machine. Introduce using the pick-off (A2) spindle, back/front tools and live tools. The use of special Swiss cnc cutting tools will be emphasized. The use of high precision inspection tools such as optical comparators and high precision measuring tools will be an integral part of the course.

Student Learning Outcomes:

- * Develop safety habits consistent with industry standards and college policy.
- * Setup Swiss CNC turning centers including tooling and bar feeder.
- * Write setup and run CNC programs utilizing gang tools, live tools, and front and back tools.
- * Examine tooling, programs and offsets to correct or modify programs.
- * Utilize inspection equipment to inspect critical dimensions.
- * Establish code necessary for simultaneous tool cutting operations.
- * Identify the critical components and functions of Swiss CNC machines.

Prerequisite(s): MACH1514

(2 C: 0 lect/pres, 2 lab, 0 other)

MACH 2544 - CNC/CAM Capstone

Students will engage in advanced machining activities encompassing all areas of Computer Numerical Control (CNC) and Computer Assisted Machining (CAM). Course will include: 4th axis programming and part development on machining centers; drawing solid models using CAM systems; utilizing the drawings to develop .stl files, and building the shape using a 3D printer.

Student Learning Outcomes:

- * Define solid model of a part and its uses.
- * Perform 4th axis setup on machining center and produce 4th axis machining operation.
- * Draw a solid model using CAM systems and produce a .stl file for model development.
- * Produce 4 axis shaped parts using a CAM system and burn on CNC Wire-Electrical Discharge Machining (EDM) machine.
- * Understand the benefits of tool mapping on machining center programs.
- * Examine tool life variables and set in CNC program.
- * Draw 4th axis shaped part for milling on CAM system.
- * Create a 3D part using surface modeling.
- * Produce multiple part shapes from a single blank on CNC Wire-Feed EDM.
- * Import Computer Aided Design (CAD) .dxf file for CNC machining purposes.
- * Create an advanced surface milling program.

Corequisite(s): MACH2520, MACH2524

(1 C: 0 lect/pres, 1 lab, 0 other)

MACH 2548 - Plastics - Application and Chemistry

This course is for students entering the Moldmaking, Mold Press operator or Mold design occupations. The student will identify different plastic types, explain plastics chemistry, determine plastic types applications and calculate volumes of components for injection molding.

Student Learning Outcomes:

- * Identify plastic types.
- * Compare plastics classifications.
- * Determine plastic types application.
- * Explain chemical change.
- * Explain physical change.
- * Summarize plastics properties and characteristics.

(1 C: 1 lect/pres, 0 lab, 0 other)

MACH 2550 - Mold Design Theory

This course will give students an introduction to Plastic Injection Mold designs, applications and processes. Other topics covered will be extrusions, blow molding, Rotary molds and Die Casting.

Student Learning Outcomes:

- * Comparison of plastic types and applications.
- * Identify the names and function of Injection and Die-cast mold components.
- * Describe the different processes for forming plastic components.
- * Describe the components of a basic plastic injection mold.
- * Explain why molds need to be heated and cooled.
- * Explain the operation of a Mold Base.
- * Describe the function of the ejector system.
- * Explain why a cam might be used in an injection mold.
- * Determine different methods of producing cores and cavities.
- * Select the proper types of runner and gating system for different types of injection systems.
- * Select suitable materials for the production of an injection mold.

Prerequisite(s): TECH1550, MACH1511, MACH1532

(2 C: 1 lect/pres, 1 lab, 0 other)

MACH 2552 - Mold Design Applied

In this course the student will apply injection mold design skills to create working blueprints for a mold to manufacture in the lab.

Student Learning Outcomes:

- * Identify a plastic injection project part.
- * Calculate mold base size requirements.
- * Explain mold component requirements.
- * Calculate plastic injection shot volume.
- * Calculate shrinkage.
- * Contrast construction options.
- * Design mold base.
- * Design Mold Cavity.
- * Design mold force.
- * Design ejection system.

Prerequisite(s): MACH2550

(2 C: 0 lect/pres, 2 lab, 0 other)

MACH 2554 - Mold Base, Force and Cavity

In this course the student will machine the Base, Force and Cavity of their injection mold. The base is the foundation of every quality injection mold. The student will select the size required and select materials. The Force and Cavity will be created to fit into the base, they produce the desired shape and characteristics of the final part.

Student Learning Outcomes:

- * Calculate material types and quantities.
- * Prepare material sizes according to blueprints.
- * Assess fastener and locating hardware requirements.
- * Produce mounting and locating holes.
- * Compute cavity location requirements.
- * Calculate force alignment location and indexing devices.
- * Produce graphite roughing and finishing tools for machining the cavity.
- * Machine cavity with Electrical Discharge Machine.
- * Produce force with 3D CNC machining center or other as required.
- * Machine locating pockets for force.

Prerequisite(s): MACH2550

(5 C: 1 lect/pres, 4 lab, 0 other)

MACH 2558 - Ejector System, Runners and Gates

In this course the student will build the system that ejects the molded plastic part from their mold and machine the runners and gates that deliver and meter the hot plastic into the mold cavity. It is also required to calculate cavity volume and material flow characteristics.

Student Learning Outcomes:

- * Calculate ejector pin lengths.
- * Grind ejector pins.
- * Machine ejector system plates.
- * Determine parallel size requirements.
- * Produce parallels.
- * Evaluate ejector system fit and function.

- * Calculate cavity volume.
- * Determine material flow characteristics.
- * Research gate types and uses.
- * Calculate runner size and type.

Prerequisite(s): MACH2550

(4 C: 1 lect/pres, 3 lab, 0 other)

MACH 2562 - Mold Press Operation

In this course the student will setup, operate and troubleshoot a plastic injection molding machine.

Student Learning Outcomes:

- * Calculate plastic volume requirements.
- * Determine injection pressures.
- * Identify temperature settings.
- * Locate holding pressures and timing.
- * Estimate cooling time requirements.
- * Determine cycle times.
- * Analyze injection errors and correction procedures.

(1 C: 0 lect/pres, 1 lab, 0 other)

MATH 0720 - Math Literacy

This course supports students in building numeracy, mathematical reasoning, and problem-solving skills to prepare for future study of mathematics. The course explores the mathematics content that forms the foundations of algebra and statistics including embedded prerequisite knowledge, fundamental mathematics topics, and essential skills needed to meet the course outcomes with a focus on applications and communication about mathematical ideas. This is a college readiness course and does not fulfill a college goal area requirement.

Student Learning Outcomes:

- * Represent quantitative information, quantitative relationships, and mathematical concepts using appropriate mathematical notation
- * Describe mathematical concepts and processes using appropriate language for the context
- * Support answers by providing appropriate mathematical justifications
- * Assess the reasonableness of solutions
- * Solve authentic, multistep problems in a variety of contexts by applying two or more mathematical strategies or concepts
- * Translate among verbal, numeric, symbolic, and graphical forms of mathematics
- * Formulate algebraic representations necessary to model problems
- * Evaluate algebraic or numerical expressions involving rational numbers
- * Solve multistep equations
- * Create graphical representations of quantitative information and relationships
- * Apply appropriate formulas to solve problems
- * Interpret graphs and data displays

Prerequisite(s): All three of these ESOL1120, ESOL1310, ESOL1330, or READ0900 and ENGL0900 or appropriate placement score.

(6 C: 6 lect/pres, 0 lab, 0 other)

MATH 0831 - Bridge to Quantitative Reasoning

This course is designed to provide developmental mathematics instruction and essential foundational skills for students enrolled concurrently in a linked section of MATH 1331 Quantitative Reasoning. Topics will parallel topics being studied in MATH 1331. This course emphasizes communication about mathematical ideas, development of critical thinking ability and quantitative literacy through problem-solving, mathematical reasoning, interpreting graphs and data displays, equation-solving, and math success strategies. This is a college readiness course and does not fulfill a college goal area requirement.

Student Learning Outcomes:

- * Represent quantitative information, quantitative relationships, and mathematical concepts using appropriate mathematical notation
- * Describe mathematical concepts and processes using appropriate language for the context
- * Support answers by providing appropriate mathematical justifications
- * Assess the reasonableness of solutions
- * Interpret quantitative information
- * Solve authentic, multistep problems in a variety of contexts by applying two or more mathematical strategies or concepts

- * Translate among verbal, numeric, symbolic, concrete, and graphical forms of mathematics
- * Formulate algebraic representations necessary to model problems
- * Utilize procedures for simplifying and manipulating algebraic expressions and equations
- * Evaluate algebraic or numerical expressions involving rational numbers
- * Solve multistep equations
- * Create graphical representations of quantitative information and relationships
- * Apply appropriate formulas to solve problems
- * Interpret graphs and data displays

Corequisite(s): MATH1331

Prerequisite(s): MATH0720 or appropriate math placement score, and all three of these ESOL1120, ESOL1310, ESOL1330, or READ0900 and ENGL0900 or appropriate reading placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

MATH 0840 - Pathway to College Mathematics

This course explores the mathematics content that forms the foundation of elementary algebra and statistics. The course focuses on applications of mathematics, problem-solving skills, and communication about mathematical ideas while incorporating essential skill development for future study. This is a college readiness course and does not fulfill a college goal area requirement.

Student Learning Outcomes:

- * Translate among verbal, numeric, symbolic, and graphical forms of mathematics.
- * Represent quantitative information, quantitative relationships, and mathematical concepts using appropriate mathematical notation.
- * Describe mathematical concepts and processes using appropriate language for the context.
- * Support answers by providing appropriate mathematical justifications.
- * Assess the reasonableness of solutions.
- * Interpret quantitative information.
- * Solve authentic, multistep problems in a variety of contexts by applying two or more mathematical strategies or concepts.
- * Utilize procedures for simplifying and manipulating algebraic expressions and equations.
- * Evaluate expressions involving real numbers.
- * Solve multistep equations.
- * Create graphical representations of quantitative information and relationships.
- * Apply appropriate formulas to solve problems.
- * Interpret graphs and data displays.
- * Formulate algebraic representations necessary to model problems.

Prerequisite(s): MATH0720 or appropriate math placement score, and all three of these ESOL0810, ESOL0820, ESOL0830, or READ0900 and ENGL0900 or appropriate reading placement score..

(4 C: 4 lect/pres, 0 lab, 0 other)

MATH 0860 - Beginning Algebra for STEM Students

This course explores the fundamental skills and concepts needed for future study of intermediate and college algebra within STEM fields. Students will develop fluency in solving, translating among function representations, and algebraic manipulation. Upon successful completion of this course, students will be prepared to enroll in an Intermediate Algebra course or College Algebra course with co-requisite. This is a college readiness course and does not fulfill a college goal area requirement.

Student Learning Outcomes:

- * Translate among verbal, numeric, symbolic, and graphical forms of mathematics.
- * Represent quantitative information, quantitative relationships, and mathematical concepts using appropriate mathematical notation.
- * Describe mathematical concepts and processes using appropriate language for the context.
- * Support answers by providing appropriate mathematical justifications.
- * Assess the reasonableness of solutions.
- * Utilize procedures for simplifying and manipulating algebraic expressions and equations.
- * Evaluate expressions involving real numbers.
- * Solve multistep linear equations and inequalities.
- * Solve quadratics by applying inverse operations and by factoring.
- * Analyze graphs of a variety of functions.

- * Formulate algebraic representations necessary to model problems.
- * Factor polynomials using a variety of methods.
- * Determine if a relation is a function and use function notation appropriately.
- * Use numerical, symbolic, and graphical methods to model, solve, and interpret the results of application problems.

Prerequisite(s): MATH0720 or appropriate math placement score, and all three of these ESOL0810, ESOL0820, ESOL0830, or READ0900 and ENGL0900 or appropriate reading placement score.

(4 C: 4 lect/pres, 0 lab, 0 other)

MATH 0941 - Bridge to Elements of Math I

This course is designed to provide developmental mathematics instruction and essential foundational skills for students enrolled concurrently in a linked section of MATH 1341 Elements of Math I. Topics will parallel topics being studied in MATH 1341. This course emphasizes use of manipulatives to model mathematical processes, communication about mathematical ideas, and development of critical thinking ability and quantitative literacy through problem-solving, mathematical reasoning, equation-solving, and math success strategies. This is a college-readiness course and does not fulfill a college goal area requirement.

Student Learning Outcomes:

- * Represent quantitative information, quantitative relationships, and mathematical concepts using appropriate mathematical notation
- * Describe mathematical concepts and processes using appropriate language for the context
- * Support answers by providing appropriate mathematical justifications
- * Assess the reasonableness of solutions
- * Interpret quantitative information
- * Solve authentic, multistep problems in a variety of contexts by applying two or more mathematical strategies or concepts
- * Translate among verbal, numeric, symbolic, concrete, and graphical forms of mathematics
- * Formulate algebraic representations necessary to model problems
- * Utilize procedures for simplifying and manipulating algebraic expressions and equations
- * Evaluate expressions involving real numbers
- * Solve multistep equations
- * Create graphical representations of quantitative information and relationships
- * Apply appropriate formulas to solve problems

Corequisite(s): MATH1341

Prerequisite(s): MATH0860 or appropriate math placement score, and all three of these ESOL1120, ESOL1310, ESOL1330, or READ0900 and ENGL0900 or appropriate reading placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

MATH 0945 - Bridge to Elements of Math II

This course is designed to provide developmental mathematics instruction and essential foundational skills for students enrolled concurrently in a linked section of MATH 1345 Elements of Math II. Topics will parallel topics studied in MATH 1345: statistics, probability, graph theory, and geometry. This course emphasizes communication about mathematical ideas, use of technology and manipulatives to investigate quantitative and geometric relationships, connections among the branches of mathematics, and quantitative literacy through problem-solving, mathematical reasoning, modeling processes and relationships, and math success strategies. This is a college-readiness course and does not fulfill a college goal area requirement. Concurrent enrollment in a linked section of MATH 1345 is required.

Student Learning Outcomes:

- * Describe quantitative relationships, mathematical processes, and mathematical concepts using appropriate mathematical notation and language for the context
- * Support answers by providing appropriate mathematical justifications
- * Assess the reasonableness of solutions
- * Interpret quantitative information
- * Translate among verbal, numeric, symbolic, concrete, pictorial, and graphical forms of mathematics
- * Formulate algebraic representations necessary to model and solve geometry problems
- * Apply appropriate formulas to solve problems
- * Utilize procedures for simplifying and manipulating numerical and algebraic expressions and equations
- * Interpret graphs, descriptive statistics, and data displays

- * Model quantitative information and relationships with appropriate tables, graphs, diagrams, and pictures
- * Use technology and manipulatives to investigate quantitative and geometric relationships

Corequisite(s): MATH1345

Prerequisite(s): MATH0860 or appropriate math placement score, and all three of these ESOL1120, ESOL1310, ESOL1330, or READ0900 and ENGL0900 or appropriate reading placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

MATH 0951 - Bridge to Statistics

This course is designed to provide developmental mathematics instruction and essential foundational skills for students enrolled concurrently in a linked section of MATH 1351 Statistics. Topics will parallel topics being studied in MATH 1351. This course explores and establishes a connection between mathematical or statistical concepts and practical world questions through application problem solving. It will focus on developing critical thinking ability, improving analytical skill and enhancing quantitative literacy. This is a college readiness course and does not fulfill a college goal area requirement.

Student Learning Outcomes:

- * Represent quantitative information, quantitative relationships, and mathematical concepts using appropriate mathematical notation
- * Describe mathematical and statistical concepts and processes using appropriate language for the context
- * Support answers by providing appropriate mathematical justifications
- * Assess the reasonableness of solutions
- * Interpret quantitative information
- * Translate among verbal, numeric, symbolic, and graphical forms of mathematics
- * Create graphical representations of quantitative information and relationships
- * Apply appropriate formulas to solve problems
- * Interpret graphs and data displays
- * Utilize procedures for simplifying and manipulating numerical and algebraic expressions and equations

Corequisite(s): MATH1351

Prerequisite(s): MATH0720 or appropriate math placement score, and all three of these ESOL1120, ESOL1310, ESOL1330, or READ0900 and ENGL0900 or appropriate reading placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

MATH 0960 - Intermediate Algebra for College Algebra Students

This corequisite support course is linked to MATH 1360 College algebra to allow acceleration through Intermediate and College Algebra in one semester. This course supports students in MATH 1360 College Algebra by providing a solid foundation in the principles and applications of intermediate algebra and by using mathematical tools to analyze and solve problems. Students must register for both MATH 0960 and a linked section of MATH 1360 in the same semester.

Student Learning Outcomes:

- * Perform operations on polynomial, rational, and radical expressions.
- * Factor polynomials using a variety of methods
- * Translate between graphical, tabular, verbal, and symbolic representations of functions and relations
- * Analyze graphs of a variety of functions
- * Solve a variety of equations and linear inequalities.
- * Solve systems of equations using algebraic and graphical methods.
- * Use numerical, symbolic, and graphical methods to model, solve, and interpret the results of application problems.
- * Determine if a relation is a function and use function notation appropriately.

Corequisite(s): MATH1360

Prerequisite(s): MATH0860 or appropriate math placement score, and all three of these ESOL0810, ESOL0820, ESOL0830, or READ0900 and ENGL0900 or appropriate reading placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

MATH 0975 - Intermediate Algebra for STEM Students

This course is an intermediate course in the principles and applications of algebra. It is formatted for thorough, in-depth concept development. Topics covered include the basics of algebra and modeling; linear equations and inequalities, linear equations in two variables; systems of linear equations; exponents, polynomials, and factoring; rational expressions; introduction to functions; inequalities

and problem solving; radical functions and equations; and quadratic functions and equations. This is a college readiness course and does not fulfill a college goal area requirement.

Student Learning Outcomes:

- * Perform operations on polynomial, rational, and radical expressions.
- * Factor polynomials using a variety of methods
- * Translate between graphical, tabular, verbal, and symbolic representations of functions and relations
- * Analyze graphs of a variety of functions
- * Solve a variety of equations and linear inequalities.
- * Solve systems of equations using algebraic and graphical methods.
- * Use numerical, symbolic, and graphical methods to model, solve, and interpret the results of application problems.
- * Determine if a relation is a function and use function notation appropriately.

Prerequisite(s): MATH0860 or appropriate math placement score, and all three of these ESOL0810, ESOL0820, ESOL0830, or READ0900 and ENGL0900 or appropriate reading placement score.

(4 C: 4 lect/pres, 0 lab, 0 other)

MATH 1331 - Quantitative Reasoning

Meets Mn Transfer Curriculum Goal Area 4 - Mathematical/Logical Reasoning. This course is an investigation into the nature of mathematics. Students will apply mathematical principles to varied disciplines including an exploration of a variety of social and global issues. Students will experience mathematics as a creative and evolving discipline. Emphasis will be placed on applications in these topic areas with related statistics concepts developed when appropriate. Spread sheets will be used extensively to enhance concept development.

Student Learning Outcomes:

- * Solve practical problems using appropriate mathematical techniques.
- * Apply critical thinking skills to solve a variety of problems.
- * Utilize a systematic approach to problem solving.
- * Use appropriate computer technology and software to perform analysis and calculations.
- * Demonstrate an awareness of the application of mathematics to global and social issues.
- * Communicate mathematical understanding to others verbally and in written form.

Prerequisite(s): MATH0830 (may be taken as Corequisite) or appropriate math placement Score, and all three of these ESOL1120, ESOL1310, ESOL1330, or READ0900 and ENGL0900 or appropriate reading placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

MATH 1341 - Elements of Math I

Meets Mn Transfer Curriculum Goal Area 4 - Mathematical/Logical Reasoning. This course explores mathematics with investigations and activities to help students form a deeper understanding of why and how mathematical procedures work. In addition to solving problems, students will also model and explain mathematics concepts related to mathematical patterns, relations, and functions, numerical literacy, number theory, and mathematical processes. This is the first of two courses designed to provide the necessary foundation for students interested in elementary education licensure.

Student Learning Outcomes:

- * Explain the basic mathematical concepts that form the foundation of arithmetic, algebra, and number theory.
- * Demonstrate mathematical reasoning skills and formal logic to develop convincing mathematical arguments.
- * Solve problems using appropriate mathematical techniques.
- * Communicate mathematical understanding to others verbally and in written form.
- * Model mathematics with pictures and manipulatives.
- * Demonstrate critical thinking skills to solve a variety of problems.
- * Utilize a systematic approach to problem solving which incorporates verbal, numeric, visual, and symbolic strategies.
- * Explain the connections between mathematical concepts and procedures.

Prerequisite(s): MATH0941 (may be taken as Corequisite) or appropriate math placement Score, and all three of these ESOL1120, ESOL1310, ESOL1330, or READ0900 and ENGL0900 or appropriate reading placement score..

(4 C: 4 lect/pres, 0 lab, 0 other)

MATH 1345 - Elements of Math II

Meets MN Transfer Curriculum Goal Area 4 - Mathematical/Logical Reasoning. This course explores mathematics with activities to help students investigate mathematical properties and relate mathematical ideas in discrete math, geometry, probability, and statistics. Problem solving, modeling, and explaining mathematics will be emphasized in all topics. This is the second of two courses designed to provide the necessary foundation for students interested in elementary education licensure.

Student Learning Outcomes:

- * Explain the basic mathematical concepts that form the foundation of statistics, probability, discrete math, and geometry.
- * Demonstrate mathematical reasoning skills and formal logic to develop convincing mathematical arguments.
- * Solve problems using appropriate mathematical techniques.
- * Communicate mathematical understanding to others verbally and in written form.
- * Model mathematics with pictures and manipulatives.
- * Demonstrate and apply critical thinking skills to solve a variety of problems.
- * Utilize a systematic approach to problem solving which incorporates verbal, numeric, visual, and symbolic strategies.
- * Explain the connections between mathematical concepts and procedures.

Prerequisite(s): MATH0945 (may be taken as Corequisite) or appropriate math placement Score, and all three of these ESOL1120, ESOL1310, ESOL1330, or READ0900 and ENGL0900 or appropriate reading placement score.

(4 C: 4 lect/pres, 0 lab, 0 other)

MATH 1351 - Statistics

Meets MN Transfer Curriculum Goal Area 4 - Mathematical/Logical Reasoning. This course focuses on the principles and applications of statistics and data analysis with an emphasis on inference. The goals are to help students acquire a solid foundation in the basics of statistics and its application in solving practical problems. This course uses examples from various disciplines to illustrate the relevancy of statistics in real world situations. Topics include descriptive statistics, probability and sampling distributions, estimation and hypothesis testing of parameters, comparison of population parameters, and regression and inference about relationships.

Student Learning Outcomes:

- * Apply mathematical and statistical concepts that form the foundation of statistical analysis and problem solving.
- * Demonstrate basic skills in collecting, organizing, analyzing and interpreting quantitative data.
- * Apply an evidence-based approach in problem solving with consideration of probability and contingency.
- * Utilize procedures for manipulating algebraic expressions and equations.
- * Apply critical thinking skills to solve a variety of problems.
- * Interpret the concepts of probability and variability, and their roles in statistics.
- * Apply probability and statistical principles appropriately to applications.
- * Utilize a systematic approach to problem solving which incorporates verbal, numeric, visual and symbolic strategies.
- * Communicate mathematical understanding to others verbally and in written form.

Prerequisite(s): MATH0951 (may be taken as Corequisite) or appropriate math placement Score, and all three of these ESOL1120, ESOL1310, ESOL1330, or READ0900 and ENGL0900 or appropriate reading placement score.

(4 C: 4 lect/pres, 0 lab, 0 other)

MATH 1360 - College Algebra

Meets MN Transfer Curriculum Goal Area 4 ? The course is designed for students who have sound algebra skills. The primary goals of this course are to help individuals acquire a solid foundation in the basic skills of college algebra and to show how college algebra can be used to model and solve authentic real-world problems. Course topics include an introduction to functions and graphs; linear, quadratic, and nonlinear functions with an emphasis on rational expressions, roots and exponents; exponential and logarithmic functions; systems of equations and inequalities; conic sections; sequences and series; and counting and probability.

Student Learning Outcomes:

- * Apply the basic mathematical concepts that form the foundation of algebra
- * Utilize procedures for manipulating algebraic expressions and equations
- * Apply critical thinking skills to solve a variety of problems
- * Apply algebraic principles appropriately to applications

- * Utilize a systematic approach to problem solving which incorporates verbal, numeric, visual and symbolic strategies
- * Communicate mathematical understanding to others verbally and in written form
- * Expand mathematical reasoning skills and formal logic to develop convincing mathematical arguments

Prerequisite(s): MATH0960 (may be taken as Corequisite) or Appropriate Math Placement Score.

(3 C: 3 lect/pres, 0 lab, 0 other)

MATH 1370 - College Trigonometry

Meets MN Transfer Curriculum Goal Area 4 -Mathematical/Logical Reasoning. The course is designed for students who have mastered algebra and need to understand trigonometric functions and their applications. The primary goals of this course are to help individuals acquire a solid foundation in the basic skills of college trigonometry and to show how college trigonometry can be used to model and solve authentic real-world problems. It also acts as an entry-level STEM pathway course.

Student Learning Outcomes:

- * Apply basic trigonometric concepts to solve a variety of problems.
- * Represent and evaluate basic trigonometric information verbally, numerically, graphically, and symbolically.
- * Communicate mathematical understanding to others verbally and in written form.
- * Utilize mathematical reasoning skills and formal logic in order to develop convincing mathematical arguments.
- * Use appropriate technology to enhance mathematical thinking and understanding and to solve mathematical problems, judging the reasonableness of the results.
- * Use trigonometric functions to prove identities and solve conditional equations.

Prerequisite(s): MATH1360 or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

MATH 1380 - Precalculus

Meets MN Transfer Curriculum Goal Area 4 - The course is designed for students who have sound algebra skills. The primary goals of this course are to help individuals acquire a solid foundation in the basic skills of college algebra and trigonometry, showing how college algebra and trigonometry can be used to model and solve authentic real-world problems. This course is intended to be a one-semester path to calculus for students who have had at least three years of high school mathematics, including trigonometry. This course consists of material from MATH 1360 and MATH 1370. Course topics include polynomial, rational, exponential, logarithmic, and trigonometric functions and their inverses; systems of equations and inequalities; introduction to linear programming, matrices and determinants; trigonometric identities; equations and applications; parametric equations; polar coordinates; sequences and series; mathematical induction; probability; conics; and modeling. (Cannot be taken for credit if student has received credit for both MATH 1300 and MATH 1321 or Math 1360 and Math 1370.)

Student Learning Outcomes:

- * Apply the basic mathematical concepts that form the foundation of algebra and trigonometry.
- * Utilize procedures for manipulating algebraic and trigonometric expressions and equations.
- * Apply critical thinking skills to solve a variety of problems.
- * Apply algebraic principles appropriately to applications.
- * Utilize a systematic approach to problem solving which incorporates verbal, numeric, visual and symbolic strategies.
- * Communicate mathematical understanding to others verbally and in written form.
- * Expand mathematical reasoning skills and formal logic to develop convincing mathematical arguments.
- * Apply basic trigonometric concepts to solve a variety of problems.
- * Represent and evaluate basic trigonometric information verbally, numerically, graphically, and symbolically.
- * Use trigonometric functions to prove identities and solve conditional equations.

Prerequisite(s): MATH1360 or appropriate placement score.

(5 C: 5 lect/pres, 0 lab, 0 other)

MATH 2311 - Calculus I

Meets Mn Transfer Curriculum Goal Area 4 - Mathematical/Logical Reasoning. This course is designed for students who have sound algebra skills. The primary goal of this course is to help individuals acquire a solid foundation in the basic skills of calculus, showing how calculus can be used to model and solve authentic real-world problems. Calculus is the first mathematics course in an engineering or other STEM related curricular sequence. Course topics include differentiation and integration of polynomial, exponential, logarithmic and trigonometric functions.

Student Learning Outcomes:

- * Explain the concept of limit from a graphical, numerical, and algebraic point of view. Be able to illustrate and calculate limits of a variety of algebraic and transcendental functions, and limits involving infinity.
- * Describe what it means for a function to be continuous. Identify various types of discontinuities.
- * Compute a derivative using the definition.
- * Find derivatives using differentiation rules and implicit differentiation.
- * Recognize the derivative as a rate of change and a slope. Use derivatives to solve application problems such as optimization and related rates.
- * Use the first and/or second derivative tests and limits to analyze important features of the graph of a function.
- * Recognize limits in indeterminate forms (quotient, product, difference, power) and apply L'Hopital's Rule appropriately to evaluate them.
- * Define the definite integral as a limit of Riemann sums.
- * Describe the relationship between derivative and definite integral as expressed in both parts of the Fundamental Theorem of Calculus, and apply it to evaluate definite integrals using antiderivatives.
- * Demonstrate and apply critical thinking skills to solve a variety of problems.
- * Communicate mathematical understanding.

Prerequisite(s): MATH1370 or MATH1380 or appropriate placement score.

(5 C: 5 lect/pres, 0 lab, 0 other)

MATH 2321 - Calculus II

Meets MN Transfer Curriculum Goal Area 4 - Mathematical/Logical Reasoning. This course is designed for students who have sound elementary calculus skills. The primary goal of this course is to help individuals acquire a solid foundation in the advanced techniques of calculus, as the skills apply to the differentiation and integration of exponential and logarithmic functions. Additional emphasis is placed upon the analysis of sequences and series. Applications will be incorporated to enhance students' understanding.

Student Learning Outcomes:

- * Apply a variety of integration techniques, including u-substitution, integration by parts, trigonometric substitution, and partial fractions.
- * Use definite integrals to solve problems such as finding area, work, volume, arc length, fluid forces, and center of mass.
- * Determine convergence or divergence of an improper integral.
- * Approximate a definite integral using Simpson's Rule and/or the Trapezoid Rule.
- * Apply the definition of convergence to calculate the limit of a sequence or the sum of a convergent series.
- * Apply tests of convergence to determine the behavior of an infinite series.
- * Find Taylor series representations of basic functions.
- * Find the slope of a line tangent to a parametric curve.
- * Graph functions in polar coordinates and find slopes of tangent lines.
- * Communicate mathematical understanding.
- * Apply calculus and algebraic principles appropriately to applications.

Prerequisite(s): MATH2311.

(5 C: 5 lect/pres, 0 lab, 0 other)

MATH 2330 - Calculus III; Multivariable Calculus

Meets MN Transfer Curriculum Goal Area 4 - Mathematical/Logical Reasoning. This course is designed for students who have sound skills in single-variable calculus. The primary goal of this course is to help individuals acquire a solid foundation in multivariable and vector calculus. Students will apply skills to solve authentic real-world problems to enhance students understanding of higher-level concepts.

Student Learning Outcomes:

- * Explain the concepts of limits and continuity for real-valued functions of two or more variables.
- * Find derivatives of vector-valued functions and use those derivatives to describe an object's motion.

- * Use partial derivatives and/or Lagrange multipliers to locate any extreme values and saddle points of a function of several variables.
- * Evaluate iterated integrals using rectangular, cylindrical, and spherical coordinate systems.
- * Use triple integrals to solve problems such as calculating volume, center of mass, moments of inertia, and the expected value of a continuous random variable.
- * Recognize vector fields. Compute and interpret curl, divergence, and flux.
- * Use line integrals to calculate work done by a force field in moving an object along a curve.
- * State and apply the Fundamental Theorem of Line Integrals, Green's Theorem, Stokes' Theorem, and the Divergence Theorem.
- * Compare and contrast the generalizations of the Fundamental Theorem of Calculus.
- * Compute gradients and directional derivatives and apply them to finding tangent spaces and normal lines.
- * Communicate mathematical understanding to.
- * Apply calculus and algebraic principles appropriately to applications.

Prerequisite(s): MATH2321.

(5 C: 5 lect/pres, 0 lab, 0 other)

MATH 2350 - Differential Equations with Linear Algebra

Meets MN Transfer Curriculum Goal Area 4: Mathematics/Logical Reasoning.

This course is designed for students who have sound skills in single-variable calculus. The primary goal of this course is to help individuals acquire a solid foundation in the basic theory of differential equations and linear algebra. Students will apply skills to solve authentic real-world problems which are used to enhance students' understanding of higher level concepts.

Student Learning Outcomes:

- * Recognize and work with first order and higher order linear and nonlinear differential equations.
- * Model real-life situations using first order and higher order differential equations.
- * Find numerical solutions of ordinary Differential Equations including Euler's Method.
- * Apply Existence and Uniqueness Theorem.
- * Solve boundary/initial value problems.
- * Solve systems of linear equations using matrix methods including Gaussian Elimination, Gauss-Jordan Elimination, and by matrix equation representation.
- * Interpret the determinant of a matrix and its properties, and apply them to linear independence, areas, volumes, orientation, invertibility, Cramer's Rule, and the adjoint of a matrix.
- * Identify a vector space from the axioms and prove that a non-empty subset of a vector space is a subspace.
- * Create a basis for a nonzero finite dimensional vector space and find its dimension.
- * Compute the coordinate vector of a vector relative to a finite basis.
- * Construct bases for the row, column, and null space of a matrix. Relate their dimensions to one another, and to the rank and nullity of the matrix.
- * Compute, explain, and apply key properties and definitions related to eigenvalues and eigenvectors of a matrix.
- * Express a dynamical system as a mathematical model.
- * Use direction fields to illustrate solutions of differential equations. Solve differential equations using direction fields?
- * Solve systems of differential equations.
- * Solve problems using the Laplace Transform.

Prerequisite(s): MATH2321.

(4 C: 4 lect/pres, 0 lab, 0 other)

MHTT 1507 - Mobile Hydraulics

In addition to power steering, the application of hydraulics on trucks in wide spread, such as on sanitation, snowplow, agriculture, and construction trucks. In this course students study the design and operation of pumps, valves, cylinders, motors, and other hydraulic components of these trucks. The student will service, test, and repair hydraulic systems used on trucks.

Student Learning Outcomes:

- * Explain the basic principles of a hydraulic system
- * Identify various hydraulic components and their parts
- * Describe the operation of various hydraulic components in a system
- * Disassemble and inspect hydraulic components

- * Perform maintenance on a hydraulic system
 - * Diagnose and test a hydraulic system
 - * Identify the various fittings and hoses used with hydraulics
 - * List and identify common uses for hydraulics in the MHTT industry
- (3 C: 2 lect/pres, 1 lab, 0 other)

MHTT 1508 - Truck Computer Systems

Students will study an overview of the computer systems used on trucks. The emphasis will be on the study of input devices, ECU operation, and output devices. Students will identify components, test their operation, retrieve and program data, in accordance with manufacturer's procedures, as well as use various OEM computer based resources.

Student Learning Outcomes:

- * Identify, describe, and test input devices,
- * Identify and operate different types of scan tools,
- * Become familiarized with different software used in scan tools and laptops,
- * Retrieve data and perform basic programming of the ECM,
- * Identify, describe, and test output devices,
- * Locate and retrieve and use service, technical, and troubleshooting information.

Prerequisite(s): TRAN1504, MHTT1523.

(2 C: 1 lect/pres, 1 lab, 0 other)

MHTT 1510 - Truck Power Train

The truck power train makes it possible to deliver engine power to the vehicle wheels. This course covers theory and operation of all drive system components including manual transmissions, clutches, drivelines, and differentials. Other topics in this course will include component troubleshooting, repair operations, and preventive maintenance practices.

Student Learning Outcomes:

- * Perform all shop operations in compliance with industry safety standards.
- * Explain clutch, manual transmission, drive shaft, and differential theory of operation.
- * Utilize manufacturer's service data to complete power train rebuild and repair procedures.
- * Troubleshoot noise, vibration, and poor performance of truck power train components.
- * Apply power train preventive maintenance operations.
- * Complete the troubleshooting and repair process by verifying the complaint and repair procedure performed.
- * Apply the documentation process by typing a complete and concise story of the work done in the repair order system.

(4 C: 1 lect/pres, 3 lab, 0 other)

MHTT 1514 - Truck Brake Systems

Proper brake system operation is vital to safe utilization of any vehicle used on public roadways. This course covers the theory and operation of air and hydraulic brake system including foundation brake systems. Other topics covered in this courses include component troubleshooting, repair operations, and preventive maintenance practices.

Student Learning Outcomes:

- * Perform all shop operations in compliance with industry safety standards.
- * Describe hydraulic and pneumatic brake system theory of operation.
- * Inspect vehicle according to Minnesota Department of Transportation (MN-DOT) criteria.
- * Utilize manufacturer's service data to complete brake system repair procedures.
- * Troubleshoot noisy and poor brake system performance and determine necessary repairs.
- * Apply brake system preventive maintenance operations.
- * Apply the documentation process by typing a complete and concise story of the work done in the repair order system.

Prerequisite(s): MHTT1526.

(4 C: 1 lect/pres, 3 lab, 0 other)

MHTT 1518 - Truck Steering/Suspension

Understanding and maintaining truck steering and suspension systems is necessary to achieve peak tire life, fuel economy, and safe vehicle operation. Studies include steering and suspension system theory of operation, repair procedures, and preventive maintenance operation.

Student Learning Outcomes:

- * Perform all shop operations in compliance with industry safety standards.
- * Identify alignment angles.
- * Determine repair procedures necessary to correct vehicle alignment angles.
- * Utilize manufacturer's service data to complete wheel bearing and suspension system repairs.
- * Understand steering system theory of operation.
- * Utilize manufacturer's service data to complete steering system repairs.
- * Determine steering and suspension system preventive maintenance operations.
- * Apply the documentation process by typing a complete and concise story of the work done in the repair order system.

Prerequisite(s): MHTT1526.

(3 C: 1 lect/pres, 2 lab, 0 other)

MHTT 1523 - Truck Electrical Systems

Through this course the electrical theory learned in Electricity and Electronic Principles (TRAN 1504) is applied to the vehicle and its electrical systems. Upon the completion of this course students will be able to troubleshoot and repair starting and charging systems on light, medium, and heavy trucks and trailers.

Student Learning Outcomes:

- * Demonstrate knowledge of operation and testing of batteries.
- * Demonstrate knowledge of operation and testing of starting systems.
- * Read wiring diagrams.
- * Demonstrate knowledge of operation and testing of charging systems.
- * Servicing of battery, starting, and charging systems.

Prerequisite(s): TRAN1504, MHTT1526

(3 C: 1 lect/pres, 2 lab, 0 other).

MHTT 1526 - Truck and Trailer Preventative Maintenance

Students will learn the relationship between a low cost efficient truck operation and preventative maintenance program while ensuring safe vehicle operation. Following the recommendations of the Original Equipment Manufacturer (OEM) maintenance manuals, the student will perform truck and trailer maintenance in the lab. Students will be introduced to electrical, mechanical, lubrication and fluid functions of truck and trailers as they relate to a safe and well-maintained fleet.

Student Learning Outcomes:

All listed outcomes must be performed to acceptable levels of National Automotive Technician's Education Foundation (NATEF) Standards.

- * Explain the importance of preventive maintenance.
- * Examine OEM maintenance schedules.
- * List and practice shop safety procedures.
- * Perform vehicle maintenance and inspection.
- * Explain how electrical, mechanical, lubrication, and fluids relate to proper vehicle function.
- * Perform shop equipment maintenance.
- * Troubleshoot vehicle electrical failures.
- * Troubleshoot mechanical failures.

Prerequisite(s): TRAN1503.

(3 C: 1 lect/pres, 2 lab, 0 other)

MHTT 1529 - Welding

In the trucking industry there is often a need for technicians to have basic welding knowledge and skills. Students are introduced to Shield Metal Arc Welding (SMAW), gas metal arc welding (GMAW), gas tungsten arc welding (GTAW), plasma cutting, and oxygen acetylene cutting, heating, welding (OAW). Working in the lab on exercises and projects, students will practice these welding processes safely.

Student Learning Outcomes:

- * Perform shield metal arc welding (SMAW)Perform gas metal arc welding (GMAW)Perform plasma cutting
- * Perform oxygen acetylene cutting, heating, welding (OAW)Perform gas tungsten arc welding (GTAW)Fabricate a metal object using welding processes

Prerequisite(s): TRAN1503.

(2 C: 1 lect/pres, 1 lab, 0 other)

MHTT 2503 - Heavy Duty Diesel Engine Repair Procedures

Students learn theory, design, and operation of a diesel engine, practice engine rebuilding, adjustment, and troubleshooting skills on medium to heavy-duty diesel engines in the lab. Students will follow heavy-duty engine in frame

overhaul procedures according to manufacturer guidelines. Students will focus on the operation, maintenance, and repair of various fuel, exhaust, intake, lube and cooling systems.

Student Learning Outcomes:

- * Apply engine system repairs and maintenance according to Original Equipment Manufacturer (OEM) guidelines.
- * Demonstrate safe working skills during repair procedures.
- * Describe and practice the use of measuring instruments to compare with industry data.
- * Determine fuel, exhaust, intake, lubrication, and cooling system operation.
- * Inspect, clean, and evaluate engine component condition for re-use in accordance to OEM guidelines for engine overhaul procedures.
- * Contrast differences and similarities between various engine manufacturers.
- * Perform precise assembly and adjustment procedures.
- * Describe and practice the use of service information software.

Prerequisite(s): MHTT1510, MHTT1526, TRAN1503.

(5 C: 2 lect/pres, 3 lab, 0 other)

MHTT 2506 - Fuel System Management and Emission Controls

In this final course of the diesel engine/fuel systems series, student study and work on electronic computer driven engines. Through the knowledge and skills gained in this and previous diesel engine courses, students will be able to program engine computers, diagnose engine failures, and understand a variety of fuel management systems. The students will also learn about the emission controls put on the modern diesel engines and diagnose emission system problems.

Student Learning Outcomes:

- * Identify various OEM fuel system types
- * Describe EPA regulations
- * Explain engine computer operation
- * Program engine computer parameters
- * Troubleshoot electronic engine failures
- * Interpret wiring diagrams for engines
- * Explain Emission components and operation
- * Diagnose Fuel and Emission system problems

Corequisite(s): MHTT2522

Prerequisite(s): MHTT1508 or MHTT2503.

(4 C: 2 lect/pres, 2 lab, 0 other)

MHTT 2513 - Gas Engines and Alternative Fuel Systems

Throughout this course students will study the design, construction and operation of various power units using fuels other than diesel which are being used in the medium/heavy truck industry. The students will develop an understanding of safety, maintenance and diagnostic procedures on a variety of fuel systems through hands-on skills performing basic repair and identification procedures on fuel supply systems, fuel injection systems and ignition systems.

Student Learning Outcomes:

- * Demonstrate knowledge of specific safety concerns and procedures related to various fuel systems and the facilities that are used to repair these fuel systems.
- * Student will understand the properties and characteristics of CNG/LNG, Gasoline or other fuels vs. Diesel Fuels.
- * Demonstrate knowledge of various fuel supply, injection and ignition systems.
- * Students should be able to identify components and explain the operation of various Natural Gas Vehicle fuel systems.
- * Perform basic repair procedures on ignition and fuel systems utilizing OEM service information, diagnostic testing equipment (DVOM) and wiring diagrams.
- * Understand the impact that different fuels have on the environment

Prerequisite(s): TRAN1504.

(2 C: 1 lect/pres, 1 lab, 0 other)

MHTT 2520 - Automatic and Automated Manual Transmissions

The popularity of the automatic and automated manual transmission in the medium and heavy-duty truck industry continues to grow. Students will study theory and operation of both automatic and automated manual transmissions in the classroom. Develop hands on skills in the lab by practicing rebuilding of an operational Allison automatic transmission. Lab work will include preventive maintenance on various automatic transmissions, diagnostics and repairs on a variety of trucks with Allison automatic transmissions as well as numerous automated manual transmissions.

Student Learning Outcomes:

- * Demonstrate safe working skills during repair procedures, follow MN pollution control Agency regulations.
- * Compare and contrast Automatic VS. Automated manual transmissions..
- * Perform automatic transmission overhaul procedures using manufacturer data and procedures.
- * Determine transmission component condition for reuse.
- * Analyze automatic and automated manual transmission performance to determine necessary service and repair.
- * Perform automatic transmission replacement according to manufacturer service data.
- * Diagnose automatic and automated manual transmission computer control systems and fault codes.

Prerequisite(s): MHTT1510 or TRAN1503.

(4 C: 1 lect/pres, 3 lab, 0 other)

MHTT 2522 - Advanced Chassis Electrical Diagnostics

This advanced course involves various chassis electrical control systems, lighting, instrumentation, accessories, and anti-lock braking system (ABS) electrical systems on medium/heavy trucks and trailers. Emphasis is placed on using wiring diagrams, digital multimeters to troubleshoot electrical failures, and perform industry approved electrical repair procedures.

Student Learning Outcomes:

- * Interpret electrical diagrams on various types of equipment.
- * Apply multimeters to test circuits.
- * Diagnose and repair various electronic failures.
- * Repair electrical failures on medium/heavy trucks and trailers.
- * Test electrical components.
- * Test starting and charging systems.
- * Examine multiplexed circuits.
- * Evaluate electronic system problems using manufacturer's data.

Corequisite(s): MHTT2506

Prerequisite(s): MHTT1508, MHTT1523, TRAN1504 .

(3 C: 1 lect/pres, 2 lab, 0 other)

MHTT 2531 - Truck Heating and AC Systems

Basic skills acquired by the student in previous courses shall be used and developed into advanced theory, troubleshooting, and repair procedures, of heating and AC ventilation systems. Proper operation of Heating and AC ventilation systems is important for driver comfort and safe vehicle operation. This course covers theory of AC, cab heater and air ventilation systems. Heating and AC system preventive maintenance practices. Auxiliary power unit operations, troubleshooting and repair procedures.

Student Learning Outcomes:

- * Perform all shop operations in compliance with industry safety standards.
- * Identify heating and AC system theory of operation.
- * Observe all EPA regulations and perform AC service in compliance to these regulations.
- * Identify types of refrigerant.
- * Utilize manufacturer's service data to complete heating and AC system repair procedures.
- * Troubleshoot poor heating and AC system performance and determine necessary repairs.
- * Determine heating and AC system preventive maintenance operations.
- * Service and maintain auxiliary power units.
- * Document the steps taken and the process by typing a complete and concise story for the customer by using our repair order system.

Prerequisite(s): MHTT1523 or MHTT2522.

(3 C: 1 lect/pres, 2 lab, 0 other)

MHTT 2538 - Supervised Internship

Students will work in a sponsoring Medium/Heavy truck service facility. The work will be full time / part time approximately 40 hours per week. The tasks will be consistent with previous course work. This is a variable credit experience. Students may earn 1 to 7 credits. Course goals vary with the number of credits.

Student Learning Outcomes:

- * Perform required maintenance and various inspection procedures on over the road vehicles, agricultural equipment or heavy equipment.
- * Demonstrate entry level skill when performing service operations.
- * Exhibit technician/mechanic professionalism.

Prerequisite(s): TRAN1503, MHTT1526.

(C: 0 lect/pres, 0 lab, 0 other)

MHTT 2545 - Truck Troubleshooting and Repair

Basic skills acquired by the student in previous courses shall be used and developed into advanced troubleshooting, repair procedures, and skills necessary to operate a truck fleet or perform shop operations in the transportation industry. Coursework will include mechanical, electrical system diagnosis, and troubleshooting procedures. As well as identifying and performing mechanical and electrical system preventive maintenance operations. Student technicians will communicate with customers, shop foreman, and part supplier.

Student Learning Outcomes:

- * Perform all shop operations in compliance with industry safety standards.
- * Analyze post inspection report, and drivers complaints.
- * Evaluate performance of electrical, engine, and power train systems.
- * Perform vehicle preventive maintenance service and inspections on trucks and trailers.
- * Inspect vehicle according to Minnesota Department of Transportation (MN-DOT) criteria.
- * Determine and complete necessary vehicle repairs.
- * Understand, complete the troubleshooting, and repair process by verifying the complaint and repair procedure performed.
- * Document the steps taken and the process by typing a complete and concise story for the customer by using our repair order system

Prerequisite(s): MHTT1508, MHTT2503, TRAN1503.

(3 C: 0 lect/pres, 3 lab, 0 other)

MKAD 1211 - Adobe InDesign

This course will introduce and build proficiency in the use of Adobe InDesign, the industry-standard software for layout and page design. Students learn the fundamental principles of page layout, including typography, color, graphics and styles. Students learn essential design concepts and techniques used in the design and design pieces that reflect industry standards using this layout and page design software.

Student Learning Outcomes:

- * Recognize design characteristics, including the proper use of fonts, consistent alignment, and color techniques, that enhance print layouts.
- * Apply composition and layout design techniques to create various layout formats.
- * Practice the creative integration of type, text and images into formats unique to print media.
- * Differentiate appropriate uses among bitmap and vector graphics.
- * Design and layout a variety of print and digital documents.
- * Create text with full control over textual styling, formatting and copy fitting.
- * Develop various layout concept ideas to create final layouts as part of the creative process.
- * Demonstrate project management skills in meeting project deadlines.

(3 C: 2 lect/pres, 1 lab, 0 other)

MKAD 1216 - Adobe Illustrator

This course will introduce and build proficiency in the use of Adobe Illustrator, the industry-standard illustration program for creating vector-based print, multimedia and web graphics. Students construct illustrations and prepare them for export to graphics software, online, and for printing. Students develop an understanding of the role of Adobe Illustrator's object-oriented tools in the realm of design.

Student Learning Outcomes:

- * Create professional level vector-based drawings.
- * Use drawing software and tools to complete digital and print projects.
- * Compose typography with images and vector objects using the software application.
- * Identify differences among bitmap, vector, and layout software programs and images.
- * Apply basic principles of design, color, and perspective to drawn objects using the appropriate software and tools.
- * Combine creative integration of type, text, images, and objects into formats unique to print and digital.
- * Demonstrate project management and organizational skills to meet project needs and deadlines.

(3 C: 2 lect/pres, 1 lab, 0 other)

MKAD 1221 - Adobe Photoshop

Adobe Photoshop is a complex graphics and image editing software. Students will learn the most commonly used commands and techniques for obtaining consistent, predictable, high-quality images. Using the creative tools of the software, students learn how to select pixels in images, use layers, color correct images and to apply layer styles and filters to create special effects. In addition, students will learn how to create and save images in for print and digital use.

Student Learning Outcomes:

- * Explain differences between appropriate uses of color modes and graphics.
- * Identify tools in the photoshop interface.
- * Select appropriate resolutions and sizes for file output.
- * Examine the use of the software's tools to properly edit images.
- * Arrange images using multiple layers.
- * Apply effects to create realistic composites.
- * Create and format text using type effects and styles.
- * Prepare images to be saved in a variety of file formats.

(3 C: 2 lect/pres, 1 lab, 0 other)

MKAD 1240 - Web Design Fundamentals

HTML and CSS (cascading style sheets) are the fundamental code to create and design graphic interfaces for the Internet and are the backbone of this web design course. This course also introduces students to the concepts of designing for the web. Students will learn the fundamental skills needed to plan, organize and design effective web layouts, optimize graphics and write basic HTML markup by hand and with industry standard WYSIWYG editors. Website anatomy and information architecture techniques and best practices will be applied throughout the course.

Student Learning Outcomes:

- * Apply basic rules of design including color theory, consistency, balance and typography to web design.
- * Generate data driven design decisions through research, user experience and strategy planning.
- * Develop functional HTML code in a development and production environment.
- * Use a grid system to apply design to templates for quicker website generation.
- * Create styles using cascading style sheets.
- * Demonstrate proper optimization of images and graphics for desktop and mobile use.
- * Practice website troubleshooting, testing, publication and maintenance.
- * Apply Responsive Web Design to modern browsers and multiple user platforms.

(3 C: 2 lect/pres, 1 lab, 0 other)

MKAD 1250 - Copywriting and Design

Typography includes laying out and arranging type to become appealing when displayed. Copywriting entails writing text for advertisements and marketing pieces. This course will combine both skills to teach students how to integrate typography and designs that complement written copy. Students will study techniques, tactics, and strategies used to motivate consumers, position products, and build brand awareness.

Student Learning Outcomes:

- * Define typographic terminology.
- * Identify typefaces and letterforms.
- * Recognize the goals, purpose and functions of copywriting.
- * Create advertising copy that demonstrates product benefits.
- * Use color and letterforms to develop attention-getting type.
- * Apply copywriting skills to a variety of messages used for specific media.
- * Design advertisements using typography and copy elements that deliver an effective message to the consumer.

(3 C: 3 lect/pres, 0 lab, 0 other)

MKAD 1265 - Visual Design

This course builds graphic design knowledge and skills, offering student the opportunity to create advanced design in a variety of applications including print, logos, posters, billboards, brochures and websites. Research, analysis, and the design processes that lead to creative conceptualization and final design solutions are used. Emphasis is placed on visual problem-solving skills and the creative and aesthetic aspects of graphic design. Students also study the history and use of typography in design throughout the semester.

Student Learning Outcomes:

- * Apply the principles of design to create solutions to design problems.
- * Employ design techniques to a variety of mediums.
- * Demonstrate proficiency in the use of design software, tools and technology.
- * Identify various styles of well-executed layout formats.
- * Generate appropriate typography solutions for a variety of applications and situations.
- * Create design solutions such as posters, logos, brochures, print ads and web-sites.
- * Solve creative problems using research, conceptualizing, design and final comprehensives.
- * Evaluate personal design work and the designs created by others.
- * Use visual and oral presentation skills to present ideas professionally.

(3 C: 2 lect/pres, 1 lab, 0 other)

MKAD 2241 - The Northway Group

This course is designed to challenge the serious marketing and design student with a purposeful, specialized occupational experience in the marketing field through participation in The Northway Group (TNG), a student-led design agency. Each TNG project is an individualized student experience with a sponsoring business, organization, or professional and their instructor. Each student is assigned agency roles with various projects based upon their skill set and experience. Students will then apply their knowledge of marketing, writing, design, research, photography, computer software and production techniques to complete a series of projects that will realistically simulate agency work experience. As students develop their individual skill sets and experience how TNG operates, they will expand leadership roles and responsibilities in subsequent semesters to hone their craft for their chosen career path.

Student Learning Outcomes:

- * Select potential clients for marketing-related projects.
- * Discuss legal and regulatory aspects of agency work.
- * Identify current problems and opportunities within client work assignments.
- * Demonstrate time management skills.
- * Employ effective oral and written communication skills in presenting individual work.
- * Create professional designs that adhere to principles of design.
- * Rate other designs based on client requirements.

(3 C: 2 lect/pres, 1 lab, 0 other)

MKAD 2260 - Strategic Marketing Campaign

Using a unique blend of creative thinking and brand communication strategies, students will develop skills in how to use advertising and other communication tools in a coordinated manner to build and maintain brand awareness, brand contacts and brand preference. This course will provide students with a thorough understanding of the entire marketing campaign process. Attention will be on the strategic thinking of brands, focusing on brand positioning and how brands can be best managed to improve customer experiences. Students learn how to deliver creative messages and incentives and learn how to measure their effectiveness. Students create and present an integrated advertising campaign and plans book that includes multiple media executions of a single, unified message, theme or concept.

Student Learning Outcomes:

- * Describe the methods used in conducting marketing research.
- * Analyze and develop target consumer segments for a given brand and/or service.
- * Apply the process of developing a campaign's creative strategy.
- * Develop a campaign's creative strategy.
- * Calculate and allocate the campaign budget.
- * Produce a comprehensive integrated marketing campaign.
- * Discuss various campaign measurement tools and techniques.
- * Outline the relationship between ethics, social responsibility, and advertising.
- * Develop project management and organizational skills to meet project needs and deadlines.

Prerequisite(s): SAMG1200.

(4 C: 4 lect/pres, 0 lab, 0 other)

MKAD 2270 - Media Marketing

This course will give students the tools to develop a career path in the integrated world of media marketing. This course will explore a multitude of marketing tactics that can be used to create a comprehensive digital marketing campaign

as well as how to implement a successful content strategy for social media platforms. Students will learn the uses of online media, including increasing brand awareness, identifying key audiences, generating leads and building meaningful relationships with customers. By learning the benefits of media marketing, students can create a competitive advantage through the creation and distribution of valuable, relevant and consistent content to attract and retain clearly-defined audiences.

Student Learning Outcomes:

- * Identifying the key differences between customer communications, digital marketing, and traditional marketing.
 - * Apply knowledge of social media tactics to design an effective social media campaign.
 - * Employ a digital marketing strategy that aligns to marketing and business strategy.
 - * Develop digital strategies that adapt to the consumer persona during the consumer journey.
 - * Define target audience personas that align with marketing goals and objectives.
 - * Examine the strengths and weaknesses of various digital campaigns.
 - * Generate key performance indicators (KPI) to measure the success of digital marketing campaigns.
 - * Discuss new media trends.
 - * Create a media marketing plan that incorporates research, goals, implementations, and evaluation metrics.
- (4 C: 4 lect/pres, 0 lab, 0 other)

MKAD 2285 - Content Creation

Students will learn how to create content for use in today's marketing and design industry. Digital and social media platforms are growing in popularity, and are a vital part to growing and optimizing a brand's content marketing strategy. This course will teach students the tools needed to successfully create content in the form of videos, blogs, e-mail marketing, podcasts, promotion and more. Students will gain an understanding of the storytelling process to align with a brand's strategy. This course will utilize team work to brainstorm and create concepts, as well as allow for hands-on content creation. Students will become HubSpot certified in Content Marketing.

Student Learning Outcomes:

- * Study the history and growth of online medias.
 - * Gain working knowledge of current video software and its creative tool assets.
 - * Develop an understanding of the storytelling process.
 - * Classify different types of video platforms used today.
 - * Produce promotional videos suitable for specific medias.
 - * Identify research techniques for producing content
 - * Generate new content that appeals to appropriate target audience.
 - * Design a content strategy that aligns with brand's marketing strategy.
- (4 C: 4 lect/pres, 0 lab, 0 other)

MKAD 2290 - Portfolio Practicum

In this course, students will evaluate completed work and create their own professional portfolios to prepare for the hiring process. Students will study portfolio designs found within the industry and then prepare business cards, cover letters, resumes, and thank you cards for interviews. Discuss the use and importance of portfolios. Professional industry guest speakers will provide insight into the current job market and industry trends.

Student Learning Outcomes:

- * Demonstrate how to search and find appropriate entry-level jobs in the marketing field.
- * Select creative work to successfully meet employers' job requirements.
- * Demonstrate interview skills and use of a portfolio and resume.
- * Analyze job market trends identified by guest speakers from industry.
- * Develop individual USP (Unique Selling Proposition) branding.
- * Create professional portfolio content appropriate for a chosen career path.
- * Prepare and present a completed portfolio.

(3 C: 3 lect/pres, 0 lab, 0 other)MUSC 1320 - Music in World Culture Meets MN Transfer Curriculum Goal Area 6 - Humanities and Fine Arts and Goal Area 8 - Global Perspective. This course will examine musical soundscapes, traditional instruments, and cultural perspectives of traditional, folk, and pop genres from major musical traditions in Africa, the Americas, the Caribbean, East Asia, Europe, the Middle East, and Oceania, South Asia, and Southeast Asia. Students will develop basic skills in critical listening, intercultural awareness, analysis, and writing about music.

Student Learning Outcomes:

- * Analyze the elements of music and their function in selected music examples.
- * Examine how each culture's musical ensembles, instruments, ceremony, and ritual are tied to its music.
- * Compare diverse cultural, social, religious, and linguistic differences in selected musical examples.
- * Explain how music, culture, and language are integral to a culture's identity.
- * Understand cultural perspectives outside of student's immediate realm of experience through music.
- * Demonstrate how music is being used in our culture and communities today.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)MUSC 1340 - History of Rock and Roll Meets MN Transfer Curriculum Goal Area 6 - Humanities and Fine Arts. This course examines the evolution of popular music in the United States from the mid 1800s to today. Students will explore the history and societal influences that created musical compositions that we still listen to and are influenced by today. Topics will include music technology, music and dance, music as an expression of identity and gender, music and race, music as a theatrical experience, and musical influences from around the world. Students will develop basic skills in critical listening, musical analysis, and writing about music.

Student Learning Outcomes:

- * Analyze the elements of music and their function in selected music examples.
- * Examine the historical and societal influences found in popular music of the United States.
- * Categorize important style characteristics and musical genres of popular music in the United States.
- * Identify music, composers, and performers within each musical era.
- * Compare writings and new research on popular music.
- * Demonstrate how popular music from the United States has influenced other music styles.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)MUSC 1350 - Experiencing Live Music Meets Mn Transfer Curriculum Goal Area 6 - Humanities and Fine Arts. This course examines the creative role of music in human celebrations, commemorations, rituals, and entertainment from early music to contemporary music examples. Students will explore the musical norms and performance practices that were followed in each era to gain an understanding of the time in which each musical piece was written. Topics will include how music expresses the world around us in nature and urban environments, in religion and life events like births, weddings, funerals, and in societal structures like class divisions and politics, and how music is a creative venue for popular entertainment. Students will develop basic skills in critical listening, musical analysis, and writing about music.

Student Learning Outcomes:

- * Analyze the elements of music and their function in selected music examples.
- * Identify music, composers, and performers within each musical era.
- * Categorize important style characteristics and musical genres within each musical era.
- * Examine the historical and societal influences in the creation and performance of live music.
- * Articulate the function of music, and it's intended performance space, within each style era.
- * Demonstrate how contemporary music and performance spaces have been influenced by previous eras of music.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

MUSC 1360 - Class Voice

Meets Mn Transfer Curriculum Goal Area 6 - Humanities and Fine Arts. This course is designed to offer the opportunity to study the voice as an instrument in an individual and small group setting. Students will examine the history of voice and develop fundamental singing skills through in-class performance of standard vocal literature and contemporary songs. Vocal fundamentals will include principles of voice production, breathing, tone placement, resonance, articulation, and song interpretation.

Student Learning Outcomes:

- * Develop basic skills of singing, including performing with consistent and accurate intonation, coordinated breath support, and minimal tension.

- * Examine the aesthetics of historical and contemporary vocal music styles.
- * Articulate the elements of vocal production and vocal technique.
- * Analyze the elements of music and their function in selected vocal music examples.
- * Demonstrate an understanding of different musical eras and song styles through memorized musical performances.
- * Demonstrate an understanding of strategies for learning a song and thoughtful evaluation of a song's character and mood.
- * Foster a respectful environment for thoughtful and receptive critiques of peers and concert performances.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

MUSC 1370 - History of Musical Theatre

Meets MN Transfer Goal 6 - Humanities: Arts, Lit and Philosophy. Musicals reflect and respond to the social and cultural eras in which they were written. In this way, musicals can be studied as history. This course examines American musicals in their relationship to the larger society and culture of their times and will explore ideas of race, politics, gender, national identity through study of specific musicals and critical text. No previous musical experience is required.

Student Learning Outcomes:

- * Develop music listening skills to appreciate the similarities and differences between the many diverse eras of musical theatre
- * Define basic terminology appropriate to musical theatre studies
- * Identify basic characteristics of musical theatre
- * Research historical influences in American musical theatre
- * Develop a greater awareness of behaviors and interactions among individuals, groups, and institutions through musical theatre examples
- * Demonstrate knowledge of race, politics, gender, and national identity differences illustrated in musical theatre examples

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

NURS 2401 - Transitional Nursing Concepts

This course builds on the foundations of the practical nursing curriculum and focuses on the transitional role to the professional level of nursing. Concepts of professional behaviors, ethical and legal issues, communication and technology, and evidenced-based practice are introduced in this course. Students explore the roles and responsibilities within the practice of professional nursing including the nursing process, nursing judgement, and delegation when providing client centered and culturally sensitive care.

Student Learning Outcomes:

- * Examine nursing care that is client centered, culturally sensitive, and based on the holistic needs of clients.
- * Discuss nursing judgement within the scope of practice for the Registered Nurse.
- * Examine the role of evidence in determining best nursing practice.
- * Explain why information and technology skills are essential for safe client care.
- * Recognize professional nursing behaviors, professional boundaries, codes of ethics, practice acts, and legal/ethical frameworks
- * Compare leadership, delegation, and supervision in the healthcare setting.
- * Identify the roles and responsibilities within the professional nursing scope of practice as it applies to teamwork and other health care team members.
- * Examine the nursing process in providing care across the lifespan.

Corequisite(s): NURS2415, NURS2418.
(3 C: 3 lect/pres, 0 lab, 0 other)

NURS 2411 - Professional Nursing Concepts

This course focuses on the professional nursing standards of practice in preparation for the student to assume the role of the graduate nurse. Nursing theory includes advocacy, accountability, health care delivery systems, health policy and quality improvement concepts when partnering with clients, families and diverse populations.

Student Learning Outcomes:

- * Examine advocacy, accountability and therapeutic communication when partnering with clients, families, and diverse populations making health care decisions.

- * Analyze evidence based practice components that promote safe, quality care for clients, families and communities.
- * Contrast benefits and limitations of different communication technologies and their impact on safety and quality.
- * Differentiate considerations related to teaching and learning throughout the lifespan.
- * Examine the role of nursing and the inter-professional team in providing quality patient care.
- * Differentiate quality improvement methods to improve patient satisfaction, customer service and enhance cost efficient health care services.

Corequisite(s): NURS2421, NURS2424

Prerequisite(s): NURS2401, NURS2415, NURS2418.
(3 C: 3 lect/pres, 0 lab, 0 other)

NURS 2415 - Nursing Concepts I

This course assists the student to develop basic knowledge and understanding of focused biophysical, developmental, health, wellness, and illness concepts across the lifespan. The concepts of assessment, caring interventions, clinical decision making, teaching and learning and pharmacological interventions are emphasized as they relate to child and family health and general medical-surgical populations.

Student Learning Outcomes:

- * Apply holistic nursing care that is client and family centered, culturally sensitive, and based on the needs of clients with basic health problems.
- * Demonstrate basic understanding of biophysical, psychosocial, developmental and spiritual needs of the clients and families across the lifespan.
- * Utilize assessment data in the development of a nursing plan of care for clients with basic health problems.
- * Provide rationale for prioritized nursing judgments for patients with basic health problems.
- * Select evidence based interventions that reduce the risk of harm and/or client complications.
- * Determine common assessment procedures used to examine clients across the lifespan.
- * Apply the nursing process in care plan development across the lifespan.

Corequisite(s): NURS2401, NURS2418.

(5 C: 5 lect/pres, 0 lab, 0 other)

NURS 2418 - Clinical Concepts I

This clinical course focuses on applying the theoretical concepts of assessment, clinical decision making, caring interventions, teaching and learning, communication, evidence based practice and informatics. Professional behavior concepts are implemented related to accountability, advocacy, ethics and legal issues in nursing practice. Introductory teamwork, collaboration and managing of care concepts are applied in the provision of care for adults, children and child bearing families.

Student Learning Outcomes:

- * Provide holistic nursing care that is client and family centered, culturally sensitive, and based on the needs of clients across the lifespan.
- * Demonstrate nursing skills using proper techniques and measures that ensure client safety across the lifespan.
- * Apply nursing judgements when prioritizing care for patients with basic health problems.
- * Use evidence based interventions that reduce the risk of harm and promote the health of clients with basic health problems.
- * Demonstrate health record management through electronic medical record systems.
- * Practice personal integrity, professional boundaries and behaviors related to established codes of ethics, nurse practice acts, and legal and ethical nursing practice standards.
- * Participate as a member of the inter-professional team collaborating with other health care providers to promote safe, quality, patient-centered care.
- * Use quality improvement methods to improve patient care.

Corequisite(s): NURS2401, NURS2415.

(4 C: 0 lect/pres, 4 lab, 0 other)

NURS 2421 - Nursing Concepts II

This course assists the student to develop comprehensive knowledge and understanding of focused biophysical, psychological and social functioning concepts. The concepts of assessment, caring interventions, clinical decision making, teaching and learning and pharmacological interventions are emphasized as they relate

to mental health and advanced medical-surgical populations.

Student Learning Outcomes:

- * Analyze nursing care that is client centered, culturally sensitive, and based on the holistic needs of clients and families with complex health problems.
- * Demonstrate comprehensive understanding of biophysical, psychosocial, developmental and spiritual needs of the clients and families across the lifespan.
- * Integrate holistic assessment data in the development of a nursing plan of care for patients with complex health problems.
- * Prioritize holistic nursing care for patients with complex health problems.
- * Analyze evidence based interventions which reduce the risk of harm from potential or actual client complications.
- * Differentiate common assessment procedures used to examine clients across the lifespan.
- * Modify the nursing process in providing culturally competent care across the lifespan.

Corequisite(s): NURS2411

Prerequisite(s): NURS2401, NURS2415, NURS2418.

(5 C: 5 lect/pres, 0 lab, 0 other)

NURS 2424 - Clinical Concepts II

This clinical course focuses on synthesizing the theoretical concepts of assessment, clinical decision making, caring interventions, teaching and learning, communication, evidence based practice and informatics. Professional behavior concepts are implemented related to accountability, advocacy, ethical and legal issues in nursing practice. The concepts of teamwork, collaboration and leading and managing of care are applied in the provision of care for multiple patients with complex biophysical and psychosocial care needs in varied health care and rural community settings.

Student Learning Outcomes:

- * Manage nursing care that is client centered and based on the holistic needs of clients, families and diverse populations with complex health needs.
- * Demonstrate advanced nursing skills when providing holistic care for clients with complex health problems across the lifespan.
- * Formulate nursing judgments when prioritizing care for patients with complex health problems.
- * Implement evidence based interventions that reduce the risk of harm and promote the health of clients with complex health problems.
- * Apply communication technologies to promote safe clinical decisions.
- * Practice professional nursing in an ethical and legal manner that integrates integrity and accountability.
- * Demonstrate leadership skills by organizing, delegating and assigning nursing activities to implement the plan of care.
- * Participate effectively as individuals within the interdisciplinary team with open communication, mutual respect and shared decision making.
- * Incorporate concepts of evidence based practice, cost containment and current technology to improve the quality of care for patients and families within varied health care systems.

Corequisite(s): NURS2411, NURS2421

Prerequisite(s): NURS2401, NURS2415, NURS2418.

(4 C: 0 lect/pres, 4 lab, 0 other)

PHIL 1310 - Introduction to Philosophy

Meets MN Transfer Curriculum Goal Areas 5 and 6 - Humanities and History and the Social and Behavioral Sciences. Together, we explore fundamental issues of self, value, and reality within and as responses to social and historical contexts. By investigating the development and interplay of philosophy and the social world, we critically evaluate solutions and applications of philosophical issues. Equipped with such a background, we respond to contemporary social issues such as identity, knowledge, spirituality, and political freedom. Perspectives are global and may include Indian, Chinese, African, Greek, Christian, Islamic, Latin-American, Native American, and Aboriginal Australian. A great class to feel at home in our socially complex and diverse world!

Student Learning Outcomes:

- * Analyze the historical development and interplay of philosophical traditions in their political, economic, and cultural contexts.
- * Explain philosophical works as investigations into the nature of the world, the basis of human experience, and limits and capacities of human understanding.
- * Evaluate philosophical theories as responses to social concerns
- * Craft informed and rationally supported personal reactions to philosophical investigations within their social context.

- * Compare solutions to contemporary social issues such as identity, knowledge, spirituality, and political freedom.

- * Create solutions to contemporary social issues such as identity, knowledge, spirituality, and political freedom.

Prerequisite(s): ENGL1308, READ0900 or ESOL1120, READ1308 or Appropriate Placement Score.

(3 C: 3 lect/pres, 0 lab, 0 other)

PHIL 1320 - Ethics

Meets MN Transfer Curriculum Goal Areas 6 and 9 - Humanities and Ethical and Civic Responsibility. This course explores the philosophical conceptions of morality, justice and value. It addresses questions such as: how do we make ethical decisions? Where does our sense of right and wrong come from? Do the values we hold apply only to us as individuals, to us as part of a culture, or do our ethical values apply to all humans in all places and at all times? What is the just distribution of resources in a multicultural society? Through an examination of major ethical theories, both contemporary and classical, this course reveals the relationship between ethical theory and ethical practice, particularly as it relates to contemporary issues and to the variety of health field-related moral concerns.

Student Learning Outcomes:

- * Summarize a diverse range of philosophical thought in ethics.
- * Articulate individual investigations into the basis of human moral values.
- * Explain the origins and basis for the student's own ethical views.
- * Apply core theoretical concepts in ethics to specific issues.
- * Analyze the ethical dimensions of legal, social, and scientific issues.
- * Apply conceptions of morality as they are manifested in the health care environment.
- * Defend ethical arguments, including those contrary to the student's personal views.
- * Distinguish between logically supported ethical judgment and popular conceptions of morality.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

PHIL 1340 - Introduction to Logic

Meets MN Transfer Curriculum Goal Areas 2 and 4 - Critical Thinking, and Mathematics and Logical Reasoning. Logic is the study of correct reasoning. This course explores the principles of inductive and deductive reasoning, the structure of arguments, and methods for distinguishing between good reasoning and bad reasoning. The course introduces students to traditional Aristotelian logic, modern symbolic logic, and propositional logic. Students will learn a variety of tools for proving validity in deductive arguments and for understanding formal and informal fallacies as they occur in their own reasoning.

Student Learning Outcomes:

- * Identify the components of an argument.
- * Evaluate validity using multiple analytical tools.
- * Apply higher-order thinking to infer missing premises or conclusions.
- * Translate arguments into standard categorical and syllogistic form.
- * Create symbolic statements from verbal/written statements.
- * Differentiate between inductive and deductive arguments.
- * Recognize common logical fallacies in argumentation.
- * Determine immediate inferences.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

PHIL 1360 - Comparative World Religions

Meets MN Transfer Curriculum Goal Areas 6 and 8 - Humanities and Global Perspective. Using a comparative framework, this course attempts to understand the nature of religion by looking at the historical and ideological formation of some of the world's most influential religious traditions. It explores ideas of ultimate meaning in different cultures and different times, and follows the development of these ideas in the long search for purpose in human existence. The primary goal is to comprehend better the varieties of religious experience in the world, with a particular emphasis on understanding the unfamiliar empathetically and the familiar objectively.

Student Learning Outcomes:

- * Explain the histories, philosophies, and practices of major religious traditions.
- * Interpret religious values, images, symbols, and texts critically.

- * Articulate the formative role religion plays in culture.
- * Summarize beliefs and theologies outside the student's own belief system.
- * Describe how religion has shaped and been shaped by civilizations, past and present.
- * Identify the scope and variety of artistic and literary expressions in religion traditions.
- * Formulate an informed personal reaction to artistic and literary works in various religions.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

PHYS 1305 - Conceptual Physics

Meets MN Transfer Curriculum Goal Area 3 - Natural Sciences. This course covers the fundamentals of physics at conceptual level in the area of Mechanics, Properties of Matter, Heat, Sound, Electricity and Magnetism. This is an introductory course in Physics; which underlines on the essential concepts, vocabulary and applications of physics. This course is designed to prepare the students for higher level physics courses or for the students who do not plan to pursue career in science and engineering. This course encompasses lab component which emphasizes on measurement, result prediction, data collection, and data analysis.

Student Learning Outcomes:

- * Apply the concepts of physics in the fields of Mechanics, Properties of Matter, Heat, Sound, Electricity and Magnetism.
- * Expound the linear motion of objects - speed, velocity, acceleration, circular motion, projectile motion and Newton's Law of Motions
- * Illustrate basic fundamentals related to conservation of momentum and energy.
- * Define the angular motion of objects - angular velocity, angular acceleration, torque and angular momentum.
- * Paraphrase the introductory concepts of heat and thermodynamics for example; pressure, temperature, thermal expansion, heat transfer and change of phases and describe first and second law of thermodynamics.
- * Interpret basic principles of wave propagation and oscillations.
- * Use various concepts of electricity and magnetism such as Coulomb's law, Ohm's law, series circuit, and parallel circuit.
- * Differentiate between direct and inverse relationship among different physical quantities and explain how change in one quantity affects another quantity.
- * Conduct experiments to test hypothesis and mathematical formula.
- * Demonstrate experimental expertise through taking precise measurement, collecting, analyzing, tabulating and interpreting data.
- * Analyze 'real world' problems to simplify them through problem solving techniques and calculate or estimate solutions.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308, or ESOL1120 or appropriate reading placement score, and one of the following: MATH0960 or appropriate math placement.

(4 C: 3 lect/pres, 1 lab, 0 other)

PHYS 2300 - General Physics I

Meets Mn Transfer Curriculum Goal Area 3 - Natural Sciences. This course provides students exposure to important concepts and principles of physics as well as their application to everyday phenomena. Students will develop an understanding of mechanics, fluid dynamics, thermodynamics, and sound. Students will gain substantial understanding of experimental procedures including laboratory safety, collaborative learning, data collection, and data analysis through accompanying laboratory segment. This course is intended for students taking liberal arts and/or pre-professional courses.

Student Learning Outcomes:

- * Describe various concepts and principles of physics in the areas of kinematics, statics, dynamics, work, energy, rotational motion, gravitation, thermodynamics, fluid dynamics, waves, and sound.
- * Distinguish between distance and displacement, speed and velocity, mass and weight, static and kinetic friction, elastic collision and inelastic collision, gauge and absolute pressure, and transverse, and longitudinal waves.
- * Explain the motion of objects moving at constant velocity and constant acceleration.
- * Construct comprehensive free-body diagrams (FBD) to solve classic mechanics problems.
- * Determine direction and magnitude of resultant vectors by adding and/or subtracting various vectors.
- * Solve problems using algebra and trigonometry related to the linear motion of

- objects' speed, velocity, acceleration, circular motion, and projectile motion.
- * Calculate angular velocity, angular acceleration, and centripetal force acting on an object moving on a circular path.
- * Analyze the motion of an object along an inclined plane by using Newton's second law of motion.
- * Apply conservation of energy and conservation of momentum principles to solve problems.
- * Demonstrate understanding of static equilibrium and dynamic equilibrium.
- * Apply Pascal's principle and Archimedes' principle to solve problems of fluid systems.
- * Use the first law and the second law of thermodynamics to solve the problems.
- * Describe the components of wave and relate those components to mechanical vibrations, sound, and decibel levels.
- * Use appropriate computer technology and software to perform experiments, perform analysis, and prepare reports.
- * Show experimental skill by setting-up and performing experiments, collecting data, and formulating conclusion from the performed experiments.
- * Communicate physics theory, experimental results and real world applications of physics principles through effective and clear oral presentation(s) and detailed written document(s).

Prerequisite(s): MATH1360 or appropriate placement score.

(4 C: 3 lect/pres, 1 lab, 0 other)

PHYS 2305 - General Physics II

Meets Mn Transfer Curriculum Goal Area 3 - This is the second course in an extensive two semester preparation in algebra based physics. In this course emphasize is given on developing an understanding of electricity, magnetism, and optics using algebra and trigonometry. Students will gain substantial understanding of experimental procedures including laboratory safety, collaborative learning, data collection, and data analysis through accompanying laboratory segment. This course is intended for students taking liberal arts and/or pre-professional courses in the areas of veterinary, medicine, dentistry, biology, optometry, and architecture.

Student Learning Outcomes:

- * Describe various concepts and principles of physics in the areas of electricity, magnetism, and optics.
- * Apply Coulomb's law to calculate electrical force among electrical charges.
- * Explain electric field, electric potential, electric flux, magnetic flux, electric potential energy, capacitance, electric current, current density, and electric power.
- * Compute an electric field due to a point charge, due to an electric dipole and due to distribution of point charges.
- * Solve problems related to electromagnetism using Coulomb's Law, Gauss's Law, Ohm's Law, Kirchhoff's Law, Ampere's Law, Faraday's Law, and Lenz's Law.
- * Analyze simple AC and DC circuits to calculate various circuitry parameters such as resistance, current and electric potential.
- * Distinguish among conductors, insulators, semiconductors, and superconductors.
- * Describe how electrical measurement instruments such as ohmmeter, voltmeter and ammeter can be used.
- * Simplify series and parallel circuits by determining equivalent resistance.
- * Evaluate LR circuit, RC circuit and series LCR circuit.
- * Write about different types of magnetism - diamagnetism, paramagnetic, and ferromagnetism.
- * Review the principles of geometric optics.
- * Use principles of reflection, refraction, interference, and diffraction to solve problems related to the optics.
- * Utilize appropriate computer technology and software to perform experiments, perform analysis, and prepare reports.
- * Show experimental skill by setting-up and performing experiments, collecting data, and formulating conclusion from the performed experiments.
- * Communicate physics theory, experimental results, and real-world applications of physics principles.

Prerequisite(s): PHYS2300.

(4 C: 3 lect/pres, 1 lab, 0 other)

PHYS 2310 - Engineering Physics I

Meets MN Transfer Curriculum Goal Area 3 - Natural Sciences. This course covers the physics concepts in depth through the use of calculus and vector analysis. It covers the concepts and principles of physics in the area of Mechanics

and Thermodynamics. This course is the foundation for the further studies in the field of science, engineering and technology (STEM) and it is designed for the students who plan to pursue career in these fields. The laboratory component associated with this course provides noteworthy experience in various experimental procedures such as laboratory safety, collective learning, designing experiments, data and error analysis.

Student Learning Outcomes:

- * Analyze various theoretical and practical concepts of physics used by engineers, physicist and other scientific professionals in the area of kinematics, statics, dynamics, work, energy, rotational motion, gravitation and thermodynamics.
- * Derive formula from basic principles and work out solution to physical problems in the field of mechanics and thermodynamics.
- * Draw a complete free-body diagram (FBD) for a classic mechanics problems.
- * Perform vector analysis to solve various mechanics problems.
- * Use advanced mathematical techniques to solve the problems related to the linear motion of objects - speed, velocity, acceleration, circular motion, and projectile motion
- * Apply Newton's Law of Motions to solve the problems of statics and dynamics.
- * Apply the law of conservation of energy, linear momentum and angular momentum.
- * Solve problems related to the angular motion of objects - angular velocity, angular acceleration, torque and angular momentum.
- * Compute the amount of heat exchanged for a system where a phase changes may or may not occur.
- * Describe laws of thermodynamics.
- * Calculate the efficiency of Carnot engine and coefficient of performance of a refrigerator.
- * Explain fundamental physical principle which rule the performance of physical structures.
- * Recall basic classical physics laws to solve problems mathematically.
- * Communicate physics theory and experimental results through presentation to peers and faculty.
- * Review laboratory safety procedures and techniques.
- * Verify theoretical physics concepts through practical investigation.
- * Demonstrate cooperative learning skills.
- * Explain that though physics provides estimated answers, it is very appropriate to the real world and is a precious tool for solving problems not at only at global level but also at personal level.

Prerequisite(s): MATH2311 or Appropriate Placement Score.
(5 C: 4 lect/pres, 1 lab, 0 other)

PHYS 2320 - Engineering Physics II

Meets MN Transfer Curriculum Goal Area 3 Natural Sciences. This is the second course in an extensive two semester preparation in calculus physics. The main purpose of this course is to provide a comprehensive overview to the principles of physics using calculus. It covers the concepts and principles of physics in the areas of Electricity, Magnetism, and Optics. This course is a foundation for further studies in the field of science, technology, engineering, and mathematics (STEM) and it is designed for students who plan to pursue careers in these fields. The laboratory component associated with this course provides noteworthy experience in various experimental procedures such as laboratory safety, collective learning, designing experiments, data, and error analysis.

Student Learning Outcomes:

- * Analyze various theoretical and practical concepts of physics used by engineers, physicist, and other scientific professionals in the areas of electricity, magnetism, and optics.
- * Compute electrical force between electric charges using Coulomb's Law.
- * Apply Gauss's law to calculate electric field distribution.
- * Calculate electric potential due to individual charge or distributed charge.
- * Define electric field, electric potential, flux, electric potential energy, capacitance, electric current, current density, and electric power
- * Explain Coulomb's Law, Gauss's Law, Ohm's Law, Ampere's Law, Faraday's Law, and Lenz's Law.
- * Determine the equivalent resistance of numerous resistors connected in series, parallel or combination of both.
- * Summarize characteristics of conductors, insulators, semiconductors, and superconductors.
- * Evaluate simple Alternating Current (AC) and Direct Current (DC) circuits

applying Kirchhoff's law.

- * Estimate the capacitance of a parallel plate capacitor, a spherical capacitor, a cylindrical sphere and an isolated sphere capacitor.
- * Find the equivalent capacitance of several capacitors connected in series and/or parallel.
- * Analyze RC Circuit, RL Circuit and a series LRC Circuit.
- * Use Biot-Savart law to estimate the magnetic field of a current carrying long straight wire.
- * Locate real and virtual images shaped by spherical mirrors and lenses.
- * Describe the total internal reflection phenomenon.
- * Communicate physics theory and experimental results through presentation to peers and faculty.
- * Verify theoretical physics concepts through practical investigation.

Prerequisite(s): MATH2321, PHYS2310.

(5 C: 4 lect/pres, 0.5 lab, 0.5 other)

PLBG 1504 - Piping Procedures I

In this course students will study plastic piping, which involves the joining of drainage, waste and vent, and water supply distribution lines. Students will become familiar with the different types of copper pipe, fittings and tubing. PEX water and heating distribution piping will be discussed and utilized. Students will also utilize and study water pumps. Safe methods of handling and installing piping in accordance with Minnesota State Plumbing Code and general industry accepted standards will be emphasized.

Student Learning Outcomes:

- * Identify different types and sizes of copper pipe and fittings.
- * Operate hand and power copper cutting and cleaning tools
- * Join copper pipe and fittings using appropriate methods and tools of assembly
- * Identify different types and sizes of plastic drainage, waste and vent, water supply pipe and fittings
- * Join plastic pipe and fittings using appropriate methods and tools of assembly
- * Operate plastic cutting hand and power tools
- * Identify and utilize materials and methods of piping support installation
- * Install DWV piping in project house.
- * Install water piping in project house.
- * Demonstrate water pump procedures.

(5 C: 2 lect/pres, 3 lab, 0 other)

PLBG 1508 - Plumbing Calculations I

This course will apply mathematics to plumbing calculations in developed lengths of pipe, fitting allowances, offsets, areas, volumes, and diameters. Students will also use formulas common to the plumbing industry.

Student Learning Outcomes:

- * Apply mathematical concepts to solve formulas, decimals, fractions, square roots, angle measurement and conversion of length measurements.
- * Identify standard weight pipe and calculate allowances for pipe fittings.
- * Calculate equal spacing and angles.
- * Demonstrate the ability to solve 45-degree diagonals and pipe lengths.
- * Utilize mathematic formulas to solve center to center and end to end pipe calculations.
- * Calculate for slope and drop.
- * Analyze formulas to solve elevations and grade.
- * Calculate rolling offsets.
- * Demonstrate the ability to use constants to solve parallel offsets.

(4 C: 2 lect/pres, 2 lab, 0 other)

PLBG 1510 - Minnesota State Plumbing Code I

Students will study the Minnesota Plumbing Code, which covers the laws, rules, and regulations of plumbing installed in Minnesota.

Student Learning Outcomes:

- * Analyze basic and general plumbing principles.
- * Explain definitions for plumbing terminology related to plumbing code.
- * Identify materials used for fixtures, and fixture fittings.
- * Analyze information relevant for the safe installation and use of water heaters.
- * Identify materials used in water supply and distribution.
- * Demonstrate the ability to select the proper water protection assembly for the application.

(3 C: 3 lect/pres, 0 lab, 0 other)

PLBG 1514 - Minnesota State Plumbing Code II

This course will build on knowledge learned in first semester plumbing code and apply this information to gain through understanding of Minnesota plumbing code. Including pipe sizing of residential homes all the way up to multi story buildings with every type of plumbing fixture in them. This course also covers plumbing license requirements and practical testing to achieve the journeyman license.

Student Learning Outcomes:

- * Sizing water distribution piping system for residential and commercial buildings.
- * Analyze technical charts in the code book to size and correctly install drain waste and vent lines.
- * Design and size indirect waste piping.
- * Design and size storm drainage systems.
- * Sizing and selecting correct traps and interceptors.
- * Design and size storm drainage systems.
- * Utilize referenced standards for plumbing materials and installation procedures.
- * Apply principles of non-potable rainwater catchment systems to select and install systems correctly.
- * Explain the qualifications of licensed plumbers and the steps taken to qualify for a plumbing license.

Prerequisite(s): PLBG1510.

(3 C: 3 lect/pres, 0 lab, 0 other)

PLBG 1518 - Blueprint Reading and Estimating I

The student will learn to read building plans and pipe diagrams, interpret floor plans elevation views, draw isometrics and sketch detailed work drawings. Student will develop skills in estimating plumbing costs for new installations and remodels and prepare projects using industry developed estimating procedures. Estimates include material, fixtures and labor costs with profit and overhead calculations.

Student Learning Outcomes:

- * Read Architects scale.
- * Interpret and draw simple floor plan drawings.
- * Analyze rough in drawings.
- * Draw isometric pipe drawings of residential dwellings.
- * Interpret and draw isometrics of project house plumbing.
- * Design underground and drainage, waste and vent system and estimate labor costs on project.
- * Design and size water distribution piping and estimate the labor cost.
- * Interpret print for fixtures and estimate fixture materials and labor cost.
- * Estimate all labor and materials cost including markup and profit.
- * Demonstrate the ability to write up labor and materials estimate and submit bid for projects.

(4 C: 1 lect/pres, 3 lab, 0 other)

PLBG 1520 - Blueprint Reading and Estimating II

The student will learn how to read building plans and pipe diagrams. Interpret floor plans, elevation views, draw isometrics and sketch detailed work drawings. Student will develop skills in estimating plumbing cost for basic residential installations and remodels. Building on these skills, the student will gain knowledge of complex residential and commercial blueprint reading, pipe diagrams, isometric drawing and job cost estimating. Student will learn to interpret commercial building systems including how to size, draw and estimate the cost of a storm water disposal system and commercial bathroom groups.

Student Learning Outcomes:

- * Draw floor plans to scale.
- * Interpret complex residential prints.
- * Design isometric pipe diagrams.
- * Analyze the code book to Size isometric drawings.
- * Estimate costs from isometric drawings form residential projects.
- * Demonstrate how to size and draw storm water systems.
- * Demonstrate the ability to size and draw commercial plumbing projects.
- * Estimate isometric drawings for commercial project.

Prerequisite(s): PLBG1518.

(3 C: 1 lect/pres, 2 lab, 0 other)

PLBG 1524 - Plumbing Calculations II

This course will build on the knowledge of plumbing calculations one and move

into more advanced plumbing math that is used in the plumbing trade. The course uses formulas to solve for many complex problems that arise in plumbing systems. The math is then applied to lab projects in practical situations.

Student Learning Outcomes:

- * Apply mathematic conversions to solve for elevation and grade.
- * Utilize formulas to calculate rolling offsets.
- * Utilize graphing to solve pipe length by layout.
- * Demonstrate the ability to solve for water measure including volumes pressure and capacity.
- * Analyze formulas for water pressure head and force.
- * Evaluate properties of gases and how that relates to safer use of gases.
- * Evaluate building conditions that effect heat loss calculations.

Prerequisite(s): PLBG1508.

(3 C: 1 lect/pres, 2 lab, 0 other)

PLBG 1530 - Piping Procedures II

Students will learn about commercial plumbing systems which will include working with cast iron and, steel pipe. The student will also learn about flushometer water closets and urinals and how to install them in public bathrooms meeting ADA requirements. Students will get to use a scissor lift work platform to install pipe on high ceiling areas. Students will learn the standard installation procedures of common plumbing fixtures and appliances, which comply with the Minnesota Plumbing Code requirements. Students will also learn troubleshooting procedures for plumbing service and repair.

Student Learning Outcomes:

- * Identify different kinds of steel and cast iron pipe and fittings.
- * Operate hand powered steel and cast iron pipe cutting tools.
- * Operate steel and cast iron assembly tools.
- * Utilize various types of hangers.
- * Fabricate and assemble steel and cast iron projects using technical prints.
- * Rough in water supply and drainage waste and vents.
- * Install water closets, kitchen sinks, lavatories, showers, and bathtubs in school labs and in current house projects.
- * Analyze technical data to repair faucets, water closets and water heaters.
- * Design a hydronic heating system with proper components.

Prerequisite(s): PLBG1504.

(3 C: 1 lect/pres, 2 lab, 0 other)

PLBG 1538 - Plumbing Internship

Students will work in a sponsoring plumbing-related business applying knowledge, concepts and skills learned in the classroom and lab.

Student Learning Outcomes:

- * Apply skills learned in the classroom towards real plumbing jobs.
- * Work with a variety of employers and employees.
- * Work with customers to solve problems with plumbing systems.
- * Repair and install plumbing systems.

(2 C: 0 lect/pres, 0 lab, 2 other)

PLBG 1544 - Career Planning/Customer Relations

This course will prepare students for their careers in the pipe trades and help them secure their first job. The student will set goals and connect those to the job seeking process. Student will participate in discussions with prospective employers. Soft skills will be developed as part of building good customer relations.

Student Learning Outcomes:

- * Generate professional written materials to attain future careers in the pipe trades.
- * Accurately complete initial plumbing license application.
- * Identify and apply ethical and good customer relations skills in in classroom and lab situations.
- * Analyze various compensation and benefit packages between plumbing shops.
- * Demonstrate good interview skills.

(1 C: 0 lect/pres, 1 lab, 0 other)

POLS 1304 - Introduction to American Politics

Meets MN Transfer Goals 5 and 9 - History/Social, Behavioral Sciences and Ethical/Civic Responsibility. Introduction to American Politics is an introductory course on political ideologies, (democracy, capitalism, etc.), political institutions, (federal, state, and local governmental systems), and processes, (how a bill becomes a law, etc.). Team learning, community involvement and off-campus activities such as city council meetings are used as teaching tools.

Student Learning Outcomes:

- * Understand the major political institutions in the United States, the state and locally
- * Understand how the political system works and more importantly, what part they can play in the system
- * Understand how the scientific method applies to political behavior, with the limitations and potential it has to help understand politics
- * Apply critical thinking skills to the political process and to political behavior

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

PRSG 2401 - Medical Surgical Nursing I

This course will cover conditions and diagnostics related to body systems, medical terminology, pathophysiology, signs and symptoms, medical/surgical treatment and nursing interventions of acute and chronic disorders. The course includes components of disease prevention and health promotion for diverse populations and emphasis on the effects of aging. Care based on evidence based practice and established institutional and safety guidelines will be introduced throughout the content.

Student Learning Outcomes:

- * Summarize patterns of health promotion and disease prevention for acute and chronic conditions incorporating transcultural approaches to health.
- * Relate science and evidenced based practice to safe patient care.
- * Identify nursing interventions based on professional knowledge and scope of practice to minimize risk of harm and enhance the likelihood of desired health outcomes.
- * Summarize individual patient responses to health and illness emphasizing humility, trust, empathy, and support.
- * Determine the definition, diagnostics, pathophysiology/etiology, signs and symptoms, medical/surgical treatments, and nursing interventions of acute and chronic disorders.

(3 C: 3 lect/pres, 0 lab, 0 other)

PRSG 2402 - Medical Surgical Nursing II

This course is a continuation of content from Medical Surgical Nursing I and integrates the nursing concepts introduced in other program courses. This course will cover conditions and diagnostics related to body systems, medical terminology, pathophysiology, signs and symptoms, medical/surgical treatment and nursing interventions of acute and chronic disorders. The course includes components of disease prevention and health promotion for diverse populations and emphasis on the effects of aging. Prioritization of care based on evidence based practice and established institutional safety guidelines will be covered throughout the content.

Student Learning Outcomes:

- * Differentiate patterns of health promotion and disease prevention for acute and chronic conditions incorporating transcultural approaches to health
- * Incorporate science and evidenced based practice to safe patient care
- * Prioritize nursing interventions based on professional knowledge and scope of practice to minimize risk of harm and enhance the likelihood of desired health outcomes
- * Interpret individual patient responses to health and illness emphasizing humility, trust, empathy, and support
- * Determine the definition, diagnostics, pathophysiology/etiology, signs and symptoms, medical/surgical treatments, and nursing interventions of more complex acute and chronic disorders.

Prerequisite(s): PRSG2439, PRSG2401, PRSG2409, PRSG2419

(3 C: 3 lect/pres, 0 lab, 0 other)

PRSG 2409 - Basic Nursing Concepts

In this course, the student will acquire the theory base essential to building a foundation for the practice of nursing which encompasses safe, quality nursing care. This course utilizes the nursing process as the stepping stone to assist the student to begin to recognize principles of alterations in health. This course will also introduce ethical and legal principles and expected personal and professional behaviors that are needed to provide safe holistic care.

Student Learning Outcomes:

- * Recognize basic concepts and principles of nursing practice in the health care environment.
- * Relate knowledge and science to nursing practice.
- * Discuss personal and professional standards and behaviors of nursing practice.

- * Develop therapeutic relationship skills for nursing practice.
 - * Describe the impact of team functioning on safe quality care.
- (3 C: 3 lect/pres, 0 lab, 0 other)

PRSG 2411 - Bridging to Nursing Practice

In this course the student will synthesize and integrate prior learning from practical nursing theory and lab classes. The student will focus on topics and skills that relate to the graduate nurse role. The student will acquire needed knowledge in ethical, legal, state licensure, and nursing practice standards while exploring the transitional process from student to entry-level practical nurse.

Student Learning Outcomes:

- * Examine how change, technology, legislation, economics, and regulation affect nursing practice
- * Evaluate legal and ethical behaviors on regulatory and professional standards
- * Compare leadership and management within the scope of the practical nurse
- * Analyze factors, including evidenced based practice, that contribute to patient safety and methods of improving safety in health care environments
- * Determine sources of conflict and when to report conflict.
- * Demonstrate commitment to community health.

Prerequisite(s): PRSG2401, PRSG2409, PRSG2419, PRSG2429, PRSG2439.

(2 C: 2 lect/pres, 0 lab, 0 other)

PRSG 2419 - Nursing Skills

This course allows the practical nursing student to develop essential technical and communication skills that are necessary to provide safe, quality nursing care. While using a holistic approach, students will build the necessary skills that are based upon focused nursing assessment data and nursing judgment to provide care to patients with alterations in health. Students will build these skills through demonstration, implementation and evaluation in a simulated health care setting. Students will adhere to the personal and professional standards of nursing practice.

Student Learning Outcomes:

- * Demonstrate basic concepts and principles of nursing practice.
- * Modify nursing action based on judgment, knowledge, and science in nursing practice.
- * Display personal and professional standards of nursing practice.
- * Practice safe and quality patient care.
- * Demonstrate therapeutic interactions in nursing practice.
- * Employ effective teamwork by respecting others contributions when providing safe and quality care.

(3 C: 1 lect/pres, 2 lab, 0 other)

PRSG 2429 - Essentials of Clinical Pharmacology

In this course students will acquire introductory pharmacology information that includes referencing and resources for safe medication administration in nursing. This course covers classifications, dosing, expected action, routes, side effects, drug interactions, and nursing implications for current and newly developed medications. This course will also explore new technologies applicable to pharmacology. Content also includes how individual values and beliefs impact health.

Student Learning Outcomes:

- * Identify medications and their effects on each body system.
- * Summarize nursing responsibilities before, during, and after a medication is administered.
- * Minimize risk of harm to patients and providers through both system effectiveness and individual performance.
- * Analyze how individuals' values and beliefs impact health.

(2 C: 2 lect/pres, 0 lab, 0 other)

PRSG 2439 - Clinical Application I

In this course the student will implement the nursing process and nursing skills in a variety of healthcare settings. Students will also deliver care while developing prioritization and critical thinking skills. Delivery of care will focus on the nursing process, theory, and professional standards. Students will be guided in performing nursing functions and in the implementation of empathetic nursing care of the whole person.

Student Learning Outcomes:

- * Demonstrate the roles and professional responsibilities including legal and ethical behaviors of the practical nurse.
- * Identify differences in health care beliefs and values in diverse populations.
- * Summarize the need to be cost effective while delivering patient care.

- * Demonstrate the ability to utilize evidence based practice, nursing process, decision making, and critical thinking skills.
 - * Demonstrate caring, compassion, empathy, trust, support, and show respect, dignity, and humility for all individuals while delivering nursing care.
 - * Demonstrate therapeutic and effective communication with clients and members of the multidisciplinary team to enhance quality and safety of client care.
 - * Recognize the importance of self- reflection, life-long learning, and how these impact safe nursing care.
 - * Participate as a positive member in a multidisciplinary health care team.
- (3 C: 0 lect/pres, 3 lab, 0 other)

PRSG 2440 - Clinical Application II

This course is a progressive course as it builds on Clinical Application I. In this course students will be expected to deliver care while utilizing prioritization and critical thinking skills. The expectation is that the student will have a more thorough understanding of the nursing process, theory and professional standards. Students will be expected to perform independent nursing functions and be able to implement empathetic nursing care of the whole person. The students will have opportunities to implement the nursing process and nursing skills in higher acuity health care settings.

Student Learning Outcomes:

- * Compare the differences in health care beliefs and values while applying legal and ethical behavior with diverse populations.
 - * Demonstrate health promotion and disease prevention strategies.
 - * Prioritize care while being cost effective.
 - * Interpret client data using evidence based practice, nursing process, decision making, and critical thinking skills.
 - * Demonstrate regulatory and professional standards with awareness of personal beliefs, values, and biases to support compassionate care.
 - * Demonstrate therapeutic and effective communication with clients and members of the multidisciplinary team to enhance quality and safety of client care.
 - * Utilize effective interventions and technologies to promote personal and client safety.
 - * Demonstrate empathetic, compassionate, non-judgmental nursing care which upholds the value of the whole person.
 - * Illustrate self-reflection and how it affects the delivery of nursing care.
 - * Participates as a positive member in a multidisciplinary health care team.
- Prerequisite(s): PRSG2401, PRSG2409, PRSG2419, PRSG2429, PRSG2439.
(5 C: 0 lect/pres, 5 lab, 0 other)

PRSG 2450 - Maternal Child Nursing

This course covers nursing concepts for the obstetric and pediatric patients. This course provides an opportunity to explore the physiological and psychological responses to illness while considering diversity. Nursing care concepts and the application of the nursing process are considered with the focus on health promotion and disease prevention.

Student Learning Outcomes:

- * Apply health promotion and disease prevention principles.
 - * Integrate evidence based practice to provide safe patient-centered care.
 - * Describe the definition, diagnostics, pathophysiology/etiology, signs and symptoms, medical/surgical treatments, and nursing interventions for obstetric and pediatric conditions.
 - * Prioritize nursing interventions based on professional knowledge and scope of practice to minimize risk of harm and enhance the likelihood of desired health outcomes.
 - * Evaluate how diversity impacts wellness and health care practices.
- Prerequisite(s): PRSG2401, PRSG2409, PRSG2419, PRSG2429, PRSG2439.
(3 C: 3 lect/pres, 0 lab, 0 other)

PRSG 2460 - Mental Health Nursing

In this course the student will have the opportunity to develop their understanding of human behavior, mental health disorders, psychiatric medications and therapeutic communication skills. The student will also examine nursing interventions, the cognitive affect, and behavioral functioning of clients within a legal and ethical framework.

Student Learning Outcomes:

- * Investigate the role of therapeutic communication and defense mechanisms in the nursing care of the client with mental health disorders.
- * Describe HIPAA and its role in mental health care delivery.
- * Apply the concepts of personality development and developmental tasks

related to mental health nursing.

- * Identify classifications, uses, actions, side effects, nursing considerations and interventions for selected psychiatric medications.
 - * Differentiate physical and behavioral symptoms, treatment modalities and nursing care of mental health disorders.
 - * Apply the concepts of crisis to mental health nursing and the nurse's role in crisis situations.
 - * Examine the characteristics and treatment of substance abuse.
- Prerequisite(s): PRSG2401, PRSG2409, PRSG2419, PRSG2429, PRSG2439.
(2 C: 2 lect/pres, 0 lab, 0 other)

PSYC 1300 - Introduction to Psychology

The course meets MN Transfer Curriculum Goal Area 5 - History and the Social and Behavioral Sciences. This course offers an engaging introduction to the scientific study of human behavior: from the history of the field and its major advances to the latest research on topics such as personality, mental health, memory, sexuality, and creativity. Throughout the semester, students will actively explore a wide variety of psychological topics, spanning from the biological bases of behavior to the social influences each of us encounter daily. Students will gain knowledge of how psychologists formulate research questions, gather data, and interpret findings. Where once questions about the human mind were mysteries, psychology has not started to unravel relevant and applicable answers.

Student Learning Outcomes:

- * Demonstrate an understanding of key topics in Psychology.
- * Adopt the framework of Psychological Science (correctly use terminology and concepts, engage in scientific problem-solving) Compare and contrast the major theoretical approaches to Psychology.
- * Describe scientific research methods used in Psychology.
- * Apply course concepts to one's own daily life.
- * Utilize critical thinking skills (e.g., evaluate information quality, distinguish between causation and correlation, adopt multiple perspectives for a given problem).
- * Describe the history of Psychology and how Psychology is distinct from related disciplines such as sociology and philosophy.
- * Demonstrate an understanding and appreciation for aspects of human diversity as it applies to Psychology

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

PSYC 1304 - Lifespan Developmental Psychology

Meets MN Transfer Curriculum Goal Area 5: History and the Social and Behavioral Sciences. Lifespan Psychology is both intriguing and personally relevant because each of us is constantly developing. The course examines the biological, cognitive, and socio-emotional development of humans in diverse contexts across the human lifespan. This course explores scientific discoveries and theories through the use of key psychological concepts and terminology. Throughout this exploration there is a focus on the integration of personal experience and connection to related current public policy and diversity issues.

Student Learning Outcomes:

- * Compare and contrast the main theories and issues of human lifespan development: learning, cognitive, contextual, and sociobiological.
- * Identify biological, neurological, cognitive, cultural, and socio-emotional processes associated with developmental periods.
- * Analyze how biological, neurological, cognitive, cultural and socio-emotional processes interact with each other in a developmental context.
- * Identify the scientific method and research methodology used by developmental psychologists.
- * Evaluate the quality of developmental psychology information from multiple sources.
- * Describe the developmental challenges and psychopathologies that may occur throughout the lifespan.
- * Illustrate how developmental psychological principles apply to daily life.
- * Analyze ethical perspectives related to legal, social, and scientific issues in human development.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

PSYC 1310 - Psychology of Women and Gender

Meets MN Transfer Curriculum Goal Areas 5 and 7A. Psychology of Women and Gender will critically explore the psychology of women and psychological sex and gender differences in a sociocultural, historical, global and biological context. This class includes topics that relate uniquely to women, as well as differences and similarities between genders. It will take an intersectional approach to many facets of women's lives.

Student Learning Outcomes:

- * Compare and contrast feminist and traditional theories and research and critically examine biases relevant to the psychological factors shaping the lives of women.
- * Identify the psychological effects of power in relationships.
- * Analyze the beliefs and theories regarding women's sexuality and the impact of those beliefs on peoples' lives.
- * Analyze implications of gender roles and gender stereotypes in a personal and cultural context.
- * Identify the role of gender throughout the lifespan.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

PSYC 1320 - Psychology of Trauma

Meets MN Transfer Curriculum Goal Area 5: History and the Social and Behavioral Sciences. This course provides an overview of various theoretical perspectives and relevant research on the psychology of trauma. Students will examine concepts of traumatic and acute stress through a multidimensional lens, including historical and cultural perspectives. This course is designed to facilitate students' knowledge and insight into the impact of trauma, as well as the recovery process, at individual, family, and community levels. Using empirical and clinical research, case histories, and personal narratives, topics such as the human stress response, coping and resilience, dissociation, memory and trauma, collateral damage will be explored. Students will have the opportunity to examine current trends and literature on trauma, related disorders, treatment, and community prevention. This course is of particular interest for people who are pursuing a field where they'll be working with traumatized individuals or who want to understand more about the topic.

Student Learning Outcomes:

- * Demonstrate an understanding about research and the scientific methods used in the study of psychology.
- * Examine current research in the field of acute stress and trauma.
- * Describe cultural and historical perspectives regarding traumatic events and individual, family, and community responses to trauma.
- * Explain the historical and cultural changes to trauma treatment.
- * Describe current psychological disorders and compare treatment perspectives related to trauma.
- * Compare the different theoretical approaches in psychology used to understand trauma, and the effects traumatic events have on people.
- * Examine society's response to trauma and traumatic events.
- * Discuss and develop solutions for community awareness and prevention strategies.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

PSYC 1350 - Positive Psychology

Meets MN Transfer Curriculum Goal Area 5: History and the Social and Behavioral Sciences and the AA Wellness Requirement. Positive psychology is the scientific study of the strengths and virtues that enable individuals and communities to thrive. Through psychological theory and research, the course focuses on the science of well-being, applying the knowledge in real-world ways. Through experiential exercises and an examination of research and theory, students explore how to live a meaningful and fulfilling life, cultivate what is best within people, manage stress, be happier, and enhance experiences of love, work, and play. The course will include self-assessment exercises to enhance awareness and develop characteristics such as empathy, resilience, self-control, commitment, self-respect, and optimism.

Student Learning Outcomes:

- * Summarize the scope of the field of positive psychology and how it differs from other psychological fields of study
- * Explain the research methodologies and scientific approach in the field of posi-

tive psychology

- * Analyze scientific evidence related to well-being and human strengths
- * Integrate a set of personal strengths determined through the completion of empirically-supported assessments
- * Identify factors that contribute to intimacy and growth in interpersonal relationships
- * Apply key scientific biopsychosocial theories within the discipline of positive psychology
- * Examine how to reduce barriers to wellness, such as unhealthy coping mechanisms, cognitive biases, stress, and anxiety

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

PSYC 2310 - Psychopathology: The Science of Mental Health

Meets MN Transfer Curriculum Goal Area 5: History and the Social and Behavioral Sciences. This course explores the nature and causes of psychopathology and the terminology used in describing and discussing psychopathology. The focus will be on terminology, classification, etiology, assessment, and treatment of the major disorders and they will be explored from several different theoretical and treatment perspectives. Students will examine current trends and research in the fields of mental health and psychopathology with the goal of greater awareness and knowledge in hopes that we can reduce the suffering and stigma associated with mental disorders. This class was formerly known as Abnormal Psychology.

Student Learning Outcomes:

- * Evaluate major historical and contemporary theoretical and treatment perspectives associated with the field of abnormal psychology/psychopathology.
- * Identify principal research methods and types of questions that emerge in the science of abnormal psychology/psychopathology.
- * Distinguish what is "normal" and "abnormal" behavior.
- * Identify the characteristics, strengths and limitations of the current diagnostic system (DSM).
- * Describe the epidemiology, etiology, assessment, symptoms, and scientifically validated treatments of specific psychological disorders.
- * Describe how diversity in age, race, culture, gender and class is related to understanding psychological processes.
- * Explain how psychologists use their understanding of the APA Ethics Code and legal system to guide decisions in clinical and legal situations.
- * Apply psychological constructs to understand and improve intrapersonal, interpersonal and intercultural dysfunction (e.g. case studies).

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

PSYC 2320 - Social Psychology

Meets Mn Transfer Curriculum Goal Area 5 - History/Social, Behavioral Sciences. Social psychology is the scientific study of the way people think about, feel, and behave in social situations. It involves understanding how people influence, and are influenced by the others around them. This course is an introduction to the research methods, empirical findings and the perspectives of social psychology. The course covers topics such as: social attribution and social cognition, the social self, social influence, group processes, interpersonal attraction and relationships, altruism, aggression, stereotyping, prejudice and discrimination.

Student Learning Outcomes:

- * Identify the major concepts and theoretical approaches in psychological social psychology such as self-perception theory, attribution theories, and cognitive dissonance.
- * Understand basic research methods and ethical responsibilities in social psychological research and in psychology.
- * Critically evaluate research in psychological social psychology.
- * Apply social psychological theories or concepts to "real world" and/or personal examples.
- * Analyze oneself and others as social beings subject to situational influences.
- * Relate social behavior to cultural context.
- * Relate social behavior to biological and evolutionary factors.
- * Explore the role of stereotypes; prejudice and discrimination in bias and -isms.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

PSYC 2330 - Statistics for Psychology/Behavioral Sciences

Meets Mn Transfer Curriculum Goal Area 5 - History and the Social, Behavioral Sciences. Students use basic mathematical and computerized procedures to analyze data in the behavioral sciences. Students use statistical software (e.g., "SPSS", "R", "PSPP", "JASP") to conduct descriptive and inferential data analyses. Students choose and apply statistical procedures to help to answer psychological and behavioral scientific research questions. Students build upon knowledge gained in Statistics to read, interpret, and write APA-style results sections for behavioral science research. This course is required for the Psychology (Minnesota State Transfer Pathway) [AA-P] program.

Student Learning Outcomes:

- * Demonstrate an understanding of the mathematics and logic behind selecting and applying statistical procedures appropriate for a given hypothesis, scale of measurement, and experimental design.
- * Recognize the complex impact sociocultural diversity and individual differences have on psychological and behavioral science research.
- * Perform and describe the statistical procedures commonly used by social scientists including their respective advantages and disadvantages.
- * Read, interpret, and summarize basic statistical conclusions from psychological and behavioral science research accurately.
- * Interpret statistical findings and graphs in the context of their level of statistical significance, confidence intervals, effect sizes, and underlying assumptions.
- * Explain statistical findings using common language and conventions of the American Psychological Association.
- * Use SPSS or another statistical package to build data sets, run univariate analyses, and interpret and display results.
- * Evaluate existing psychological and behavioral science research, including critically thinking about limitations, confounds, and suggestions for future research.

Prerequisite(s): PSYC1300, and MATH 0840 or appropriate placement score.
(4 C: 3 lect/pres, 1 lab, 0 other)

PSYC 2350 - Human Sexuality

The course meets MN Transfer Curriculum Goal Area 5. Sex is one of the most basic human drives. In this course, students will examine factors relating to the broad range of human sexuality, the development of sexual behavior, sexual functioning, and gender and related issues. It will take a multidisciplinary approach to understand the diverse foundations of human sexuality, including ways in which biology, psychology, history, personal experiences, society, values, attitudes, and culture all influence our sexuality. The course will examine anatomical, physiological, and emotional aspects, love and attraction, sexual dysfunction and treatment, STI's, sex and aging, legal aspects of sexual behavior, sexual exploitation, and eroticism in American Culture.

Student Learning Outcomes:

- * Identify trends and changes in the past and present that influenced sexual attitudes and values
- * Identify various parts of their sexual anatomy and be aware of how these parts function
- * Understand sexual health and describe the various sexual diseases and dysfunctions
- * Examine sexual orientation, gender development, and gender identity
- * Describe methods of birth control and contraception
- * Describe and understand the various types of unconventional sexual behavior
- * Describe the reasons for, and effects of, commercial sex and sexual images portrayed in society
- * Analyze the circumstances, causes, and effects of sexual assault
- * Describe the changes that occur in a body during pregnancy and birth
- * Explain love and intimacy, as well as communication about sex, in relationships

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

READ 0900 - Reading Fundamentals

This course emphasizes critical reading strategies and develops college level vocabulary. It presents college reading as an active process and focuses on strategies for improving that process to succeed in college level courses. Materials represent a variety of academic disciplines and occupational areas. This is a college readiness course and does not fulfill college level course requirements.

Student Learning Outcomes:

- * Identify patterns of organization in expository text.
- * Identify topic, stated and implied main idea, and major and minor supporting details.
- * Use vocabulary building and decoding strategies.
- * Demonstrate digital literacy appropriate for college course.
- * Summarize academic and professional reading material.
- * Apply various note-taking strategies.
- * Interpret purpose and tone in narrative and expository texts using inferencing techniques.
- * Distinguish between factual and opinion statements.
- * Analyze author and reader points of view.
(3 C: 3 lect/pres, 0 lab, 0 other)

READ 1308 - Critical Reading

Meets MN Transfer Curriculum Goal Area 2. The Critical Reading course is designed to improve students' abilities to evaluate the meaning behind information they encounter daily. Students will learn skills from this course which can be applied to a variety of situations, such as, collegiate, professional, and personal settings. Students will improve skills for reading comprehension, memory, and analysis.

Student Learning Outcomes:

- * Analyze factual and opinion statements to determine point of view in a variety of text formats.
- * Apply inferencing techniques to analyze multi-modal texts.
- * Evaluate notetaking methods best suited for various source materials.
- * Analyze memory functions to develop effective reading skills.
- * Demonstrate comprehension of a variety of texts and text formats.
- * Analyze features found on a variety of text formats.
- * Demonstrate the reading process.
- * Evaluate a variety of source materials.
- * Develop thinking strategies to reduce personal bias to aid comprehension.
- * Identify bias in multi-modal texts.

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

RICT 1500 - DC Electronics

This is a foundational course in direct current (DC) electricity. This course is designed for students who have no previous experience with electricity. The primary goals of this course are to help students acquire a solid foundation in the theories and laws of DC electricity, and to apply their knowledge and skills through problem-solving, simulation, and practical projects.

Student Learning Outcomes:

- * Analyze series and parallel DC circuits using Ohm's law.
- * Measure DC voltage, current, and resistance.
- * Draw and interpret basic electrical schematic diagrams.
- * Test DC power sources.
- * Select the appropriate size wire for specific applications.
- * Calculate power consumption and losses in basic electrical systems.
- * Identify and apply appropriate safety procedures.
(3 C: 1 lect/pres, 2 lab, 0 other)

RICT 1510 - AC Electronics

This is a fundamental course in alternating current (AC) electricity. This course is designed for students who have a fundamental knowledge and understanding of the theory and laws of direct current (DC) electricity. The primary goals of this course are to help students gain the knowledge and skills necessary to troubleshoot and repair single and three phase AC powered systems and equipment. Individuals will apply these skills through problem solving, simulation, and practical projects.

Student Learning Outcomes:

- * Measure single and three phase voltage.
- * Define and demonstrate use of single and three phase capacitor circuits.
- * Describe and connect single and three phase inductor circuits.
- * Explain and demonstrate use of single and three phase transformer circuits.
- * Measure phase angles between voltage and current.
- * Draw and read basic electrical schematic diagrams.
- * Identify and apply appropriate safety procedures.

Prerequisite(s): RICT1500.
(3 C: 1 lect/pres, 2 lab, 0 other)

RICT 1520 - OSHA for Industry

This course design aligns with the Manufacturing Skill Standards Council's (MSSC) assessment and certification system for Safety. The course curriculum follows federally endorsed national standards for production workers. This course will introduce Occupational Safety and Health Administration (OSHA) standards relating to personal protective equipment, Hazardous Material (HAZMAT), tool safety, confined spaces, and others.

Student Learning Outcomes:

- * Identify appropriate safety procedures in given situations.
- * Interpret Safety Data Sheets (SDS) that are compliant with the Globally Harmonized System.
- * Apply OSHA standards to given situations.
- * List and demonstrate the steps for lockout and tag out procedures.
- * Acquire awareness to the Minnesota Employee Right to Know Act.

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or appropriate placement score.

(1 C: 1 lect/pres, 0 lab, 0 other)

RICT 1600 - Digital Electronics

The primary goals of this course are to help individuals acquire a fundamental knowledge of digital electronics, Boolean algebra, digital devices, analog to digital conversion and digital to analog conversion, and how to apply their knowledge and skills through problem solving, simulation and practical projects.

Student Learning Outcomes:

- * Draw and interpret digital logic and schematic diagrams.
- * Write Boolean logic statements.
- * Correctly fill out and interpret truth tables.
- * Design and build basic digital logic decision and interface circuits.
- * Design and build basic timing, counter circuits.
- * Convert between binary, octal, hexadecimal, and decimal number systems.
- * Use a PLD (programmable logic device) to implement a Boolean logic statement.

(3 C: 1 lect/pres, 2 lab, 0 other)

RICT 1620 - Networking Systems

This course covers the foundation of electronic communication networks and the associated wiring and equipment. Networks included are, field bus, profibus, Ethernet, and Devicenet.

Student Learning Outcomes:

- * Identify types of networks.
- * Differentiate various networks.
- * Test network cables and wiring.
- * Assemble network cables.
- * Identify components of a given network.
- * Utilize different measures of network security

(2 C: 1 lect/pres, 1 lab, 0 other)

RICT 1630 - Production Automation

This exploratory course is designed to introduce students to the dynamic field of manufacturing. This course provides hands-on experience with advanced manufacturing equipment, including water jets, 3D metal printers, welding tools, machining equipment, and drafting software. Students will gain practical skills and insights into various manufacturing processes, preparing them for potential careers in the industry. Through project-based learning, students will explore the principles of automation, precision engineering, and modern production techniques.

Student Learning Outcomes:

- * Evaluate different manufacturing processes and their applications in real-world scenarios.
- * Identify and explore various career paths within the manufacturing industry, understanding the skills and qualifications required.
- * Demonstrate proficiency in using water jets, 3D metal printers, welding tools, machining equipment, and drafting software.
- * Implement industry-standard safety practices while operating manufacturing equipment.

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or appropriate placement score.

(3 C: 1 lect/pres, 2 lab, 0 other)

RICT 1640 - Sensor Applications

This course provides a comprehensive introduction to sensors, exploring their principles, types, and diverse applications across various fields. Students will gain an understanding of how sensors work, the different types of sensors available, and how they are used to collect data in real-world scenarios and applied to Internet of Things (IoT).

Student Learning Outcomes:

- * Understand the working principles of various sensors.
- * Identify and select appropriate sensors for specific applications.
- * Design and implement sensor-based systems for data collection and analysis.
- * Apply sensor technologies to solve real-world problems in various industries.

Prerequisite(s): RICT1510.

(2 C: 1 lect/pres, 1 lab, 0 other)

RICT 2500 - Fluid Power

This course is an introductory course in fluid power and control systems used in industry. The course is designed for students who have no previous experience working with fluid power. Students will acquire the knowledge and skills required to install, troubleshoot, and maintain hydraulic and air powered systems.

Student Learning Outcomes:

- * Identify and apply appropriate safety procedures.
- * Interpret and draw schematics of pneumatic and hydraulics systems.
- * Calculate the force of air/fluid systems will have in devices.
- * Perform routine maintenance of actuators, control valves, pumps and other supply equipment in fluid/air systems.
- * Troubleshoot common problems that occur in an air/fluid system and repair.

(4 C: 2 lect/pres, 2 lab, 0 other)

RICT 2510 - Electrical Motors and Controls

This course provides students with the fundamental knowledge and skills necessary to install and maintain a variety of motor controllers, relays and other relay logic. Students will continue into Alternating Current (AC) and Direct Current (DC) motors and motor controllers used in industry. This course emphasizes mastering line diagrams and control panel wiring.

Student Learning Outcomes:

- * Demonstrate mechanical construction of control panels.
- * Maintain industry-wiring standards.
- * Interpret AC and DC motor specifications.
- * Connect solid state DC drives to DC motors.
- * Draw and interpret electrical motor control diagrams to use in troubleshooting.
- * Successfully wire and connect reversing DC motor starters.
- * Connect and test overload protection and monitoring devices.
- * Perform routine maintenance of AC and DC motors.

Prerequisite(s): RICT1510.

(3 C: 1 lect/pres, 2 lab, 0 other)

RICT 2520 - Programmable Logic Controllers

This course covers the knowledge and skills required to install and maintain programmable logic controllers (PLC) in automated control systems. Students will learn to write programs to solve basic control problems, connect sensors and actuators, and configure PLCs.

Student Learning Outcomes:

- * Maintain industry-wiring standards.
- * Interpret and draw basic ladder logic diagrams and programs.
- * Draw electrical input/output wiring diagrams.
- * Connect discrete input/output devices to the PLC.
- * Connect analog input/output devices to the PLC.
- * Monitor and modify PLC hardware configurations and programs.
- * Interpret PLC module specifications.
- * Troubleshoot and repair PLC control systems.
- * Demonstrate how to perform disaster recovery

Prerequisite(s): RICT1510.

(3 C: 1 lect/pres, 2 lab, 0 other)

RICT 2530 - Mechanical Systems

This course provides students with the fundamental knowledge and skills necessary to install and maintain mechanical systems. Course study includes maintenance scheduling, hand and power tools, precision measurement tools, power transmission systems, bearings, lubrications, couplings, alignment, and vibration analyzers.

Student Learning Outcomes:

- * Identify and apply appropriate safety procedures.
- * Identify basic mechanical drive components.
- * Install, adjust, and maintain belt and chain drive tensions.
- * Apply proper techniques for identifying and maintaining bearings.
- * Demonstrate mechanical troubleshooting skills.

(3 C: 1 lect/pres, 2 lab, 0 other)

RICT 2540 - FANUC Robotics Certification

This course teaches students basic handling tool operation and programing. The course covers the tasks that an operator, technician, engineer or programmer who needs to setup, record and/or troubleshoot programs on a FANUC Robotics Handling Tool Software Package. After successful completion of this course, students will receive an industry recognized FANUC Certificate.

Student Learning Outcomes:

- * Create, modify and execute a material handling program.
- * Create and execute macro's.
- * Demonstrate how to monitor, force and simulate input and output signals.
- * Perform a backup and restore of individual programs and files.
- * Identify and apply appropriate safety procedures.

(2 C: 1 lect/pres, 1 lab, 0 other)

RICT 2550 - Introduction to Process Control

This course covers the fundamental principles of process measurement and control equipment and systems. Students will acquire the knowledge required to read and interpret piping and instrument diagrams, understand the terminology and language of control systems, and control strategies. Students will be introduced to a variety of instruments commonly used in industry for measurement and control.

Student Learning Outcomes:

- * Define terms used in process control such as open and closed loop control, scaling, and proportional, integral, and derivate (PID) control.
- * Describe the application of sensors such as Resistant Temperature Detectors (RTD's), thermistors, capacitive level and pressure sensors, and flow meters.
- * Describe the operation and application of final control elements such as heaters, valves, and pumps.
- * Describe the operation and application of transmitters and transducers.
- * Perform conversions between measurement units, sensor units, output units and display units using both English and Metric units.
- * Describe the operation of on/off, proportional and time-proportional control loops.
- * Interpret Piping and Instrumentation Diagrams (PandiD).
- * Identify and apply appropriate safety procedures.

Prerequisite(s): RICT1510.

(3 C: 1 lect/pres, 2 lab, 0 other)

RICT 2600 - Industrial Motor Applications

This course equips students with the knowledge and skills needed to install and maintain various motor controllers, relays, and relay logic, as well as AC and DC motors and motor controllers used in industry. This course emphasizes incorporating Programmable Logic Controllers communicating to Variable Frequency Drive controlled AC motors.

Student Learning Outcomes:

- * Maintain industry-wiring standards.
- * Interpret AC and DC motor specifications.
- * Connect Variable Frequency AC drives to AC motors.
- * Draw electrical motor control diagrams based off an existing motor circuit.
- * Connect reversing AC motor starters.
- * Connect and test overload protection and monitoring devices.
- * Perform routine maintenance of AC motors.

Prerequisite(s): RICT2510.

(3 C: 1 lect/pres, 2 lab, 0 other)

RICT 2610 - Advance Mechanical Systems

This course teaches students a higher-level knowledge and skills required to install and maintain pumps, compressors, hoists, and rigging. Students learn all the skills required for working in industry such as pipe fitting, pipe sweating, and proper fasteners. Students become skilled using advanced predictive maintenance equipment, such as infrared thermography, and vibration analyzers.

Student Learning Outcomes:

- * Identify and apply appropriate safety procedures.

- * Identify major components of mechanical drive systems.
- * Disassemble, inspect, refurbish, and reassemble mechanical mechanisms.
- * Demonstrate proper rigging equipment and setup procedures for different applications.
- * Troubleshoot, repair, and analyze mechanical systems.

Prerequisite(s): RICT2530.

(3 C: 1 lect/pres, 2 lab, 0 other)

RICT 2620 - Vision Systems for Robotics

Upon successful completion of this course, the student can identify the components of a vision system, install vision hardware, develop an application, program the robot, perform error recovery procedures and follow recommended safety practices.

Student Learning Outcomes:

- * Demonstrate the ability to setup and position camera correctly.
- * Knowledgeable of basic vision concepts and lighting.
- * Calibrate a camera so that it will read material correctly.
- * Program a robot to respond to the results of the vision.
- * Identify and apply appropriate safety procedures.

Prerequisite(s): RICT2540.

(2 C: 1 lect/pres, 1 lab, 0 other)

RICT 2630 - Instrumentation Control and Data Analysis

This course covers the knowledge and skills required to calibrate, install, and maintain process control instruments, actuators, operator interface, and controllers. Students practice calibrating, and installing instruments, tuning controllers, and use test equipment to analyze process control systems.

Student Learning Outcomes:

- * Calibrate temperature, pressure, flow, and level transmitters.
- * Perform routine maintenance on control valves and actuators.
- * Interpret and draw piping and instrumentation diagrams.
- * Configure operator interface and data acquisition programs.
- * Configure and install process control loops.
- * Perform loop tuning on basic control loops.
- * Demonstrate flow loop data acquisition and correctly wire the control system.
- * Perform routine maintenance on instrument air systems.
- * Identify and apply appropriate safety procedures.

Prerequisite(s): RICT2550.

(4 C: 2 lect/pres, 2 lab, 0 other)

RICT 2640 - Automated Manufacturing Systems

This course enables the student to work as a member of a team focused on maintaining an automated manufacturing system. This capstone course draws from previous program course work which includes, not only, skills specific to Instrumentation and Process Control Technicians, but also problem solving and communication skills.

Student Learning Outcomes:

- * Implement safety programs in an automation system.
- * Perform system maintenance tasks.
- * Identify and resolve systemic problems.
- * Demonstrate ability to work as part of a team.
- * Demonstrate effective communication skills.
- * Identify and apply all appropriate safety procedures.

Prerequisite(s): RICT2630.

(3 C: 1 lect/pres, 2 lab, 0 other)

RENEW 1300 - Introduction to Traditional and Renewable Energy

Introduction to Traditional and Renewable Energy introduces students to various forms of energy stemming from both renewable and non-renewable sources. Students will study many sources of energy including solar thermal power, solar photovoltaics, bioenergy, hydroelectricity, tidal power, wind energy, wave energy, geothermal energy and fossil fuels. The First Law of Thermodynamics is studied along with conversion and efficiency of various forms of energy. The economics, potential and environmental impact will be covered for each topic.

Student Learning Outcomes:

- * Explain the fundamentals and basic principles of operating and maintaining wind, solar, and fossil fuel power generation and distribution facilities.
- * Demonstrate the principles of operating and maintaining biofuel plants.
- * Demonstrate basic principles of operating and maintaining natural gas pipelines.

- * Identify career opportunities as they relate to the various energy industries.
- * Identify the sources used to provide energy in today's society.
- * Identify the major components of various energy systems and the technologies associated with them.
- * Describe the economic, potential impact and environmental impact of various energy systems.
- * Describe the issues relating to energy integration.

Prerequisite(s): ENGL0900, ENGL0304, ESOL1310, ESOL1120, ESOL1330, READ0304, READ0900 or Appropriate Placement Score.

(3 C: 3 lect/pres, 0 lab, 0 other)

SAMG 1200 - Principles of Marketing

Marketing plays an important role in today's successful businesses. This course will provide an overview of the marketing processes and activities which are imperative for students entering the business arena. This course will focus on marketing as it relates to retailing, advertising, public relations, sales promotions, and sales management in a variety of mediums. Students will be exposed to topics such as strategic marketing, ethical and social responsibilities, selection of target markets, consumer behavior, and international marketing. Students will also study the concepts of product and brand development, pricing decisions, marketing channels, and supply-chain management. Involvement in this course will provide a strong foundation and appreciation for the important role marketing plays in business, society, and everyday life.

Student Learning Outcomes:

- * Apply terminology essential to marketing communications.
- * Apply the elements of the market mix: Product, Price, Place (Distribution), Promotion to marketing strategies.
- * Demonstrate how products and services impact customer value perception.
- * Identify how customers determine value by comparing their benefits to their costs.
- * Decide how place (distribution) can create a competitive advantage for a company.
- * Analyze how promotions impact marketing communications with the customer.
- * Evaluate market segments, target market selection, and market position.
- * Examine the benefits of each component of a marketing plan.
- * Analyze the environmental forces affecting international marketing efforts.
- * Differentiate between corporate ethics and corporate social responsibility.
- * Differentiate between the consumer buying decision process and the business buying decision process.
- * Explain product differentiation as it relates to demand, costs, and profits.
- * Identify the importance of Integrated Marketing Communications (IMC).

(3 C: 3 lect/pres, 0 lab, 0 other)

SAMG 1206 - Strategic Customer Service

To remain competitive business-to-business organizations are recognizing the growing demand for delivering superior customer service. This course covers the fundamentals of customer service as it applies to sales, management, marketing, and entrepreneurial professions. Students will become familiar with customer service as part of their career positions and apply strategies for providing quality customer service. Students will study customer service skills, utilize tools, and practice communication techniques necessary for developing positive business-to-business, retail to consumer, and service industry business relationships.

Student Learning Outcomes:

- * Define customer service and internal customer support systems as they relate to the wholesale distribution process.
- * Comprehend differences between service, wholesale and retail customer service environments and cultures.
- * Examine consumer-focused behavior and training requirements for serving a diverse customer base.
- * Differentiate between internal and external customers in wholesale business environments.
- * Practice customer service verbal, non-verbal, and listening skills related to their service responsibility.
- * Define and calculate the importance of customer loyalty, relationship development, retention, and loss.
- * Define and practice attitude, ethics and developing trust as a customer service provider and specialist.
- * Contrast various customer relationship management systems, technologies, and their utilization as support tools.

- * Examine customer service breakdowns, service recovery, and retention methods.
- * Research both in-bound and out-bound customer call center delivery systems.
- * Apply customer service phone and electronic communications as part of the sales, management, and marketing processes.
- * Demonstrate customer service skills in one-to-one and group situations for both business to business and retail to consumer environments.

(3 C: 3 lect/pres, 0 lab, 0 other)

SAMG 1211 - Professional Sales Fundamentals

In today's highly competitive market an effective sales approach is important in every industry. In this course students will design a business-to-business sales presentation by defining customer's needs, explaining the value customers receive from the organization, and practicing approaches to reach a joint purchasing agreement with clients. This course will focus on the theory and practice of personal selling used by organizations to build long term business relationships.

Student Learning Outcomes:

- * Develop personal selling characteristics and a personal selling style.
- * Apply traditional and trust-based relationship selling tactics the selling process.
- * Describe the importance of sales ethics in different scenarios.
- * Demonstrate style flexing with different types of buyers.
- * Explain buying teams and member roles as it applies to an organization's sales team.
- * Utilize various sales tools and applications in the selling process.
- * Demonstrate active and effective listening.
- * Interpret the different forms of verbal and nonverbal communication used in the sales process.
- * Explain the importance of understanding your customers' business in the sales process.
- * Apply complaint resolution methods to the business environment.
- * Create a business-to-business (B2B) sales presentation.

(3 C: 3 lect/pres, 0 lab, 0 other)

SAMG 1215 - Principles of Management

This course introduces the basic principles of the management process, including the functional, scientific, and behavioral systems approaches. The course explores management functions of planning, organizing, leading, and controlling through the use of current literature, concepts, theories, models, applications, and case studies. The course also focuses on contemporary trends in quality improvement, team building, motivation, and leadership skills. Applications of these functions and trends are examined from both a local and global perspective.

Student Learning Outcomes:

- * Recall the historical and philosophical origins of management
- * Describe essential management functions, skills and roles
- * Describe organization-staffing models
- * Identify and understand the concepts of strategic, tactical, and operational planning and it's direct relationship to organizational goals
- * Identify personal traits and skills of effective leaders
- * Recognize the importance and sources for developing an organizational vision and mission
- * Identify ethical perspectives and practice outlining processes for making ethical decisions
- * Practice the understanding of the advancing phases of moral development as it applies to ethical decision making in a business context
- * Explore effective use of leadership styles
- * Demonstrate the understanding of situational leadership theories and models
- * Develop an appreciation for corporate social responsibility within small and mid-size organizations
- * Understand the importance of a team environment and its contribution to the success of organizational goals
- * Understand and identify procedures for implementing effective control systems
- * Understand motivation in the workplace and apply motivation concepts to suggest improvements in the workplace
- * Understand and analyze the nature and role of organizational culture within an organization.
- * Apply both local and global perspectives to all models, theories, and concepts

(3 C: 3 lect/pres, 0 lab, 0 other)

SAMG 1221 - Branding and Promotion

Promotion of products and services for businesses in today's competitive market is undergoing tremendous change. Students entering the workforce will need to have an understanding of promotion to help their companies determine the best means of communicating brand information to consumers. This course covers how the promotion industry works, and what messaging strategies, media options, and promotion measurements support decision making. To apply the theory and concepts of the course students will design a promotion campaign using appropriate media and messages for a target audience.

Student Learning Outcomes:

- * Identify and apply integrated marketing communication (IMC) strategies in branding creation.
 - * Describe and categorize the various methods of audience classification for promotion and IMC.
 - * Examine trends transforming the promotion industry and its economic and social impact.
 - * Explain and describe the process of segmenting, targeting, and positioning (STP) marketing in promotion plan.
 - * Discuss how brand communication influences consumer behavior.
 - * Evaluate ethical considerations as they relate to brand campaigns.
 - * Learn the laws and regulations as they apply to a promotion plan.
 - * Describe challenges and opportunities that affect integrated marketing communication in global markets.
 - * Evaluate communication methods and strategies for effective promotion.
 - * Analyze traditional media and social media options for use in brand campaigns.
 - * Examine the importance and growth of sales promotion in the consumer, trade, and business markets.
 - * Evaluate the use of direct marketing, event sponsorship, product placement, public relations, and brand entertainment as a means of promotion.
 - * Explain the importance of personal selling for optimal representation of a brand.
 - * Create, analyze, present, and evaluate an effective brand campaign.
- (3 C: 3 lect/pres, 0 lab, 0 other)

SAMG 1236 - Professional Development

In today's highly competitive industries finding a place in a chosen field is a process that takes into account personal interests, education, goals, and abilities. Students will facilitate their transition into the work place and support themselves in defining their professional role in sales, marketing, management, or entrepreneurial careers. This course will also emphasize corporate and civic responsibility and the participation in professional networking activities and organizations. In this course students will develop a professional portfolio which includes setting goals, managing their time and resources, and practicing self-responsibility. Upon completion students will be prepared to market themselves for opportunities in the fields of sales, marketing, or management.

Student Learning Outcomes:

- * Research sales, marketing, and management careers and industries.
 - * Assess and incorporate personal strengths and skills in development of portfolio.
 - * Practice networking and self-promotion at professional organizational events to develop center of influence contacts.
 - * Build a resume and cover letter that will promote interview success.
 - * Research and practice professional dressing for success in the fields of sales, management, and marketing.
 - * Practice successful interviewing for sales, marketing, and management careers.
 - * Differentiate negotiations of sales, marketing, and management job offers.
 - * Practice various techniques of professional job search etiquette.
 - * Evaluate the process of job offers and rejections.
 - * Research and participate in corporate and civic responsibility activities applicable to career choice.
- (2 C: 2 lect/pres, 0 lab, 0 other)

SAMG 1241 - Internship I

In today's competitive environment employers anticipate employees will have skills to contribute to the successful growth of the business. This course emphasizes the application of classroom skills and concepts to the work place in the areas of customer service, sales, marketing, promotion, or management. The purpose of this course is to provide the student with a relevant work experience. The students will set goals, determine their strengths, and apply them to their

internship position. This course should be completed during the student's first year.

Student Learning Outcomes:

- * Perform duties in the areas of customer service, sales, marketing, promotion, and/or management.
- * Complete personal strengths assessment and report to internship advisor.
- * Apply personal strengths to the workplace environment.
- * Coordinate personal and professional goals with internship supervisor.
- * Follow policies and procedures of the internship site.
- * Practice professional business behavior while in the workplace.
- * Demonstrate time management skills.
- * Communicate with internship supervisor and advisor regularly to update progress.
- * Complete and submit required internship packet to internship advisor.
- * Prepare self-evaluation at mid-term and end of semester for submission to internship advisor.

Prerequisite(s): SAMG1236.

(2 C: 0 lect/pres, 0 lab, 2 other)

SAMG 1251 - Financial Strategy Fundamentals

Financial Strategy Fundamentals is an introductory course in financial statement strategies for business. The purpose of the course is to understand sufficient amount of accounting knowledge and skills to evaluate an enterprises' financial position and its operating, investing and financing activities. The course is designed to meet the needs of those students who are preparing for sales, management, and marketing orientated careers. It is also applicable for students from other academic disciplines who recognize that the ability to use and interpret financial information is essential to today's business world.

Students will study the nature of assets, liabilities and owner's equity while learning to use reported financial information for purposes of making financial decisions about a company. Students will examine the procedures and systems to accumulate, analyze, measure and record financial transactions; use that information to prepare financial statements; and then communicate a business entity's results of operations and financial position to users of financial information.

Student Learning Outcomes:

- * Differentiate the principal activities of business firms and how they relate to the principal financial statements.
- * Prepare financial statements in an appropriate format, including the income statement, balance sheet, statement of cash flows, and statement of shareholder's equity.
- * Identify the types of information provided by the principal financial statements and how firms might use this information in managing and evaluating a business.
- * Analyze and interpret financial statements using financial analysis techniques, including horizontal, vertical and ratio analysis.
- * Define and identify financial accounting terminology.
- * Describe the differences between cash basis and accrual basis of income revenue recognition.
- * Calculate and interpret financial ratios in order to compare a firm to its competitors and to evaluate changes in ratios over time.
- * Identify and analyze a firm's overall profitability using ROI, profit margin, and asset turnover ratios.
- * Analyze and calculate financial leverage on a firm's investment return.
- * Identify and analyze a firm's short-term liquidity risk and long-term solvency risk.

Prerequisite(s): BUSM1260.

(3 C: 3 lect/pres, 0 lab, 0 other)

SAMG 2245 - Marketing Strategies

Today strategic marketing managers must address multiple challenges as they try to deliver something of value to their customers. Students in this course will study marketing from the marketing manager's perspective. Marketing managers are involved in the design and selection of products, establishing competitive pricing, while distributing products through appropriate channels. This course provides the student practical application of marketing concepts while managing the company's marketing resources. The objective for sales, marketing, and management professionals is to understand their businesses and the markets in which they operate. Students will create of a Marketing Plan using strategic planning methods as a capstone project of this course.

Student Learning Outcomes:

PLEASE NOTE: All program plans are preliminary and curriculum may change without notice.

- * Examine marketing management as it relates to the operation of an organization and the development of its marketing strategy.
- * Analyze optimal, serviceable market segmentation schemes used by businesses when developing marketing plans.
- * Select target markets for profitability and service by the marketer's firm.
- * Communicate a position statement to several different audiences.
- * Distinguish the qualities of goods and services as they relate to brands and new products.
- * Illustrate how demand and elasticity enter pricing decisions made by marketers.
- * Compare distribution channels of goods and services for efficiency and profitability.
- * Develop marketing goals for an advertising campaign of a company's products, brands, and position in the marketplace.
- * Evaluate media options for an effective integrated marketing communications strategy.
- * Categorize social media variations as they relate to effective pre and post-purchase information and promotion.
- * Analyze customer evaluation processes as it translates to customer relationship management (CRM) and customer lifetime value (CLV).
- * Compare market research tools used to gather data used for making marketing decisions.
- * Develop a marketing plan using professional standards and tools.

Prerequisite(s): SAMG1200.

(3 C: 3 lect/pres, 0 lab, 0 other)

SAMG 2255 - Professional Sales Strategies

Today's sales professional is involved in building long-term relationships with customers. Students in this course will develop skills which will help them define their customers businesses, learn how to communicate with a variety of peoples' styles, and know the sales process from rapport building through follow-up. Upon successful completion of this course students will have mastered the areas of networking, prospecting, time management, self-leadership, sales territory management, and setting sales goals. Students will build upon the skills they developed in Professional Sales Fundamentals.

Student Learning Outcomes:

- * Plan the sales process from prospecting through follow-up.
- * Demonstrate prospecting methods, lead generation, and cold calling techniques and as they apply to the sales process.
- * Develop a sales network.
- * Demonstrate appointment closing call strategies.
- * Research various sales support technologies.
- * Utilize value propositions and value statements.
- * Write sales proposals that incorporate appropriate pricing strategies.
- * Explore sales aids as applied to customer engagement.
- * Demonstrate methods to overcome different types of buyer resistance.
- * Demonstrate sales conversations and flexing techniques for various communication styles.
- * Map sales territory and routes employing time management strategies.
- * Demonstrate self-leadership skills.
- * Calculate sales goals and budgets.
- * Compare compensation packages.
- * Interpret sales representative contract laws.

Prerequisite(s): SAMG1211.

(3 C: 3 lect/pres, 0 lab, 0 other)

SAMG 2266 - Internship II

Employers today are demanding technically skilled employees in the areas of customer service, sales, marketing, promotion, and management. To remain competitive in these areas students will complete a work-related experience in a relevant position. This course emphasizes interaction between the student and supervisor with emphasis on the progression to an advanced role in the organization. The students will set advanced goals and complete a learning project for their internship position. This course should be completed during the student's final year.

Student Learning Outcomes:

- * Demonstrate work-related competency of advanced marketing, management, customer service, or sales skills in the workplace.
- * Research and complete an applied internship project, in cooperation with internship employer and advisor, while meeting deadlines.

- * Consistently apply internship site policies and procedures to daily tasks.
- * Coordinate personal and professional goals with internship supervisor.
- * Practice professional business behavior according to internship site standards.
- * Demonstrate personal accountability and time management skills.
- * Communicate with internship supervisor and advisor regularly to update progress.
- * Complete and submit required internship packet and learning project to internship advisor.
- * Prepare self-evaluation at mid-term and end of semester for submission to internship advisor.

Prerequisite(s): SAMG1236, SAMG1241.

(2 C: 0 lect/pres, 0 lab, 2 other)

SAMG 2270 - Managing Human Resources

Organizations combine financial, physical, and material resources to provide goods and services to consumers, but there is no resource more vital to an organization's success than its human resources. Managing human resources is a comprehensive set of managerial activities and tasks concerned with developing and maintaining a qualified workforce that contributes to organizational effectiveness. This course covers the policies and procedures relating to acquiring, training, appraising, rewarding, and providing a safe, ethical, and fair environment for employees. The student will gain an understanding of the legal considerations and government regulations that impact employment relationships.

Student Learning Outcomes:

- * Explain Human Resource Management as it relates to the management process, and its importance to all managers within an organization.
- * Demonstrate knowledge of the legal, regulatory and ethical environment including equal employment laws and policies.
- * Critique the role of human resources in developing and maintaining a diverse workforce.
- * Understand and apply the policies and practices of the primary areas of managing human resources including staffing, training, and compensation.
- * Analyze job analysis methods as they apply to the selection process to include job descriptions, job specifications and job postings.
- * Evaluate effective screening tools and apply to the employee selection process.
- * Learn and apply the steps of the interview process to the employee selection process.
- * Research and calculate fundamentals of strategic pay plans.
- * Analyze the decisions an employer faces regarding performance management and employee development.
- * Evaluate the main employee benefits inside of the compensation package.
- * Demonstrate effective training methods and procedures as they relate to the talent management process.

Prerequisite(s): SAMG1215.

(3 C: 3 lect/pres, 0 lab, 0 other)

SAMG 2280 - Sales Force Management

The sales force management environment of today is critical to the success and growth of a business. This course presents comprehensive and rigorous coverage of contemporary sales management concepts. Topics are covered from the perspective of a sales manager decision maker. This decision-making perspective is accomplished through discussion of the stages of the sales management process, identifying critical decision areas, and presenting analytical approaches for improved sales force management. Upon completion of this course students will have an understanding of the importance of managing and participating on a sales team.

Student Learning Outcomes:

- * Study and differentiate the relationship between the sales force and the sales manager.
- * Examine and determine organizational strategy levels for an effective sales process.
- * Evaluate and analyze internal sales organization structures.
- * Determine sales force size, territory design, and the allocation of selling effort to maximize company profitability.
- * Identify and analyze recruitment options as it relates to sales force optimization.
- * Examine legal and ethical considerations of sales force selection.
- * Identify and model the steps of the sales training process.
- * Differentiate between styles of sales force leaders and sales force managers.
- * Describe and analyze salary, commission and combination pay plans.

- * Examine and evaluate sales and force reward systems beyond the basic compensation plans.
- * Identify sales force performance issues and compare sales force evaluation tools.

Prerequisite(s): SAMG1211, SAMG1215.

(3 C: 3 lect/pres, 0 lab, 0 other)

SAMG 2285 - Entrepreneurship

Students in this course will generate and evaluate small business opportunities. Students will research and create a business plan taking it from conception through development for the development of a business plan. Managerial concepts are applied in this course as it relates to owning or operating a small business. Students will research an industry and a target market, plan promotions, determine operations, and calculate financial statements to produce a complete business plan.

Student Learning Outcomes:

- * Identify foundations of entrepreneurial leadership.
- * Generate ideas for small business opportunities.
- * Conduct feasibility analysis for business plan application.
- * Apply research methods to a business plan.
- * Conduct target market analysis.
- * Calculate investment required for business start-up.
- * Create an income statement, balance sheet, and cash flow statement for inclusion in the business plan.
- * Identify financing options for business startup or expansion.
- * Evaluate appropriate business legal structures for business plan development.
- * Determine managerial operations and structure.
- * Create a business plan.

Prerequisite(s): ACCT1215, (SAMG1200 or SAMG1251).

(3 C: 3 lect/pres, 0 lab, 0 other)

SOCI 1310 - Introduction to Sociology

Meets Mn Transfer Curriculum Goal Area 5: History and The Social and Behavioral Sciences - This course introduces students to the scientific study of human interaction at the micro and macro levels. Students will analyze social structure, social relationships, social organization, and stratification to deepen their understanding of how individuals function within larger social contexts. Students will apply sociological data, concepts, and theories to think critically about social institutions.

Student Learning Outcomes:

- * Recognize sociological perspectives.
- * Apply basic sociological theories to the study of social interactions.
- * Examine the interaction and influences of social structures, organizations, and institutions.
- * Apply sociological research data to analyze social phenomena.
- * Analyze concepts of difference, deviance, and culture.
- * Examine how social interaction influences an individual's development.
- * Use Sociological theories to analyze social institutions.
- * Develop a sociological imagination.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

SOCI 1320 - Social Problems

Meets MN Transfer Goal Area 5 - History and the Social and Behavioral Sciences. This course introduces students to a sociological analysis of social problems. A variety of social issues are analyzed, including race, poverty, population, and inequality. Causes and consequences of social problems are explored to deepen an understanding of the impact of social problems on quality of life. Expect an emphasis on critical thinking as potential solutions are developed through the analysis of data and the application of sociological processes.

Student Learning Outcomes:

- * Identify what constitutes a social problem
- * Examine social issues using sociological processes, approaches and concepts
- * Identify personal values that influence sociological perspectives
- * Demonstrate an appreciation of diverse perspectives on social issues
- * Identify the social interactions involved in social problems
- * Analyze social problems for causative and influencing factors
- * Analyze the impact of social problems on individuals and society
- * Apply sociological data to the understanding of social issues

- * Use critical thinking processes to develop potential solutions for social problems

- * Display the intellectual standards of accuracy, precision, clarity, fairness, completeness and depth

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

SOCI 1350 - Sociology of Marriage and Family

Meets MN Transfer Curriculum Goal Areas 5: History and The Social and Behavioral Sciences and 7A: Human Diversity. This course analyzes Marriage and Family from a sociological perspective. The course examines how historical changes, social contexts, economics, gender roles, and social policies affect how we form and maintain families. Marriage and family are looked at from both theoretical and practical perspectives. Throughout the course, students will look carefully at variations in marriage and family structures and experiences across cultures including race, class, gender, age, sexuality, and different abilities.

Student Learning Outcomes:

- * Analyze a variety of sociological theories of marriage and family.
- * Analyze the application of theories of marriage and family to current trends and events.
- * Identify research methods used by sociologists to study marriage and family.
- * Examine historical changes in the institutions of marriage and family.
- * Analyze the impact of gender, race, ethnicity, class, sexual orientation, and different abilities on marriage and family dynamics.
- * Examine the impact of varying child rearing practices and parenting styles.
- * Examine the dynamics of power, violence, and abuse within intimate and family relationships.
- * Analyze the effect of social policies on the institutions of marriage and family.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

SOCI 1360 - The Politics of Food

Meets MN Transfer Goals 5 and 9 - History/Social, Behavioral Sciences and Ethical and Civic Responsibility. Students will examine the various sociological and political dimensions of food. Food will serve as the lens through which students examine larger structural issues in society as they examine how these processes relate to structures of power and inequality. This course explores the social world(s) we live in by analyzing what we eat, where it comes from, who produces it, who prepares it, and how.

Student Learning Outcomes:

- * Examine and evaluate the connections between food, culture, and society
- * Explore the structural relations of power regarding the production, distribution, preparation and consumption of food
- * Apply sociological concepts, theories, methods and findings to the study of food
- * Examine the impacts of corporate dominance on the global food supply
- * Analyze the structure of globalized, industrialized agriculture and food systems
- * Analyze the impact of corporate food structures on farmers and communities
- * Examine how food issues reflect larger social forces
- * Analyze and evaluate current responses to social problems surrounding food and agriculture

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

SOCI 2305 - Environmental Sociology

Meets MN Transfer Goals 5 and 10 - History/Social, Behavioral Sciences and People and the Environment. Students will examine environmental issues from a sociological perspective. The focus will be on social, political, and economic factors which encourage or discourage protection of the natural life support systems of earth. What steps are going to be required to restore our damaged resources and create a sustainable society for future generations? Considering the implications of what we have studied, students will be encouraged to develop a personal philosophy.

Student Learning Outcomes:

- * Analyze the connections between bio-physical and socio-cultural systems
- * Explain research methods social and natural scientists use to investigate the

relationship between bio-physical and socio-cultural systems

- * Describe basic social, political, and economic institutional arrangements that are associated with environmental issues
- * Place environmental issues within a social, cultural, and historical context
- * Understand the social and cultural causes of environmental problems
- * Evaluate current challenges and alternative solutions to environmental problems
- * Integrate what they have studied into their own personal philosophy

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

SPAN 1305 - Introduction to Latin American Studies

Meets MN Transfer Curriculum Goal Areas 5 and 8 - History and the Social and Behavioral Sciences and Global Perspectives. This course provides a panoramic view of Latin America from Pre-Columbian times to the present. Students will examine the history of Latin America, including Mexico, Central and South America, and the Caribbean. The course will focus on the civilization and rich culture of the areas, as well as explore contemporary relations with global powers. Through the literature, art, music, and video components, students will be able to analyze and understand important aspects of Latin American history and cultures. The course provides a historical look (pre-Hispanic to present) at the various cultures/civilizations of Latin America, but specific countries may vary each semester. While the course is taught in English, some course material may be in Spanish and English. Students may choose to complete their assignments in Spanish or English.

Student Learning Outcomes:

- * Identify the countries and cultures that constitute Latin America.
- * Distinguish the history of the three most populous indigenous empires (Aztec, Maya, and Inca).
- * Compare and contrast viewpoints of the events surrounding the Mexican Conquest.
- * Identify major events and figures in Latin American history.
- * Describe how key issues in Latin America shape current identities and experiences.
- * Apply a comparative perspective to the social, economic, religious, and political experiences of various Latin American cultures.
- * Examine cultural production in its socio-historical context.
- * Respond critically to literary texts, films, art, and music about and from Latin America.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(3 C: 3 lect/pres, 0 lab, 0 other)

SPAN 1310 - Beginning Spanish I

Meets MN Transfer Curriculum Goal Area 8 - Global Perspective. This is the first course in a four-semester sequence that, upon completion of the sequence, meets the Spanish requirements for the Spanish (Minnesota State Transfer Pathway) AA degree. Beginning-level vocabulary (colors, school, house, family, time, basic descriptions, dates) is introduced and then incorporated into elementary conversations and writing assignments. The course covers essential grammar, oral and listening practices, composition, and reading, as well as projects during which students start to explore the cultures, the people and the history of Spanish-speaking countries. The grammar presented in the first semester includes adjectives, sentence structure, present tense of regular and irregular verbs, progressive structure, and the difference between *ser* and *estar* and between *saber* and *conocer*. Emphasis is given to the differences among Spanish-speaking cultures. Linguistic varieties as well as idiomatic differences among Spanish-speaking countries are also introduced.

Student Learning Outcomes:

- * Transfer grammar rules to the conjugation of verbs, word endings and syntax.
- * Adopt pronunciation rules when speaking Spanish.
- * Carry on a short conversation about personal interests including what they are doing and are going to do.
- * Ask and answer simple questions using practiced patterns.
- * State personal preferences and feelings.
- * Express agreement and disagreement using memorized expressions.
- * Read and respond to level-appropriate written materials on familiar topics.
- * Identify the main idea of selected authentic materials.
- * Demonstrate understanding of written and spoken language that has strong

visual support.

- * Write short, guided compositions on familiar topics in the present time frame.
- * Identify similarities and differences between the target cultures and the student's own culture.
- * Identify and describe contributions from the target cultures such as artwork, architecture, music, dance and literature.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.
(4 C: 4 lect/pres, 0 lab, 0 other)

SPAN 1320 - Beginning Spanish II

Meets MN Transfer Curriculum Goal Area 8 - Global Perspective. This is the second course in a four-semester sequence that, upon completion of the sequence, meets the Spanish requirements for the Spanish (Minnesota State Transfer Pathway) AA degree. The vocabulary established in Beginning Spanish I is augmented to include vocabulary related to food, clothing, the human body and its diseases, traveling, and the environment. The increased vocabulary furthers the students' speaking and writing skills, as well as their comprehension of more complicated reading and listening assignments. The grammar studied in the second semester includes the past tenses (preterit and imperfect), an introduction to the subjunctive and the command forms, the difference between *por* and *para*, direct, indirect and reflexive pronouns, and the comparative. Students continue to study the differences among Spanish-speaking countries, focusing on specific aspects (e.g. art, architecture, food, gender roles, education system, and politics). Linguistic varieties as well as idiomatic differences among Spanish-speaking countries continue to be discussed.

Student Learning Outcomes:

- * Carry on a short conversation about personal interests including things they did, are doing and plan to do.
- * Ask and answer a variety of questions giving reasons for the answers.
- * Exchange personal preferences and feelings.
- * Express agreement and disagreement.
- * Read and respond to level-appropriate written materials on a broader range of familiar topics.
- * Identify the main idea and demonstrate understanding of key words and phrases from selected authentic materials.
- * Demonstrate understanding of spoken and written language that incorporates familiar vocabulary and structures.
- * Write guided compositions on familiar topics in present and past time frames.
- * Examine the similarities and differences between the target cultures and the student's own culture with topics such as holidays, food, travel and shopping.
- * Identify and describe contributions from the target cultures such as artwork, architecture, music, dance and literature.

Prerequisite(s): SPAN1310.
(4 C: 4 lect/pres, 0 lab, 0 other)

SPAN 2310 - Intermediate Spanish I

Meets MN Transfer Goal Area 8 - Global Perspectives. This is the third course in a four-semester sequence that, upon completion of the sequence, meets the Spanish requirements for the Spanish (Minnesota State Transfer Pathway) AA degree. The third semester in the study of the Spanish language further develops grammar, conversation, reading, composition, and listening skills. The students' listening skills will be refined in the third semester by listening to songs, watching movies, and having conversations. Students will learn to listen for general information and details. They will also develop the ability to listen for specific information. This course will stress the correct application of grammar through reading, speaking, and writing. The writing skills of students in this course will expand from being able to write paragraphs with supporting details to being able to write short essays. Original literary works will be read by students in order to develop more advanced vocabulary. These literary pieces will also be analyzed by students in a written and oral format. The people, culture, history, politics, and arts of the different Spanish-speaking countries will be covered extensively through upper-level readings, videos, and research projects.

Student Learning Outcomes:

- * Sustain a conversation about themselves on selected topics of interest.
- * Ask and respond to open-ended questions.
- * Exchange feelings and ideas of self and others with some explanation.
- * Express agreement and disagreement with some explanation.
- * Read and respond to selected materials on a variety of topics.
- * Identify the main idea and demonstrate understanding of some supporting

- * details in authentic materials.
- * Demonstrate understanding of written and spoken Spanish on a variety of topics.
- * Write compositions with some guidance on a wider variety of topics in any time frame.
- * Briefly narrate an event in the past.
- * Analyze similarities and differences between the target cultures and the student's own culture with topics such as celebrations, health, technology, and homes.
- * Describe and discuss contributions of other cultures such as artwork, architecture, music, dance and literature.
- * Comprehend and interpret the ramifications of the Spanish Colonization in Latin American.
- * Compile historical reasons for the differences between the Spanish-speaking countries.

Prerequisite(s): SPAN1320.

(4 C: 4 lect/pres, 0 lab, 0 other)

SPAN 2315 - Literature from our Latinx Communities

Meets MN Transfer Curriculum Goal Areas 6 and 7B -Humanities and Race, Power, and Justice. This survey course features literature of authors from a variety of Latine communities in Minnesota and the United States (U.S.). Students will explore how the written works reflect issues of language, national origin, immigration, skin color, gender, and sexuality. Students will be exposed to the diversity of the authors' experiences in the U.S. through a variety of genres and cultural expressions, such as poetry, fiction, non-fiction, and memoirs. Students will read, discuss, and analyze Latine literature by authors living in the U.S. to develop a lens for understanding the diverse Latine cultures in Minnesota and the United States. This course is cross-listed as ENGL 2315. Students taking SPAN 2315 will read the texts in the original Spanish and submit their assignments in Spanish. Those taking ENGL 2315 will read English translations of the text and submit their assignments in English.

Student Learning Outcomes:

- * Differentiate terms and concepts such as Latino/a, Latinx, Latine, Latinidad, Hispanic, Xicano/a, and Chicano/a.
- * Examine cultural differences and similarities among the literary production of different groups of Latine in MN and the U.S.
- * Recognize how the migration experience, national origin, skin color, gender, or sexuality shape the intersectional experiences and tensions of Latine in the U.S.
- * Explain how the bilingual and bicultural experience of Latine informs their discourses.
- * Examine from a literary perspective the themes and issues rooted in social structures and values that affect the Latine community.
- * Uncover traditions and values of various Latine cultures necessary for living and working effectively in a diverse population.
- * Analyze cultural and social issues in literature as expressions of the Latine experience within historical periods.
- * Examine the contributions of major authors in the Latine tradition.

(3 C: 3 lect/pres, 0 lab, 0 other)

SPAN 2320 - Intermediate Spanish II

Meets Mn Transfer Curriculum Goal Areas 6 and 8 - Humanities and Global Perspective. This is the last course in a four-semester sequence that, upon completion of the sequence, meets the Spanish requirements for the Spanish (Minnesota State Transfer Pathway) AA degree. During the fourth semester in the study of the Spanish language, students will continue to hone their grammar, reading and composition skills, while focusing on oral communication. The spoken word, as well as the listening skills, will be given priority in the last semester of the sequence. Students will orally summarize and paraphrase readings and screenings. They will engage in knowledgeable discussions about the cultural and historical information presented in the original work studied in class. The correct application of advanced grammar will still be emphasized through reading, speaking, and writing. Students will write essays as well as short stories in this course. Original literary works will be read and analyzed by students in a written and oral format. The people, politics, society, culture, history, and arts of the different Spanish-speaking countries will be covered extensively through original readings, videos and research projects.

Student Learning Outcomes:

- * Discuss a wide variety of topics.

- * Ask and answer a variety of questions that require elaboration and substantiation of opinions.
- * Discuss feelings and ideas about self and others.
- * Compare, contrast, express and support opinions and make suggestions and recommendations.
- * Analyze selected reading materials.
- * Identify the main idea and demonstrate understanding of significant details of authentic materials.
- * Demonstrate understanding of written and spoken Spanish on a wide variety of topics in any time frame.
- * Write formal compositions for a variety of purposes.
- * Compare the target culture and the student's own culture on topics such as the environment and other contemporary issues in society.
- * Discuss and analyze contributions of cultures such as selections from various literary genres and fine arts.
- * Expand the use of Spanish beyond the school setting for life-long learning and participating in a global community.
- * Infer and explain social, cultural and political issues reflected in literary works from Spanish-speaking countries.
- * Examine historical figures from the Spanish-speaking world within their social and historical background.
- * Create artistic works that express and reflect issues in the Spanish-speaking world.

Prerequisite(s): SPAN2310.

(4 C: 4 lect/pres, 0 lab, 0 other)

SPEC 2850 - Special Topics

This course is designed by the student and instructor to meet specialized needs for the individuals program requirements. This course will be used by students needed to demonstrate achievement of specific knowledge for use in completion of program graduation requirements.

(C: 0 lect/pres, 0 lab, 0 other)

SPED 1205 - Introduction to Special Education

This course provides an overview of the historical and philosophical foundations of special education and provides the foundation to support education for individuals with disabilities. The student will learn the importance of inclusion and the impact it has on individuals with disabilities by examining legal and social environments of education. The student will also learn how to adapt learning materials for a variety of learning environments. Student observation techniques and developing personal philosophy of special education will be studied as well. Students will complete fifteen hours of field-based experience in a special education classroom setting under the supervision of a licensed special education teacher.

Student Learning Outcomes:

- * Define the role of special education based on an individualized planning and programming process.
- * Examine the process of free appropriate public education to students in special education through a continuum of services.
- * Define historical, philosophical, contemporary issues and legal bases pertaining to the education of individuals with disabilities.
- * Identify definitions, characteristics, and educational implications for students with disabilities eligible for special education services.
- * Describe how disabilities can impact the student's ability to learn, interact socially, and contribute to the community throughout the life span.
- * Describe a student's strengths as a basis for growth, and a student's errors as opportunities for learning.
- * Examine areas of exceptionality in learning, including learning disabilities, perceptual difficulties, and special physical or mental challenges, gifts, and talents.
- * Analyze strategies to support student learning at the highest possible levels.
- * Utilize information about students' families, cultures, and communities as the basis for connecting instruction to students' experiences.
- * Examine student rights and teacher responsibilities to provide equal and appropriate education for students with disabilities.
- * Observe and document student behaviors and teacher adaptations in a special education classroom setting.

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

SSCI 1300 - Introduction to the Social Sciences

Meets MN Transfer Goal Area 5 - History, Social and Behavioral Sciences. This course provides students an overview of the core concepts and methods of the social sciences. Students examine their world and current national and international issues from the perspectives of anthropology, sociology, political science, history, psychology and economics.

Student Learning Outcomes:

- * Understand and be able to explain the basic concepts and methods of the social sciences
- * Identify and describe unique contributions made by each of the social sciences
- * Apply social science concepts and methods to better understand current national and international issues
- * Understand and be able to give examples of the interconnectedness of the social sciences
- * Use social science concepts to identify and describe the role power plays in issues such as poverty, homelessness, crime, racism

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

SURG 1400 - Medical Microbiology

This course will enable students to recognize how to prevent the spread of disease and promote wound healing. Students will study the structure and function of microorganisms, the various diseases caused by pathogenic microorganisms, and the methods of transmission of disease. Students will classify wound types and study the wound healing process in conjunction with the body's defenses against disease. Students will also learn to protect themselves by studying the concept of standard precautions. Students will describe the various methods of sterilization and disinfection.

Student Learning Outcomes:

- * Correlate the impact of microbiology in relationship to the practice of sterile technique and infection control in the operative setting.
- * Compare and contrast the structure and characteristics of different microorganisms.
- * Analyze the various immune responses that occur in the body as defenses against invasion by pathogens
- * Describe the wound healing process and the factors affecting this process.
- * Relate the infectious process to surgical practice.
- * Identify the name and function of various parts of the compound microscope.

(2 C: 2 lect/pres, 0 lab, 0 other)

SURG 1404 - Surgical Pharmacology

This course will enable students to assist in the preparation of drugs used in the operating room. Students will distinguish the various uses, routes of administration, equipment needed and possible side effects of these drugs. Emphasis will be placed on the legal and safety aspects of drug administration. The metric and apothecary systems of measure will be studied. Students will convert standard time to military time, do temperature conversions, and learn how to prepare a solution.

Student Learning Outcomes:

- * Analyze the principles of anesthesia administration as well as be able to explain the necessity of each component of anesthesia preparation of the surgical patient.
- * Compare and contrast methods, agents, and techniques of anesthesia administration and preparation.
- * Correlate anesthesia monitoring devices with patient homeostasis.
- * Explain anesthesia complications and interventions.
- * Calculate medication conversions and dosages.
- * Apply general terminology to medication use.
- * Prepare and manage medications and solutions.
- * Use medications in the care of the surgical patient.
- * Describe the legal and safety principles of drug/anesthesia administration in the operating room.

(2 C: 2 lect/pres, 0 lab, 0 other)

SURG 1420 - Operating Room Techniques

This course will enable students to recognize the surgical technologist as an essential part of the medical team providing surgical care to patients in an operating room setting. Students will study the total operating room environment, which includes preoperative, intraoperative and postoperative care. Emphasis will be

placed on safety and the principles of aseptic technique.

Student Learning Outcomes:

- * Describe the operating room team and environment.
- * Discuss theory relating to preoperative, intraoperative, and postoperative patient care.
- * Identify general equipment and supplies related to surgical procedures.
- * Identify professional standards and behavior of surgical technologist.
- * Discuss operating room policies and procedures, preference cards and documentation.
- * Discuss aseptic technique and safety for the student and patient.
- * Discuss attitudes toward death and dying and the grief process.
- * Comprehend all hazard preparedness.

(3 C: 3 lect/pres, 0 lab, 0 other)

SURG 1424 - Operating Room Techniques Lab

This course will enable students to perform fundamental operating room skills, to identify instruments and to prepare equipment and supplies necessary for surgical case management. Included will be a basic knowledge of Information Technology, Electricity and Robotics. Students will accomplish this by having the opportunity to observe, practice and demonstrate these skills in a mock operating room lab setting. Emphasis will be placed on demonstrating the principles of aseptic technique as they apply to skills inherent in the scrub role of the surgical technologist and assistant circulator.

Student Learning Outcomes:

- * Classify, identify and pass instruments in specific sets.
- * Demonstrate surgical attire and principles of aseptic technique displaying professional behavior.
- * Demonstrate safe patient care practice preoperatively, intraoperatively and postoperatively for surgical procedure.
- * Demonstrate operating room preparation preoperatively, intraoperatively and postoperatively for surgical procedure.
- * Prepare surgical supplies, equipment and instruments necessary for a surgical procedure.
- * Identify and demonstrate the perioperative duties of the assistant circulator.
- * Identify and demonstrate the perioperative duties of the surgical technologist.
- * Demonstrate basic knowledge pertaining to information technology, electricity and robotics.

(4 C: 0 lect/pres, 4 lab, 0 other)

SURG 1442 - Surgical Procedures I

This course will enable students to understand various types of surgical procedures. Students will accomplish this by studying surgical anatomy, physiology, pathophysiology and the preoperative, intraoperative and postoperative processes as they relate to each type of surgery. Students will relate the knowledge learned in previous theory courses to specific surgical procedures. The types of surgeries to be studied will include General, Obstetrics and Gynecological, Genitourinary, Otorhinolaryngologic Orthopedic, Ophthalmic, Neurosurgery, Cardiothoracic and Peripheral Vascular. This course will also enable students to seek employment. Students will write a letter of application and a resume and follow-up letter. Students will practice for an interview.

Student Learning Outcomes:

- * Correlate the relevant surgical anatomy, physiology and pathophysiology to the surgical procedure.
- * Explain diagnostic interventions that are utilized for obtaining a diagnosis.
- * Discuss specific factors including tissue replacement materials that are unique to the surgical procedure.
- * List the supplies, equipment and instrumentation needed for the procedure.
- * Explain the correct order of steps taken during the surgical procedure.
- * Discuss the postoperative care of the patient according to the procedure.
- * List the wound classification and correlate to wound management.
- * Identify surgical procedures according to specialties including General, Obstetrics and Gynecological, Genitourinary, Otorhinolaryngologic Orthopedic, Ophthalmic, Neurosurgery, Cardiothoracic and Peripheral Vascular. See addendum for content of each specialty.
- * Demonstrate interview techniques and prepare personal resume, cover letter and follow-up letter.

Prerequisite(s): SURG1424.

(6 C: 6 lect/pres, 0 lab, 0 other)

SURG 1443 - Surgical Procedures II

This course will enable students to understand various types of surgical procedures. Students will accomplish this by studying surgical anatomy, physiology, pathophysiology and the preoperative, intraoperative and postoperative processes as they relate to each type of surgery. Students will relate the knowledge learned in previous theory courses to specific surgical procedures. The types of cases to be studied will include surgeries performed in Oral/Maxillofacial and Plastic/Reconstructive specialties.

Student Learning Outcomes:

- * Correlate the relevant surgical anatomy, physiology and pathophysiology to the surgical procedure.
- * Explain diagnostic interventions that are utilized for obtaining a diagnosis.
- * Discuss specific factors including tissue replacement materials that are unique to the surgical procedure.
- * List the supplies, equipment and instrumentation needed for the procedure.
- * Explain the correct order of steps taken during the surgical procedure.
- * Discuss the postoperative care of the patient according to the procedure.
- * List the wound classification and correlate to wound management.
- * Identify surgical procedures according to specialties including Oral/Maxillofacial and Plastic/Reconstructive surgery. See addendum for content of each specialty.

Prerequisite(s): SURG1442.

(1 C: 1 lect/pres, 0 lab, 0 other)

SURG 1462 - Operating Room Clinical Lab I

This course will start you on the road to becoming a functional member of the surgical team in the capacity of a surgical technologist. The student will implement skills learned in prior surgical technology theory and lab courses. The student will be scrubbing for a variety of surgical procedures and assisting the circulating nurse. The student will also be working with central processing, unit support, and instrument room personnel. The complexity of duties will increase as the semester progresses. During this semester, the student will have two rotations at area health care institutions. The student must pass the 1st rotation in order to continue on to the 2nd rotation.

Student Learning Outcomes:

- * Perform pre-operative skills specific to surgical technologist
- * Perform intra-operative skills specific to surgical technologist
- * Perform post-operative skills specific to surgical technologist
- * Evaluate your performance
- * Work towards independence
- * Assist with support personnel duties
- * Assist circulating nurse with perioperative duties including documentation
- * Evaluate patient follow through from admissions, to surgery, to PACU and to discharge
- * Exhibit professionalism
- * Display dependability
- * Demonstrate the practices of Aseptic Technique

Meet the clinical case requirements set forth by the AST; Core Curriculum for Surgical Technology Sixth Edition. Refer to official course syllabus and outline, clinical folder and/or Surgical Technology O.R. Clinical Student Handbook for detailed description of Surgical Rotation Case Requirements.

Prerequisite(s): SURG 1424.

(14 C: 0 lect/pres, 14 lab, 0 other)

SURG 1463 - O.R. Clinical Lab II

This course will enable the student to be a functional member of the surgical team in the capacity of a surgical technologist. During this 3-week rotation, the student will become an independent practitioner by performing all of the duties of a surgical technologist in the cases the student is assigned to scrub. The student will sharpen the skills learned in prior surgical technology theory and lab courses. The student will complete any experience with the central processing, unit support, and instrument room personnel that was not available to the student in SURG 1462.

Student Learning Outcomes:

- * Perform pre-operative skills specific to a surgical technologist
- * Perform intra-operative skills specific to a surgical technologist
- * Perform post-operative skills specific to a surgical technologist
- * Plan procedural activities from start to finish
- * Integrate procedural activities from start to finish
- * Evaluate your performance

- * Work independently with minimal assistance
- * Assist with support personnel duties
- * Assist circulating nurse with perioperative duties including documentation
- * Evaluate patient follow through from admissions, to surgery, to PACU and to discharge
- * Exhibit professionalism
- * Display dependability

Complete the clinical case requirements set forth by the AST; Core Curriculum for Surgical Technology Sixth Edition. Refer to official course syllabus and outline, clinical folder and/or Surgical Technology O.R. Clinical Student Handbook for detailed description of Surgical Rotation Case Requirements.

Prerequisite(s): SURG1442, SURG1462.

(3 C: 0 lect/pres, 3 lab, 0 other)

TECH 1530 - Computer Applications

This is an introductory course in computer applications. This course is designed for students who have no previous computer experience or for those who need a review of basic computer applications. The primary goals of this course are to help individuals acquire a hands-on working knowledge of current personal computer applications including, word-processing, spreadsheet, database, presentation, and internet browser software.

Student Learning Outcomes:

- * Use word-processing software to create, save, print, edit, and format documents
 - * Organize and manage documents
 - * Use spreadsheet software to create, save, print, and edit documents and graphs
 - * Create, save, print, edit, format and enhance graphical presentations
 - * Add visual enhancements to documents and integrate information from multiple applications into one document
 - * Explore the Internet using browser software
 - * Model professional and responsible behavior by being on time, participating in class discussions and completing assignments on time
- (2 C: 0 lect/pres, 2 lab, 0 other)

TECH 1545 - Technical Computations

This course will focus on how to use basic algebraic procedures to transpose formulas/equations and how it applies to specific geometric and trigonometric formulas. Students will acquire data and use it to determine needed information as it relates to their industry. Students will be involved in problem solving as it relates to trade and industrial applications in a lab setting.

Student Learning Outcomes:

- * Transpose formulas to solve for unknown value.
- * Acquire lab measurements for application to geometric formulas.
- * Convert units of measurement for specific needs.
- * Acquire lab measurements for application to right triangle trigonometry.
- * Acquire lab measurements for application to oblique triangle trigonometry formulas.
- * Apply critical thinking skills when solving industry related problems.
- * Utilize a systematic approach to problem solving.

Prerequisite(s): MATH0720 or Appropriate Placement Score.

(3 C: 1 lect/pres, 2 lab, 0 other)

TECH 1550 - Basic CADD

Students will develop a basic knowledge of interactive graphics software manipulation and hardware operations. Students will input drafting commands to develop two dimensional geometry, store and transfer data and output drawings to the plotter for hard copy.

Student Learning Outcomes:

- * Demonstrate start up and shut down procedures for computer software
- * Manipulate the drawing software
- * Set up drawing layout and create basic 2 dimensional drawings
- * Generate completed drawing in hard copy form
- * Store, transfer and retrieve data
- * Treat classmates with respect
- * Demonstrate timeliness in meeting deadlines

(2 C: 1 lect/pres, 1 lab, 0 other)

TECH 1552 - Basic Metal Joining and Fabrication

This course covers basic welding procedures using arc welding and oxy-fuel equipment. One of the major topics of discussion will be safe use of this equip-

ment. Time will be spent in the lab completing welds in various positions with different processes and electrodes. The processes to be covered in this class will be stick welding (SMAW), wire feed (GMAW), Tig (GTAW) Oxy-Acetylene welding, cutting and brazing along with an introduction to other equipment used in welding shops. Students in this course will be non-welding majors where welding may be a useful tool. Course instruction will stress the many situations where it is advisable to have a skilled welder engaged. Knowing your limitations is of the utmost importance.

Student Learning Outcomes:

- * Apply shop safety practice and proper use of shop equipment
- * Calculate proper voltage, feed speeds, and amperages based on machine operation, conditions, materials, and equipment
- * Identify preferred welding process to be utilized to complete assigned tasks
- * Select appropriate electrodes for specified applications
- * Complete welding projects assigned by the instructor in various positions using various welding processes

(2 C: 1 lect/pres, 1 lab, 0 other)

TECH 1556 - Basic Manual - Automated Machining

This course is intended to give the student an introduction into the machining-metalworking world. The student's time will be spent in the lab developing skills in manual machining techniques, using various metals and materials, inspection and measurement of machined features as well as an overview of Computer Numerical Control (CNC) machining and programming. An important part of this class will be the safety concerns of each of the areas being taught. The content of the course will vary somewhat for welding, CADD and electronic students. The electronics students will be given a higher level of automated machining experiences than the welding and CADD students.

Student Learning Outcomes:

- * Demonstrate safety habits consistent with industry standards and college policy
- * Demonstrate the ability to select proper equipment, set up and operate proficiently
- * Complete inspection and measurement process as assigned
- * Demonstrate the ability to work with others
- * Demonstrate the ability to determine if machined parts meet blueprint requirements
- * Explain the code necessary for CNC programs
- * Decipher material types and their characteristics

(2 C: 1 lect/pres, 1 lab, 0 other)

THTR 1315 - Acting for Everyone

Meets MN Transfer Curriculum Goal Area 6 - Humanities and Fine Arts. In this course, students will explore the art and craft of acting, to heighten the student's self-awareness and to improve presentational skills, both individually and in collaboration. Through a series of exploratory exercises, written assignments, and performed presentations, students will engage with and create texts, sharpening analytical skills, and improving understanding of both self and humanity. This course satisfies the Minnesota State Transfer Pathways for an Associate of Fine Arts (AFA) in Theatre.

Student Learning Outcomes:

- * Analyze scripts and characters in scripts.
- * Apply acting theory and techniques to characters.
- * Evaluate performances in class and out of class.
- * Perform for class in scenes, improvisations, monologues, etc.
- * Evaluate acting seen in class and assigned to attend.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

THTR 1330 - Introduction to Theatre

Meets Minnesota Transfer Curriculum Goal Area 6 - Humanities and Fine Arts. In this course, students will explore the history and art form of theatre. Students will research how theatrical form and vision between diverse periods and cultures communicates and reflects the culture and context from which it was created. Students will participate in a broad range of experiences including performance and crew work. This course satisfies the Minnesota State Transfer Pathways for an Associate of Fine Arts (AFA) in Theatre.

Student Learning Outcomes:

- * Describe the differences in theatrical form and vision between diverse periods and cultures.
- * Analyze the means whereby various conceptual/style approaches and/or use of dance and music are used as a communicative and interpretive tool.
- * Analyze the means through which an historic or contemporary dramatic text reflects or critiques the culture and context from which it emerged.
- * Demonstrate and devise the means through which theatrical performance may directly engage relevant social or intellectual issues.
- * Actively participate in the creation of a publicly-presented theatrical event.
- * Devise and present an original group-based performance scenario.
- * Describe how elements of directing, performance, and design contribute to an effective or ineffective personal experience.
- * Describe and demonstrate the various communication tools used by scenic, costume, lighting, and sound designers.
- * Analyze the means whereby various conceptual/style approaches and/or use of dance and music are used as a communicative and interpretive tool.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

THTR 1370 - Introduction to Technical Theatre

MN Transfer Curriculum Goal 6. In this course, beginning and experienced students will explore the art and function of technical theatre in a professional environment. With a focus on understanding the different roles in technical theatre including scenic, costumes, properties, lighting, sound, and stage management students will be introduced to the artistry and function of each technical theatre area. Through exploring the historical background of technical theatre practices, students will engage both design and implementation components, developing an understanding and appreciation for how the technical aspects of theatre create meaning and communicate story. Included is an overview of safety specific to each theatrical discipline as well as an understanding of the components of technical theatre in a variety of performance spaces. Utilizing a variety of in-class instructional strategies as well as experiential learning in partnership with GREAT Theatre, students will be introduced to the technical theatre in a professional environment. This course is a required component of the Technical Theatre Practicum AA degree in partnership with GREAT Theatre and is also open to any student interested.

Student Learning Outcomes:

- * Apply creative thinking and problem-solving skills as they relate to technical theatre practices and artistry.
- * Interpret the organizational structure and roles and relationships of professional technical theatre staff.
- * Build relationships to effectively contribute to the overall outcomes of theatrical production.
- * Analyze different types of theatrical performance spaces (proscenium, black box, outdoor).
- * Analyze theatrical paperwork (i.e. costume renderings, lighting magic sheets, scenic elevations, sound plots) standards, and terminology utilized to effectively communicate in technical theatre.
- * Explain the process of creating a theatrical production as it develops from page to stage.
- * Describe how script interpretation and analysis inform the elements of theatrical design.
- * Interpret historical and contemporary texts from a technical design perspective.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

THTR 1371 - Technical Theatre Practicum 1

Technical Theatre Practicum 1 provides students the opportunity to see the inner workings of a production from the backstage perspective. Through a hands-on experience with GREAT Theatre, students will gain insight into the technical aspects of theatre by working alongside lighting, scenic, sound, properties, costume, and stage management professionals during tech week of a GREAT production (the final two weeks of rehearsal leading to opening night of a production). This course provides an artistic and practical foundation for the Technical Theatre Practicum AA degree as students are introduced to the responsibilities and processes of preparing for a live theatrical production by working on an actual production crew. In this course students will spend 100 hours under the guidance of GREAT Theatre professionals.

Student Learning Outcomes:

- * Apply theatre safety skills and procedures.
 - * Identify key collaborators and their roles in theatre production.
 - * Demonstrate effective communication and collaboration as it relates to specific backstage production roles.
 - * Explore the tech week production processes for theatre.
- (2 C: 0 lect/pres, 0 lab, 2 other)

THTR 1372 - Technical Theatre Practicum 2

Technical Theatre Practicum 2 introduces students to six areas of technical theatre: scenic, costumes, properties, lights, sound, and stage management. Throughout the practicum experience with GREAT Theatre, students will rotate through each area, gaining insight, hands-on skills, and real work experience in each of the six disciplines. Under the guidance of theatre professionals, students will gain an overview of and practice in the six different shops/skill focuses learning the basics of construction and implementation as it relates to each specific area. In this course students will spend 150 hours (3 credits) under the guidance of GREAT Theatre professionals. This practicum is a required component of the Technical Theatre Practicum AA degree and builds on knowledge, skills, and experience gained in Technical Theatre Practicum 1.

Student Learning Outcomes:

- * Utilize terminology, vocabulary, and communication tools used in technical theatre areas.
- * Exhibit safety procedures specific to each technical discipline.
- * Utilize technical theatre equipment and tools in each technical discipline.
- * Analyze the roles and responsibilities of six different technical theatre professions.
- * Explain the paperwork and build/development processes in each technical discipline.

Prerequisite(s): THTR1371.

(3 C: 0 lect/pres, 0 lab, 3 other)

THTR 1373 - Technical Theatre Practicum 3

In Technical Theatre Practicum 3 students will begin to specialize in self-selected areas of technical theatre, focusing in on 2-3 areas from the six options (scenic, costumes, properties, lights, sound, stage management). Through hands-on experiences with GREAT Theatre, students will engage their selected areas of focus under the supervision of theatre professionals, working in respective shops and experiencing show conditions by working on realized productions. In this course students will spend 150 hours (3 credits) under the guidance of GREAT Theatre professionals. This practicum is a required component of the Technical Theatre Practicum AA degree and builds on knowledge, skills, and experience gained in Technical Theatre Practicums 1 and 2.

Student Learning Outcomes:

- * Demonstrate organizational, time management and communication skills.
- * Examine the art of collaboration with artistic and production teams.
- * Utilize terminology, vocabulary, and communication tools in specific technical theatre areas of focus.
- * Interpret technical drawings and paperwork specific to technical theatre areas of focus.
- * Exhibit proficiency with theatrical tools and materials specific to disciplinary areas in accordance with industry safety guidelines.
- * Explain the importance of archiving theatrical work in a professional portfolio format.

Prerequisite(s): THTR1372.

(3 C: 0 lect/pres, 0 lab, 3 other)

THTR 1374 - Technical Theatre Practicum 4

Technical Theatre Practicum 4 allows students the opportunity to specialize in a self-selected area of technical theatre (set, costumes, properties, lights, sound, stage management) by working with GREAT Theatre. Students will gain real world experience under the supervision of a professional theatre artist in their selected area of emphasis, gaining hands-on experience both in the shop and backstage during production. Working closely with the production design team, students will engage their discipline area in the process from page to stage. During this semester, students will develop a professional portfolio to demonstrate their theatrical skills and experience. In this course students will spend 200 hours (4 credits) under the guidance of GREAT Theatre professionals. This practicum is a required component of the Technical Theatre Practicum AA degree and builds on knowledge, skills, and experience gained in Technical Theatre Practicums 1,

2, and 3.

Student Learning Outcomes:

- * Exhibit organizational, time management, and communication skills as well as professional practices and standards associated with a specific technical theatre role.
- * Utilize collaboration techniques with artistic and production teams.
- * Demonstrate mastery of shop safety, construction/implementation methods, tool use and maintenance for specific technical theatre discipline.
- * Construct technical drawings and paperwork for communication specific to technical theatre areas of focus.
- * Implement paperwork, standards, and terminology related to one specific area of technical theatre.
- * Implement specific designs for technical theatre discipline.
- * Demonstrate the importance of archiving technical theatre work.
- * Create a professional portfolio.

Prerequisite(s): THTR1373.

(4 C: 0 lect/pres, 0 lab, 4 other)

TRAN 1503 - General Service

This course is an introduction to the automotive industry. Materials covered will include an overview of the entire vehicle layout, components, correct procedures, intervals for servicing, and maintaining multiple types of vehicles. Students will have a strong emphasis on shop safety, vehicle lifting, hoisting, along with the use of electronic service information, technical service bulletins, and repair orders. Students while disassembling and reassembling vehicle components will also be introduced to shop tools, equipment, how to use them correctly and safely. Students will examine many scientific principles and materials that apply to the transportation industry.

Student Learning Outcomes:

- * Apply soft skills and shop safety procedures while working in the lab.
- * Identify service intervals and perform vehicle safety inspections.
- * Demonstrate oil/filter service, maintenance, and light repairs.
- * Comprehend waste handling procedures and comply with Environmental Protection Agency (EPA) and Minnesota Pollution Control Agency (MPCA) regulations.
- * Perform cooling system test, maintenance and light repairs to vehicles.
- * Analyze electronic service information, technical service bulletins, and repair orders.
- * Examine the function and operation of entire vehicle's main components and systems.
- * Demonstrate safe and proper use of basic hand tools and shop equipment.
- * Identify the different types of fasteners and hardware used in the transportation industry.
- * Disassemble and reassemble vehicle components using correct tools and procedures.
- * Demonstrate how to use measuring devices such as, micrometers, veneer calipers, and dial indicators.
- * Demonstrate serpentine belt and tensioner inspection and replacement.

Corequisite(s): AUTO1510.

(C: 1 lect/pres, 2 lab, -3 other)

TRAN 1504 - Electricity and Electronic Principles

This is an introductory course to electricity and electronic principles. The student will acquire a basic understanding of voltage, current, and resistance, and how they function and operate in an electrical circuit. The student will study the sources of electricity including chemical reactions, light, heat, and magnetism. Students will learn about solid state devices such as resistors, diodes, and transistors. Lab work will give the students hands-on experience building electrical circuits, and measuring voltage, current, and resistance using digital multi-meters and oscilloscopes.

Student Learning Outcomes:

- * Examine both conventional and electron theory.
- * Identify how voltage, current and resistance is used in an electrical circuit.
- * Develop safe working practices around electricity.
- * Examine how electricity and electrical components are used in vehicle electrical systems.
- * Develop basic diagnostic electrical trouble shooting skills.
- * Understand and use different functions of automotive electrical testing equipment.
- * Identify sources of electricity, and explain the origin, e.g. chemical reaction,

light, heat, or magnetism.
(3 C: 1 lect/pres, 2 lab, 0 other)

TRAN 1517 - Scan Tool Data Acquisition

On today's complex cars and light trucks, computers affect every aspect of our vehicles. In this course, students will have the opportunity to acquire and store data from various automotive computer systems using factory and aftermarket scan tools. Students will also have the opportunity to learn how to decode and interpret VIN, vehicle I.D. along with different emissions and information labels, also gathering and interpreting the valuable vehicle and computer information that will assist them in performing service work in accordance with the manufacturer procedures.

Student Learning Outcomes:

- * Interpret VIN and vehicle I.D. labels and information.
- * Begin to identify typical automotive computer operation on late model vehicles.
- * Perform a computerized scan analysis.
- * Perform bi-directional control of different vehicle functions: (honk the horn, roll the window up and down) Be aware of safe and ethical practices as it relates to engine computer service procedures.
- * Begin to develop job entry level skills when performing basic engine, body, and chassis monitoring with various scan tools.
- * Exhibit professionalism in the transportation industry.

(2 C: 2 lect/pres, 0 lab, 0 other)

TRAN 1518 - Transportation Hazardous Materials

Students enrolled in this class will learn how to identify and to handle hazardous materials found in the transportation industry. Students will access and utilize safety and environmental information. Students will be able to recognize their professional obligation to explore, develop, and implement pollution preventive and safe maintenance practices.

Student Learning Outcomes:

- * Identify shop safety hazards.
- * Interpret Safety Data Sheets (SDS) and Globally Harmonized System Labeling Pictograms (GHS).
- * Explore methods to reduce or eliminate waste from entering environmental ecosystems.
- * Identify environmental impacts and responsibilities of the transportation industry.
- * Identify Agencies that assist and enforce rules and laws as they pertain to hazardous and Environmental issues (MPCA, OSHA, EPA) Determine proper use of Personal Protective Equipment (PPE).

(1 C: 1 lect/pres, 0 lab, 0 other)

TRAN 1520 - Workplace Perceptions and Expectations

This course introduces students to the different types of certifications and technician levels needed for advancement in the transportation industry. Students will receive instruction in job exploration, job application forms, resume writing and interview skills. Student will understand the importance of soft skills such as communication, work performance, and workplace ethics.

Student Learning Outcomes:

- * Explain communication skills with coworkers, employers, and customers.
- * Generate written materials used to aid in securing a job.
- * Demonstrate interview skills.
- * Analyze various benefit and payment methods offered to employees.
- * Examine costs associated with operating a business.
- * Compare union and non-union labor practices in the workplace.
- * Identify types of industry certifications, levels of certification and growth opportunities in the transportation field.
- * Discuss industry associations, national conferences, and training opportunities for transportation technicians.
- * Develop professional ethical practices and responsibilities.

(2 C: 2 lect/pres, 0 lab, 0 other)

WELD 1502 - Welding for Work and Leisure

This course covers basic welding procedures using arc welding and oxy-fuel equipment. One of the major topics of discussion will be safe use of this equipment. Time will be spent in the lab completing welds in various positions with different processes and electrodes. The processes to be covered in this class will be stick welding (SMAW), wire feed (GMAW), Oxy-Acetylene welding, cutting

and brazing along with an introduction to other equipment used in welding shops. Students in this course will be non-welding majors where welding may be a useful tool. Course instruction will stress the many situations where it is advisable to have a skilled welder engaged. Knowing your limitations is of the utmost importance.

Student Learning Outcomes:

- * Apply shop safety practice and proper use of shop equipment.
- * Calculate proper voltage, feed speeds, and amperages based on machine operation, conditions, materials, and equipment.
- * Identify preferred welding process to be utilized to complete assigned tasks.
- * Select appropriate electrodes for specified applications.
- * Complete welding projects assigned by the instructor in various positions using various welding processes.

(2 C: 1 lect/pres, 1 lab, 0 other)

WELD 1505 - Arc Welding Processes I

Students will study the uses of these process in industry, fundamentals of the process, and safety concerns connected with the Shielded Metal Arc Welding (SMAW), along with an introduction into Gas Metal Arc Welding (GMAW), the types of power sources used with these two processes, and other related safety working conditions in the welding field. Time will be spent in the lab developing skills using the SMAW and GMAW processes. Welds will be made in the flat, horizontal, vertical and overhead positions. Written and Fundamental tests will be done in accordance with the American Welding Society (AWS) SENSE curriculum and code books.

Student Learning Outcomes:

- * Demonstrates proper use and inspection of personal protection equipment (PPE).
- * Demonstrates proper safe operation practices in the work area.
- * Demonstrates proper use and inspection of ventilation equipment.
- * Demonstrates proper Hot Zone operation.
- * Demonstrates proper work actions for working in confined spaces.
- * Demonstrates proper use of precautionary labeling and MSDS information.
- * Performs safety inspections of SMAW, GMAW equipment and accessories.
- * Makes minor external repairs to SMAW, GMAW equipment and accessories.
- * Operates and set up for SMAW, GMAW operations on carbon steel.

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or appropriate placement score.

(C: 1 lect/pres, 4 lab, -5 other)

WELD 1515 - Thermal Welding and Cutting Process

This course covers the use of oxy-fuel cutting equipment (OFC) when, welding, cutting, brazing, and the use of the Plasma Arc Cutting (PAC) hand held along with CNC operations and Air Carbon Arc Cutting (CAC-A) processes. A very important part of this course will be discussing safety as related to the thermal welding and cutting equipment. Time will be spent in the lab developing skills using the thermal welding and cutting processes. Welds will be made in the flat, horizontal, vertical and overhead positions. Cuts will be made in the flat and horizontal positions. Written and Fundamental tests will be done in accordance with the American Welding Society (AWS) SENSE curriculum and code books.

Student Learning Outcomes:

- * Demonstrate proper use and inspection of personal protection equipment (PPE).
- * Demonstrate proper safe operation practices in the work area.
- * Perform safety inspections of manual OFC, PAC, CAC-A equipment and accessories.
- * Make minor external repairs to manual OFC, PAC, CAC-A equipment and accessories.
- * Operate and sets up for manual, mechanized, and CNC OFC/PAC operations on carbon steel, austenitic stainless steel, and aluminum.
- * Operate and set up for manual CAC-A scarfing and gouging operations on carbon steel.
- * Demonstrate proper inspection and operation of equipment used for each welding and thermal cutting process.

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or appropriate placement score.

(C: 1 lect/pres, 2 lab, -3 other)

WELD 1520 - Metallurgy and Safety in Fabrication

This course covers the study of metals and how to safely join them in the fabrica-

tion of weldments to Generally Industries OSHA 10 requirements. Physical and mechanical properties of alloyed materials as they apply to welding, cutting, forming, shaping and heat treating will be covered. The students will do a capstone/developmental research project of manufacturing processes of products being built in manufacturing. There will also be a wide variety of equipment used during this course and several projects will be fabricated. Written and Fundamental tests will be done in accordance with the American Welding Society (AWS) SENSE curriculum, OSHA and related code books.

Student Learning Outcomes:

- * Demonstrate proper use and inspection of personal protection equipment (PPE).
- * Demonstrate proper safe operation practices in the work area.
- * Will complete a General Industry OSHA 10 safety.
- * Develop an understanding of the terminology used in the study of metals.
- * Describe the types of tests that are performed on metals to determine their range of usefulness.
- * Determine the difference between ferrous and nonferrous metals and how the applications will vary.
- * Fabricate various projects using prints and basic hand tools.
- * Research manufacturing fabricated products and their material make up's (Capstone/Development Project).

Prerequisite(s): ENGL0900 and READ0900 or all three of these ESOL1120, ESOL1310, ESOL1330 or appropriate placement score.
(3 C: 2 lect/pres, 1 lab, 0 other)

WELD 1529 - Print Reading and Math Applications

The Welding profession requires a good working knowledge of print and math concepts using whole numbers, fractions, decimals and the metric system in conjunction with prints. To accurately layout and fabricate parts the welder will need basic knowledge of print lines, dimensions, notes, and welding symbols. In many instances the welder will be required to calculate the weight and cost of material to fabricate a tank then calculate the capacity, which may be needed in cubic feet, gallons or liters. Written and Fundamental tests will be done in accordance with the American Welding Society (AWS) SENSE curriculum and code books.

Student Learning Outcomes:

- * Interpret basic elements of a drawing or sketch.
- * Interpret welding symbol information.
- * Prepare an applicable bill of materials.
- * Perform conversions of standard inch and metric measurements.
- * Solve the common welding/fabrication workplace problems involving perimeter, area, surface area and volume.

Prerequisite(s): MATH0720 or appropriate placement score.
(C: 2 lect/pres, 0 lab, -2 other)

WELD 1533 - Fabrication Print Reading

This course is a continuation and reinforcement of the fundamental component of welding prints together that make up structures in industry. The student will break down welding prints to develop the skill needed to fabricate individual component parts that will makeup welded structures. There will be discussions on the different welding prints and symbols in the various organizations in the welding field and how the Welding Procedure Specification (WPS) and non-destructive examination symbols correlate with the prints for welding. Written and Fundamental tests will be done in accordance with the American Welding Society (AWS) SENSE curriculum and code books.

Student Learning Outcomes:

- * Interprets welding symbol information.
- * Prepares an applicable bill of materials.
- * Performs conversions of standard inch and metric measurements.
- * Develop an understanding of the components of a Welding Procedure Specification (WPS).
- * Interpret non-destructive examination symbols.

Prerequisite(s): WELD1529.
(1 C: 1 lect/pres, 0 lab, 0 other)

WELD 1540 - Arc Welding Processes II

Students will study the fundamentals and the safety concerns of the two wire feeding processes; Gas Metal Arc Welding (GMAW) and Flux Cored Arc Welding (FCAW). Within this study the students will cover five major groups: Power Sources, Shielding Gases, Methods of Transfer, Electrodes, and Limitations. Time will be spent in the lab developing skills using the GMAW, FCAW processes.

Welds will be made in the flat, horizontal, vertical and overhead positions. Written and Fundamental tests will be done in accordance with the American Welding Society (AWS) SENSE curriculum and code books.

Student Learning Outcomes:

- * Demonstrate proper use and inspection of personal protection equipment (PPE).
- * Demonstrate proper safe operation practices in the work area.
- * Perform safety inspections of GMAW, FCAW equipment and accessories.
- * Make minor external repairs to GMAW, FCAW equipment and accessories.
- * Operate and sets up for FCAW operations on carbon steel.
- * Operate and sets up for GMAW operations on carbon steel, stainless steel, and aluminum.

Prerequisite(s): WELD1505.
(6 C: 1 lect/pres, 5 lab, 0 other)

WELD 1545 - Gas Tungsten Arc Welding

Students will study the fundamentals and safety concerns connected with the Gas Tungsten Arc Welding (GTAW) equipment. Within this study the students will cover five major groups: Power Sources, Shielding Gases, Current Selection, Torch Types, and Limitations. Time will be spent in the lab developing skills using the GTAW process for carbon steel, austenitic stainless steel, and aluminum. Welds will be made in the flat, horizontal, vertical and overhead positions. Written and Fundamental tests will be done in accordance with the American Welding Society (AWS) SENSE curriculum and code books.

Student Learning Outcomes:

- * Demonstrate proper use and inspection of personal protection equipment (PPE).
- * Demonstrate proper safe operation practices in the work area.
- * Perform safety inspections of GTAW equipment and accessories.
- * Make minor external repairs to GTAW equipment and accessories.
- * Operate and sets up for GTAW operations on carbon steel, austenitic stainless steel, and aluminum.

Prerequisite(s): WELD1505.
(4 C: 1 lect/pres, 3 lab, 0 other)

WELD 1558 - Robotics, Inspection, and Testing

Students will study the fundamentals of welding inspection processes and different types of testing that are conducted both destructively and non-destructively to ensure the soundness of the weldments. The students will also gain an understanding of the importance of researching companies to better prepare them in the resume development process, and interview with confidence. The students will program an industrial robotic welder for a variety of welding applications by applying safe operation, positional teaching, program logic and sequence, and input/output command structure to achieve optimum quality and cycle time. Written and Fundamental tests will be done in accordance with the American Welding Society (AWS) SENSE curriculum and code books.

Student Learning Outcomes:

- * Demonstrate proper use and inspection of personal protection equipment (PPE).
- * Demonstrate proper safe operation practices in the work area.
- * Develop an understanding of the fundamental operations of a robotic welder.
- * Examine cut surfaces and edges of prepared base metal parts.
- * Examine tacks, root passes, intermediate layers, and completed welds.
- * Understand the importance of cover letters and resumes.
- * Research employable companies to better prepare for interviewing.

Prerequisite(s): WELD1520.
(3 C: 2 lect/pres, 1 lab, 0 other)

WETT 1502 - Basic Laboratory Skills

Students will learn basic testing skills, weighing and sampling techniques. Course also includes: laboratory safety, the identification, care, and use of laboratory supplies and equipment.

Student Learning Outcomes:

- * Understand the importance and purpose of laboratory testing, and lab safety.
- * Conduct basic water and wastewater analysis using standard testing procedures and interpretation of the results.
- * Identify laboratory equipment, its care and use.

(1 C: 0 lect/pres, 1 lab, 0 other)

WETT 1506 - Introduction to Water/Wastewater Technology

Students will gain an understanding and develop skills, knowledge, and attitude necessary to be successful in the water and wastewater treatment program. Student will study water and wastewater terminology, identify operator duties, identify different treatment processes, identify sources of water and define water characteristics. Students will learn the impacts people have, due to group and individual behaviors, on water resources and the treatment processes designed to limit those effects. This course will distinctly define the differences between water and wastewater treatment facilities.

Student Learning Outcomes:

- * Identify, and describe treatment facilities and processes utilized in water and wastewater treatment, including collection and distribution systems.
- * Differentiate between ground water and surface water sources.
- * Differentiate between physical, chemical, biological and radiological characteristics of water and wastewater.
- * Develop base knowledge regarding regulatory requirements for water and wastewater treatment.
- * List and describe duties and responsibilities of water and wastewater treatment plant professionals.
- * Define cultural differences relating to availability of potable water supplies.

(3 C: 3 lect/pres, 0 lab, 0 other)

WETT 1510 - Water / Wastewater Treatment Calculations

Students will perform basic mathematical calculations directly related to the water and wastewater field. This course has a main focus on math theories, but also will include applied mathematical applications. Students must learn the theoretical math before applying the math concepts in practical applications in order to manipulate data and use that data for process control in water and wastewater treatment applications. Upon completion of this course, students will understand the importance of mathematical theories as stated in the course content and topics. The relevance of the math concepts will be applied and further understood in future courses taken in the Water Environment Technologies program. A wide variety of conversions are introduced to the students that specifically relate to the water and wastewater industry.

Student Learning Outcomes:

- * Solve basic mathematical calculations utilized in the water and wastewater industry.
- * Convert units to solve mathematical equations.

(2 C: 2 lect/pres, 0 lab, 0 other)

WETT 1514 - Source Water Treatment and Development

Students will study the treatment and development of both ground and surface water sources. Areas studied will include: well construction and development, pump types and applications, ground and surface water protection, pretreatment of surface water, and water filtration.

Student Learning Outcomes:

- * Identify the three basic types of centrifugal pumps, their applications, and methods of selection.
- * Identify the three categories of positive displacement pumps, their applications, and methods of selection.
- * Determine, by calculation, pumps sizing and pump selections.
- * Understand the importance of meeting well construction codes and preventive maintenance procedures for a public water supply.
- * Explain the process of designing a wellhead protection program.
- * Describe the steps to be followed in conducting a sanitary survey of a water supply.
- * Explain the importance of reservoir and watershed management.
- * Understand the operation and maintenance processes related to gravity and pressure filtration systems.

(4 C: 2 lect/pres, 2 lab, 0 other)

WETT 1518 - Water Plant Operation I

This course assists students to identify and gain knowledge and demonstrate the skills and tasks used in the treatment of raw water and the production of finished drinking water. The tasks and skills reflect tests and operations that are practices in water treatment plants and are based on biological and chemical concepts. The tests are in correlation with Public Health and Environmental Protection Agency Standards.

Student Learning Outcomes:

- * Understand water use, pricing, loss identification and reduction and conservation practices.
- * Explain the purpose and describe the operation of the equipment involved in the aeration process.
- * Describe the function and operation of the coagulation and flocculation process.
- * Calculate chemical feed rates required to achieve proper floc formation.
- * Calculate and explain the concepts of detention time, surface overflow rates, and weir overflow rates as they relate to sedimentation.
- * Perform laboratory analysis and apply the results to operation of a water treatment plant in a safe manner.
- * Demonstrate ability to work, problem solve, and communicate with diverse populations both verbally and in writing.

(3 C: 2 lect/pres, 1 lab, 0 other)

WETT 1522 - Water Treatment Plant Operation II

Students in this course will continue to study the various techniques and methods required to provide a safe, sanitary drinking water supply for the public. The course will focus on water softening and stabilization techniques currently being applied by the water industry. The course also examines water fluoridation and adsorption treatment methods. Plant operation procedures and evaluation of treatment performance will be analyzed both mechanically and by generating and evaluating laboratory data to verify process control and regulatory compliance.

Student Learning Outcomes:

- * Assess the chemistry of water softening and combine it with operational data.
- * Perform pre and post analysis of a water sample and summarize the results.
- * Determine chemical dosage required for removal of hardness, turbidity and color.
- * Investigate the importance of providing a stable water supply from both a health and economic perspective.
- * Judge the importance and application of Activated Carbon adsorption as a water treatment technique.
- * Evaluate chemicals used to fluoridate a water supply.
- * Utilize and compare calculated dosages and techniques used to feed and apply Fluoride.
- * Demonstrate ability to work, solve problems, and communicate with others both verbally and in writing.

Prerequisite(s): WETT1518.

(3 C: 2 lect/pres, 1 lab, 0 other)

WETT 1526 - Water Distribution Systems

Students will be exposed to all operational design and maintenance characteristics of water distribution systems. This will include storage facilities, pump stations, distribution piping, valves, and fittings and associated hydraulics. The course will include a 40-hour internship at a water treatment facility.

Student Learning Outcomes:

- * Knowledge of selection, application, and operation of various valves and fittings.
- * Compare and contrast different types of pipe materials and their application.
- * Operate and maintain fire hydrants following industry safety standards.
- * Describe different types of storage tanks and the proper application of each type.
- * Perform a direct tap and a tap using a saddle into a water main.
- * Perform pipe flow capacity and head loss calculations on a distribution system.
- * Describe the operation of residential water meters.
- * Investigate cross-connections and explain the application of the different types of backflow preventers.
- * Describe how water quality is impacted by the water distribution system.

(3 C: 1 lect/pres, 2 lab, 0 other)

WETT 1530 - Understanding OSHA Safety Regulations in the Water Industry

Students will study the intent of the OSHA regulations as they pertain to the safety of the individual in the water industry. Students will obtain an understanding of the development of OSHA. Students will also construct a facility safety and health manual based on the knowledge obtained in the classroom and information gathered through research and observation at a local utility

Student Learning Outcomes:

- * Investigate the history of OSHA and the reasons for its development.
- * Judge the importance of management and employee involvement in a safety

program.

- * Assess the primary hazards involved in the water industry.
- * Develop a job hazard analysis presentation.
- * Generate a safety presentation using the seven steps of presenting a safety program.
- * Construct and develop a utility safety manual.

(3 C: 3 lect/pres, 0 lab, 0 other)

WETT 1534 - Wastewater Treatment Plant Operations I

This course will assist students in understanding lift stations, preliminary, primary and secondary operations and process control at a wastewater treatment facility. Students will understand the importance of various treatment process steps, the order of operation and the purpose of each. The handlings of solid wastes from a wastewater treatment facility are introduced in this course. The concept of rotating biological contactors and trickling filter operations and maintenance will be presented as the secondary processes. Process control of the various stages of treatment is a major focus of this course. Students will be presented with the opportunity to demonstrate control strategies, safety practices, ability to solve mechanical, flow and pollution problems. The lab component in this class will address specific analytical methods directly associated with the treatment processes involved.

Student Learning Outcomes:

- * Identify, distinguish and differentiate between treatment processes and control techniques for lift stations, preliminary treatment, primary treatment and secondary treatment within a wastewater treatment facility.
- * Relate control parameters with lab analysis associated with individual treatment processes.
- * Identify potential hazards in a wastewater treatment facility and lab settings.
- * Demonstrate the knowledge and ability to identify and correct unsafe and/or harmful conditions.
- * Inspect and classify lift stations and describe their function in a wastewater collection system.
- * Compute mathematical functions relative to the operation of wastewater treatment processes.
- * Examine and assist with real-life treatment facility operations and problem solving.
- * Demonstrate ability to work with others, problem solve and communicate, orally and in writing.
- * Cooperate with other learners and instructional staff through group projects and in lab settings.

Prerequisite(s): WETT1502, WETT1506, WETT1510.

(3 C: 2 lect/pres, 1 lab, 0 other)

WETT 1538 - Wastewater Treatment Plant Operations II

This course is a continuation of Wastewater Treatment Plant Operations I. Students will gain an understanding and develop skills, knowledge, ability and attitude necessary to be successful with controlling processes that occur in Activated Sludge, Stabilization Pond and Septic systems. The student will identify problems that occur in each of these processes and develop skills necessary to troubleshoot and solve the problems. Mathematical computations in conjunction with process control are a major objective in this course. The laboratory component presented in this course will require a synthesis of prior theory and practice. The use of microscopic evaluation to identify organisms in wastewater treatment processes is explored in this course. Septic system design and construction will be evaluated as content in this course.

Student Learning Outcomes:

- * Assess treatment processes and control techniques for pond systems, septic systems and activated sludge systems.
- * Select lab tests and relate control parameters to lab analysis results associated with individual treatment processes and the overall treatment facility in a safe and efficient manner.
- * Interpret and explain the nitrogen cycle.
- * Calculate flows, chemical dosages, detention times and other mathematical computations associated with operation and control of treatment facilities.
- * Assess real-life treatment facility operations and problem solving strategies.
- * Demonstrate ability to cooperate and work with others, troubleshoot systems, problem solve and communicate, orally and in writing.
- * Identify and explain the significance of various aquatic organisms in the wastewater secondary biological processes.

(4 C: 2 lect/pres, 2 lab, 0 other)

WETT 1542 - Wastewater Laboratory Procedures

Students will receive the opportunity to observe, perform and demonstrate their abilities with a wide variety of water and wastewater tests commonly performed at a water and/or wastewater treatment facility. Students will interact with other students while performing sampling, preservation and handling of samples as well as when running an analysis. Students will be working in a variety of groups and sharing ideas and skills necessary and expected throughout the industry in performing standardized tests. Students will be required to generate lab reports and complete standard regulatory forms with their data generated from their lab results.

Student Learning Outcomes:

- * Select and perform lab procedures appropriate for wastewater treatment facility operation and control, while observing and practicing necessary safety practices in a lab setting.
- * Improve skills and techniques associated with water and wastewater lab analysis (including quality control), develop procedural techniques and relate lab results to wastewater treatment facility operation and control.
- * Generate, organize, manipulate, formulate, and complete lab spreadsheets, forms and reports required by employers and regulatory agencies.
- * Calculate loading rates, percentages, and other mathematical computations related to the data developed from lab analysis in a safe and efficient manner.
- * Determine and explain the use of lab ware, chemicals and electronic equipment used during lab analysis, in a safe and efficient manner.
- * Develop and demonstrate the ability to interact, collaborate, listen, assist, communicate orally and in writing and share responsibilities with lab partners.

Prerequisite(s): WETT1502, WETT1506, WETT1510.

(3 C: 1 lect/pres, 2 lab, 0 other)

WETT 1546 - Collection and Disinfection Systems Operation

This course will prepare students for the operation and maintenance of wastewater collection systems and disinfection methods employed in water and wastewater treatment systems. The installation and maintenance of the equipment required by these systems will be explored. Disinfection by gas chlorination, as well as other chlorine methods of disinfection, will be the main focus of the disinfection methods discussed. Ultra Violet Light, Ozone, Heat, and other methods of disinfection will be addressed in this course as well. Calculations of chemical dosages and safety practices involved with handling chemicals will be included in this course. Lab analysis and interpretation of lab data will be demonstrated and practiced to ensure comprehension and understanding of these systems.

Student Learning Outcomes:

- * Examine collection and disinfection systems.
- * Select analytical methods used for disinfection of water and wastewater.
- * Disassemble, inspect, reassemble, and explain the mechanical equipment and uses of the equipment in chlorine feed systems.
- * Calculate flows, chemical dosages and feed-rates, percent solutions and other mathematical computations associated with chemical additions.
- * Assess methods of lift-station and collection system operation and maintenance, and safety policies in accordance with industry standards.

Prerequisite(s): WETT1502, WETT1506, WETT1510.

(3 C: 2 lect/pres, 1 lab, 0 other)

WETT 1550 - Strategic Planning for Success

This course is designed to synthesis all courses in the Water Environment Technologies program. The process of synthesis will assist students in passing their state class D certification examination. Students will also complete the process of researching and applying for employment using a variety of methods learned, in the water and wastewater industry.

Student Learning Outcomes:

- * Develop and produce a resume, cover letter and thank you letter.
- * Assess and explore sources of employment, identify job opportunities and submit applications for employment.
- * Accept interviews and judge self-assessments in relation to employment potential.
- * Solve mathematical problems associated with the operation and control of water and wastewater treatment facilities.
- * Criticize and assist with real-life treatment facility operations and problem solving.
- * Compile data in preparation for sitting of state water and wastewater examinations.
- * Demonstrate ability to listen, organize, creatively think and develop, and com-

communicate orally and in writing.

Prerequisite(s): WETT1514, WETT1522, WETT1526, WETT1538, WETT1542, WETT1554.

(3 C: 3 lect/pres, 0 lab, 0 other)

WETT 1554 - Automated Control Systems

Students will comprehend basic electrical concepts used to analyze electrical consumption and assist in environmental protection through consumption reduction. Students will also develop an understanding of the motors and control panels used in the operation of water and wastewater treatment processes. The operation of various types of instrumentation, monitoring equipment and other control devices will be understood and utilized by the students.

Student Learning Outcomes:

- * Clarify the fundamentals of AC and DC electricity.
- * Demonstrate ability to use multi-meters, check line voltage, amperage draws and resistance in an electrical system.
- * Demonstrate ability to operate various types of instrumentation used in treatment control processes to include remote sites, booster stations and reservoirs.
- * Troubleshoot and solve problems associated with electronic control devices.
- * Demonstrate ability to work, problem solve and communicate, orally and in writing.
- * Differentiate between single phase and 3 phase electrical systems
- * Operate various electrical control panels, monitoring equipment and chemical feed systems.

Prerequisite(s): WETT1502, WETT1506, WETT1510.

(3 C: 1 lect/pres, 2 lab, 0 other)

WETT 1558 - Understanding the EPA Part 503 Biosolids Rule

This course is designed to assist students with the interpretation and understanding of the rules and regulations set forth by the federal and state agencies relating to biosolids. Students will study the comprehensive requirements for the management and disposal of biosolids generated during the process of treating municipal wastewater. This course will also help prepare students in obtaining a type IV biosolids operators license upon meeting the state and federal requirements for biosolids application. Use of the D2L online learning environment may be utilized in this class.

Student Learning Outcomes:

- * Identify and describe the main subparts of CFR part 503.
- * Examine the requirements for biosolids classification.
- * Recommend forms and reports required by regulatory agencies.
- * Calculate biosolids loading and application rates and other mathematical computations associated with operation and control of biosolids.
- * Classify and explain the importance of management practices and record keeping.
- * Argue and recommend potential violations and penalties.
- * Observe and/or assist with the application of biosolids to a land application site,
- * Identify and adhere to all safety practices associated with Biosolids operations.

(3 C: 3 lect/pres, 0 lab, 0 other)

WMST 1300 - Introduction to Women's Studies

Meets MN Transfer Curriculum Goal Areas 2 and 7A - Critical Thinking and Human Diversity. This course will investigate women's lives, their experiences, contributions, and culture, and the surrounding social structures and societal values, all from the perspective of women. This is an interdisciplinary course that is based on theoretical framework and approaches from a number of disciplines. We will be looking at the patriarchal system that produces and maintains unequal social relationships, and institutional exploitation, both political and economic. We will discover how both women and men can be a part of the process of solving gender inequality.

Student Learning Outcomes:

- * Examine ways women have contributed to society, both historically and in the present, and why women's contributions have been relatively unrecognized.
- * Define and examine the system of patriarchy in the United States, and how it affects each of us.
- * Examine the ways women have both survived oppression and successfully challenged oppression, and the effects of that on women themselves and on society.
- * Examine the destructive potential of the traditional images and stereotypes of our lives, and consider alternatives to these.

- * Discover how historically accepted theories and explanations are rife with prejudice and misunderstanding about women in particular, and humanity in general, and how they impact current beliefs about women.
- * Examine the gender issues deeply imbedded in the most familiar facets of life: family relationships, work, education, media, religion, and other popular culture.
- * Examine the ways sexism is promoted and maintained on the personal, institutional, and cultural level.
- * Examine the intersections of sexism and racism, ethnocentrism, heterosexism, classism and ageism.
- * Identify and analyze the major themes of gender roles, including the images of male and female ideals, roles, and expectations of gender as they have been expressed in aspects of our culture and institutions.
- * Examine the role that the cultural definition of masculinity plays in violence against women and maintaining unequal power structure.
- * Explain how both women and men can be a part of the process of solving gender inequality.

Prerequisite(s): ENGL1308 and one of the following: READ0900, READ1308 or ESOL1120, or appropriate placement score.

(3 C: 3 lect/pres, 0 lab, 0 other)

ADMINISTRATION, FACULTY, & STAFF DIRECTORY

Albers, James (james.albers@sctcc.edu)..... (320) 308-5737
College Lab Assistant – Medium/Heavy Truck

Althaus, Malinde (linde.althaus@sctcc.edu)..... (320) 308-0973
Psychology Instructor
MA, University Of Minnesota Twin Cities
DD, Minnesota State University, Mankato

Anderson, James (janderson@sctcc.edu) (320) 308-5013
Accounting Instructor
BS, St. Cloud State University
MS, St. Cloud State University

Anderson, Kristin (Kristin.anderson@sctcc.edu)
Sonography Lab Assistant

Anderson, Roseanne (randerson@sctcc.edu) (320) 308-0978
Administrative Assistant, Dean of Skilled Trades & Industry
Diploma, St. Cloud Technical & Community College

Babic, Maja (maja.babic@sctcc.edu) (320) 308-3382
General Maintenance Worker

Babic, Namik (namik.babic@sctcc.edu) (320) 308-3382
General Maintenance Worker

Backen, George (george.backen@sctcc.edu) (320) 308-5073
Philosophy Instructor
MA, Ohio University Main Campus
JD, Suny At Buffalo Law School
PHD, Suny At Buffalo

Backes, Karen (karen.backes@sctcc.edu) (320) 308-5087
Director of Recruitment & Outreach

Backstrand, Craig (craig.backstrand@sctcc.edu) . (320) 308-5916
Heating, Ventilation & Air Conditioning Instructor
AAS, Dunwoody College of Technology

Barker, Aaron (abarker@sctcc.edu) (320) 308-6518
Robotics & Industrial Controls Instructor
Diploma, Ridgewater College
AAS, Ridgewater College

Bauer, Kristen (kbauer@sctcc.edu) (320) 308-5740
PT Practical Nursing Instructor
BS, College Of Saint Benedict

Becker, Kimberly (kimberly.becker@sctcc.edu) (320) 308-5179
Associate Degree Nursing Instructor
MA, Bethel University

Bellfield, Jackie (jackie.bellfield@sctcc.edu) (320) 308-5175
Academic Advisor

Benner, Anna (abenner@sctcc.edu) (320) 308-5410
Dental Hygiene Instructor
BS, Minnesota State University, Mankato
MS, University Of Minnesota

Benson, Timothy (tbenson@sctcc.edu) (320) 308-5072
English Instructor
BA, University Of Wisconsin-Superior
MA, Universidad de las Americas-Puebla
EDD, University Of St Thomas

Bergman, Eric (eric.bergman@sctcc.edu) (320) 308-5056
Enrollment Processor

Bergs, Erik (erik.bergs@sctcc.edu) (320) 308-5239
CRM Manager

Bethke, Micaela (micaela.bethke@sctcc.edu) (320) 308-0979
Recruitment and Outreach Specialist
BA, California State University – San Marcos

Bielejeski, Jeanne (jeanne.bielejeski@sctcc.edu) ... (320) 308-6618
Registration Assistant

Blommer, Christine (cblommer@sctcc.edu) (320) 308-5993
Human Resources Specialist
AAS, St. Cloud Technical & Community College
AA, St. Cloud Technical & Community College

Booth, Holly (holly.booth@sctcc.edu) (320) 308-5538
Dean of Business, IT, Education and Customized Training
PHD, Alder University

Brandel Ryder, Paula (pbrandel@sctcc.edu) (320) 308-5321
Art Instructor
BA, University of Minnesota
BFA, University of Minnesota
MA, University Of Iowa
MFA, University Of Iowa

Brannick, Kristi (kbrannick@sctcc.edu) (320) 308-5501 Biology Instructor CERT, Anoka Technical College AA, Normandale Community College BS, St. Cloud State University MS, St. Cloud State University	Chamberlain, Christopher (christopher.chamberlain@sctcc.edu) (320) 308-5362 Biology Instructor BA, Hamline University PHD, University Of Minnesota Twin Cities
Brewer, Carol (carol.brewer@sctcc.edu) (320) 308-6158 Director of Safety and Security BS, Minnesota State University, Mankato MA, Minnesota State University, Mankato	Charlton, Resa (resa.charlton@sctcc.edu) College Lab Assistant - EMS/Paramedic AAS, St. Cloud Technical & Community College
Brix, Stephanie (sbrix@sctcc.edu) (320) 308-3709 Account Clerk Senior	Clark, Sean (sclark@sctcc.edu) (320) 308-5012 Civil/Highway Technician Instructor BS, University Of Minnesota MS, University Of Minnesota Certificate, College Of Saint Scholastica
Buchanan, Mark (mbuchanan@sctcc.edu) (320) 308-6642 Business Instructor AAS, Wisconsin Indianhead Technical College BS, University Of Wisconsin-Stout MS, Southwest Minnesota State University	Clement, Njeri (njeri.clement@sctcc.edu) (320) 308-5121 Director of Cultural Fluency, Equity, and Inclusion BA, St. Cloud State University MS, St. Cloud State University MPNA, Metropolitan State University
Buerman, Nancy (nbuerman@sctcc.edu) (320) 308-5919 Administrative Assistant - Dental	Cook, Avery (avery.cook@sctcc.edu) (320) 308-5064 Accessibility Coordinator MS, St. Cloud State University
Burgess, Kami (kami.burgess@sctcc.edu) (320) 308-5563 Dental Hygiene Instructor AAS, North Dakota State College Of Science AS, North Dakota State College Of Science BS, Charter Oak State College MS, Argosy University	Crue, Kelly (kcrue@sctcc.edu) (320) 308-5336 Speech Communication Instructor BA, University of Minnesota Duluth MA, The University Of Montana-Missoula EDD, St. Cloud State University
Carkhuff, Lois (lcarkhuff@sctcc.edu) (320) 308-6598 Associate Registrar for Transfer Services AAS, St. Cloud Technical & Community College	Cuppy, David (david.cuppy@sctcc.edu) Paramedicine Instructor AAS, Minnesota State Community & Technical College AAS, Bismarck State College
Carlson, Jason (jcarlson@sctcc.edu) (320) 308-6031 Biology Instructor AS, Vermilion Community College AA, Vermilion Community College BS, Bemidji State University AD, Bemidji State University MS, St. Cloud State University	Deidrick, Matthew (mdeidrick@sctcc.edu) Mathematics Instructor BS, University of Minnesota MS, University of Minnesota
Cassalom, Tomy (tcassalom@sctcc.edu) (320) 308-0977 TRIO Academic Advisor AA, St. Cloud Technical & Community College CERT, St. Cloud Technical & Community College AS, St. Cloud Technical & Community College AS, St. Cloud Technical & Community College BS, Southwest Minnesota State University MBA, Southwest Minnesota State University CERT, Washington Technical Institute	DeJuliannie, Denise (denise.dejuliannie@sctcc.edu) (320) 308-5177 College Information Officer
	Dilly, Tracy (tdilly@sctcc.edu) (320) 308-5232 Health Information Technology Instructor AAS St. Cloud Technical & Community College BA, Gustavus Adolphus College MA, Minnesota State University, Mankato DC, Northwestern Health Sciences University

Donabauer, Heather (heather.donabauer@sctcc.edu) **(320) 308-5573**

Surgical Technology Instructor
Diploma, St. Cloud Technical & Community College
AAS, St. Cloud Technical & Community College

Dusosky, Joseph (joseph.dusosky@sctcc.edu) **(320) 308-3382**
General Maintenance Worker

Ehr, Diane (diane.ehr@sctcc.edu) **(320) 308-5059**
Mathematics Instructor
BA, University of Northern Iowa
MSM, Iowa State University

Emslander, Alice (alice.emslander@sctcc.edu) **(320) 308-6471**
Accounting Officer Intermediate
BS, St. Cloud State University

Engel, Susan (sengel@sctcc.edu) **(320) 308-5186**
English Instructor
BA, St. Cloud State University
MS, St. Cloud State University
MA, St. Cloud State University

Enriquez, Jon (jon.enriquez@sctcc.edu) **(320) 308-5531**
Director of Institutional Effectiveness, Assessment & Research
BA, Georgetown University
MA, University of Pennsylvania
PHD, Georgetown University

Evans, Jennifer (jevans@sctcc.edu) **(320) 308-5537**
Biology Instructor
AAS, St. Cloud Technical & Community College
BA, St. Cloud State University
MA, St. Cloud State University

Fesenmaier, Dean (dean.fesenmaier@sctcc.edu) ... **(320) 308-5398**
Master Electrician
Diploma, St. Cloud Technical & Community College

Fesenmaier, Mary (mary.fesenmaier@sctcc.edu).. **(320) 308-5973**
Purchasing Agent

Fischer, Craig (craig.fischer@sctcc.edu) **(320) 308-5481**
Electrical Instructor
Diploma, St. Cloud Technical & Community College

Fischer, Michelle (mfischer@sctcc.edu) **(320) 308-6022**
Recruitment & Outreach Specialist/PSEO Specialist

Flick, Beth (beth.flick@sctcc.edu) **(320) 308-5031**
PT Dental Assistant Instructor
Diploma, St. Cloud Technical & Community College

Fournier, Diane (dfournier@sctcc.edu) **(320) 308-1591**
Mathematics Instructor

BA, St. Cloud State University
MS, St. Cloud State University

Frank, Katarina (katarina.frank@sctcc.edu) **(320) 308-5168**
VEX Robotics & STEAM Outreach Coordinator
AAS, St. Cloud Technical and Community College
AAS, St. Cloud Technical and Community College
AAS, St. Cloud Technical and Community College

Franklin, Jeanna (jeanna.franklin@sctcc.edu) **(320) 308-5006**
Mental Health Professional
BS, St. Cloud State University
MS, St. Cloud State University

Frants, Don (don.frants@sctcc.edu) **(320) 308-3382**
General Maintenance Worker

Furman, Julie (julie.furman@sctcc.edu)
Practical Nursing Instructor
BSN, Minnesota State University, Mankato

Gately, Michael (mgately@sctcc.edu) **(320) 308-5171**
Endpoint Administrator
AAS, St. Cloud Technical & Community College

Garrett, Carisa (carisa.garrett@sctcc.edu)
Practical Nursing Instructor
AAS, Rasmussen University
BA, St. Cloud State University
BSN, Presentation College

Gilmore, Steven (sgilmore@sctcc.edu) **(320) 308-5079**
Plumbing Instructor
BS, St. Cloud State University

Govani, Jay (jgovani@sctcc.edu) **(320) 308-5516**
Physics Instructor
MA, Saurashtra University
PHD, The University Of Texas At El Paso

Green, Luke (lgreen@sctcc.edu) **(320) 308-5187**
Speech Communications Instructor
BS, College Of Saint Scholastica
MA, University Of Wisconsin-Superior
EDD, Minnesota State University Mankato

Gucinski, Mark (mgucinski@sctcc.edu) **(320) 308-5744**
Biology Instructor
BS, St. Cloud State University
MS, St. Cloud State University

Gunderson, Jeffrey (jgunderson@sctcc.edu) (320) 308-0971
Sonography Instructor
CEC, United Hospital Grand Forks
CEC, University of Iowa Hospitals & Clinics
BS, University of St. Francis
MS, St. Cloud State University

Hahn, Dean (dean.hahn@sctcc.edu) (320) 308-0901
Electrical Construction Instructor
Diploma, St. Cloud Technical and Community College
Diploma, St. Cloud Technical and Community College

Halverson, Kelly (kelly.halverson@sctcc.edu) (320) 308-5903
Dean of Liberal Arts & Sciences
BS, Northern State University
PHD, University Of Minnesota Twin Cities
MS, U S Army War College

Hansen, Sarah (sarah.hansen@sctcc.edu) (320) 308-5322
Director of Customized Training
BS, St. Cloud State University

Hansen, Thomas (thansen@sctcc.edu) (320) 308-5901
Automotive Service Technician Instructor
Diploma, St. Cloud Technical & Community College
AAS, St. Cloud Technical & Community College
BS, Valley City State University

Haus, Charles (chaus@sctcc.edu) (320) 308-5111
Welding Instructor
Diploma, St. Cloud Technical & Community College
AA, St. Cloud Technical & Community College
BS, Bemidji State University
MSed, Southwest Minnesota State University

Haws, Ryan (ryan.haws@sctcc.edu) (320) 308-5361
Shipping & Receiving/Safety Clerk

Heim, Sue (sue.heim@sctcc.edu) (320) 308-5091
Customer Service Specialist, Intermediate
BS, Bemidji State University

Henderson, Julie (jhenderson@sctcc.edu) (320) 308-6010
Cardiovascular Technology Instructor
AAS, Northland Community & Technical College
BS, University of North Dakota

Henry, Magen (magen.henry@sctcc.edu) (320) 308-5994
Administrative Assistant for Vice President of Academic Affairs

Hickcox, Caitlin (caitlin.hickcox@sctcc.edu) (320) 308-5949
ESOL Instructor
BA, Suny College At Fredonia
MA, St. Cloud State University

Hickman, Dwayne (dhickman@sctcc.edu) (320) 308-5549
Automotive Service Technician Instructor
Diploma, St. Cloud Technical & Community College

Hiemenz, Karen (khiemenz@sctcc.edu) (320) 308-5017
Administrative Assistant to the President
Diploma, St. Cloud Technical & Community College

Hiemstra, Logan (logan.hiemstra@sctcc.edu) (320) 308-5301
Training & Outreach Manager

Hiestand, Nathaniel (nhiestand@sctcc.edu) (320) 308-5009
Director of Athletics
BA, Saint Johns University
MS, St. Cloud State University

Hirdler, June (jhirdler@sctcc.edu) (320) 308-5011
Administrative Assistant

Hoemberg, Steven (steve.hoemberg@sctcc.edu) (320) 308-5353
Dean of Skilled Trades & Industry
BA, Saint John's University

Hoepner, Matthew (mhoepner@sctcc.edu) (320) 308-5411
Medium/Heavy Truck Technician Instructor
AAS, Alexandria Technical and Community College
BS, St. Cloud State University

Hollermann, Deanne (deanne.hollermann@sctcc.edu) (320) 308-5480
Human Resources Assistant
BA, Minnesota State University Moorhead

Homan, Linda (linda.homan@sctcc.edu) (320) 308-5706
Associate Degree Nursing Instructor
DIP, St. Cloud Technical & Community College
AS, Ridgewater College
BSN, University of Phoenix
MSN, Walden University

Hoppe, Janice (janice.hoppe@sctcc.edu)
College Lab Assistant 2 - CVT
AAS, St. Cloud Technical & Community College

Hubbard, Breanna (bhubbard@sctcc.edu) (320) 308-5174
Campus Security Officer

Hutchison, William (whutchison@sctcc.edu) (320) 308-1542
Building Maintenance Supervisor
Diploma, St. Cloud Technical & Community College
Diploma, St. Cloud Technical & Community College

Jacobson, Nathan (njacobson@sctcc.edu) (320) 308-6007 Assessment Coordinator BS, St. Cloud State University	Junes, Elaina (elaina.junes@sctcc.edu) (320) 308-5927 Inclusion Recruitment and Outreach Specialist AA, St. Cloud Technical & Community College BA, St. Cloud State University MA, Minnesota State University Mankato
Jensen, Christ (cjensen@sctcc.edu) (320) 308-5005 Instructional Technology Specialist AAS, St. Cloud Technical & Community College	Junes, Ryan (ryan.junes@sctcc.edu) Practical Nursing Instructor BS, Minnesota State University Mankato
Jensen, Laurie (laurie.jensen@sctcc.edu) (320) 308-5156 Dean of Health Sciences & Nursing AAS, Lac Courte Oreilles Ojibwa Community College BS, University of Wisconsin-Superior MBA, University of Minnesota Duluth PHD, Capella University	Kapitzke, Maria Victoria (vkapitzke@sctcc.edu) (320) 308-5215 Spanish Instructor BA, Universidad de Sevilla MA, Universidad de Sevilla
Johnson, Ben (ben.johnson@sctcc.edu) (320) 308-6597 Machine Tool Technology Instructor Diploma, St. Paul College AAS, St. Paul College	Kappes, Lauren (lauren.kappes@sctcc.edu) (320) 308-5023 Customer Service Specialist, Intermediate
Jha, Sangeeta (sjha@sctcc.edu) (320) 308-5996 Sociology Instructor BA, Bhagalpur University - India MA, Bhagalpur University - India MA, Iowa State University PHD, Bhagalpur University - India	Keeley, Danielle (dnaumann@sctcc.edu) (320) 308-5245 College Lab Assistant - Natural Sciences
Johnson, David (djohnson@sctcc.edu) (320) 308-5044 Mechanical Design Instructor Diploma, Faribault Technical College	Keeley, Shaun (skeeley@sctcc.edu) (320) 308-5922 Director of Campus Life BS, St. Cloud State University
Johnson, Michael (mjohnson@sctcc.edu) (320) 308-3382 General Maintenance Worker Diploma, St. Cloud Technical & Community College	Kloos, Lori (lkloos@sctcc.edu) (320) 308-5017 President BS, Minnesota State University Moorhead
Johnson, Teri (tjohnson@sctcc.edu) (320) 308-6456 Math Center Coordinator	Knaack, Jennifer (jennifer.knaack@sctcc.edu) (320) 308-6639 Director of Nursing MSN, Western Governors University PHD, Capella University
Jones, Katie (katie.jones@sctcc.edu) (320) 308-2930 Dental Hygiene Instructor AS, Minnesota State University, Mankato BS, Minnesota State University, Mankato	Knappek, Wendy (wknapek@sctcc.edu) (320) 308-6470 Accounting Technician
Jordahl, Susan (susan.jordahl@sctcc.edu) (320) 308-5908 Director of K-12 Initiatives BS, Minnesota State University Moorhead	Kocherer, Jim (jim.kocherer@sctcc.edu) (320) 308-5033 Farm Business Management Instructor BAS, University of Minnesota MED, St. Mary's University
Jordan, Mary (mary.jordan@sctcc.edu) (320) 308-5966 Librarian/Information Studies MLIS, University of Wisconsin-Milwaukee PHD, University of North Carolina at Chapel Hill	Kollar, Roy (roy.kollar@sctcc.edu) (320) 308-5086 Architectural Drafting Technology Instructor AAS, Dunwoody College of Technology
	Kooiman, Traci (traci.kooiman@sctcc.edu) (320) 308-5363 Practical Nursing Instructor BS, Bethel College
	Kouba, Marena (marena.kouba@sctcc.edu) (320) 308-1594 Academic Advisor BA, St. Cloud State University MS, St. Cloud State University

Kramer, Brad (bkramer@sctcc.edu)..... (320) 308-5010
English Instructor
BA, St. Cloud State University
MFA, Minnesota State University Moorhead

Krantz, Rochelle (rochelle.krantz@sctcc.edu)..... (320) 308-5572
Director of Business Services

Kraus, Christopher (chris.kraus@sctcc.edu)..... (320) 308-3382
General Repair Worker
AAS, Central Lakes College

Krystyniak, Rebecca (rebecca.krystyniak@sctcc.edu)..... (320) 308-5933
Dean of Academic Innovation and Success
BA, Carthage College
MA, University of Northern Colorado
PHD, University of Northern Colorado

Kropp, Gregg (gregg.kropp@sctcc.edu)..... (320) 308-5952
Water Environment Technologies Instructor
BS, St. Cloud State University
AAS, St. Cloud Technical & Community College

Kunde, Lauren (lauren.kunde@sctcc.edu)..... (320) 308-5942
Academic Advisor
BS, Minnesota State University Moorhead
MS, Minnesota State University Moorhead

Kunstleben, Tyler (tyler.kunstleben@sctcc.edu)..... (320) 308-5742
Auto Body Collision Technology Instructor
AAS, St. Cloud Technical & Community College

LaBuda, Brian (brian.labuda@sctcc.edu)..... (320) 308-3382
General Repair Worker

Larson, Daniel (daniel.larson@sctcc.edu)..... (320) 308-5937
Vice President of Advancement

Laudenbach, Chris (chris.laudenbach@sctcc.edu)..... (320) 308-5667
Plant Maintenance Engineer

Lemm, Lori (lori.lemm@sctcc.edu)..... (320) 308-5936
Director of Financial Aid
BS, Bemidji State University

Lenzen, Mark (milenzen@sctcc.edu)..... (320) 308-3382
General Maintenance Worker
Diploma, St. Cloud Technical & Community College

Leverson, Katey (katey.leverson@sctcc.edu)..... (320) 308-5564
Psychology Instructor
BS, Minnesota State University, Mankato
MS, North Dakota State University
EDD, Winona State University

Lewis, Samantha (samantha.lewis@sctcc.edu).....
Nursing Assistant/Home Health Aide Instructor
AAS, St. Cloud Technical & Community College
AS, Rasmussen University

Logeman, Connie (clogeman@sctcc.edu)..... (320) 308-6644
Education Instructor
BA, Luther College
MS, St. Cloud State University

Lopez, Juanita (juanita.lopez@sctcc.edu)..... (320) 308-5951
Central Services Admin Specialist, Int.
BS, University of Minnesota Crookston

Lukasek, Victor (vlukasek@sctcc.edu)..... (320) 308-5436
Instructional Technology Specialist
BS, Winona State University

Lundblad, Julie (jlundblad@sctcc.edu)..... (320) 308-5076
English Instructor
BS, Bemidji State University
BA, Crown College
MA, Bemidji State University

Lutgen, Kathleen (kathleen.lutgen@sctcc.edu)..... (320) 308-5028
Textbook Buyer

Mackedanz, Jacob (jacob.mackedanz@sctcc.edu)..... (320) 308-5061
Land Surveying/Civil Engineering Instructor
Diploma, St. Cloud Technical & Community College
AAS, St. Cloud Technical & Community College
BS, St. Cloud State University

Mason, Katie (katie.mason@sctcc.edu)..... (320) 308-5085
Practical Nursing Instructor
Diploma, Anoka-Hennepin Technical College
AS, Excelsior College
BSN, Western Governors University

Matson, Kari (kari.matson@sctcc.edu)..... (320) 308-3227
Vice President of Human Resources
BBA, University of Minnesota Duluth
MS, St. Mary's University
MA, St. Mary's University
EDD, University of St. Thomas

Matthews, Kenneth (ken.matthews@sctcc.edu)..... (320) 308-5382
Vice President of Academic Affairs & Institutional Effectiveness
BA, Stetson University
MA, University of South Florida
PHD, University of Central Florida

Mayer, Kateri (kmayer@sctcc.edu) (320) 308-5943 Dental Assisting Instructor Diploma, Central Lakes College BS, Bemidji State University MSEd, Southwest Minnesota State University	Nathe, Brittany (brittany.nathe@sctcc.edu) (320) 308-5935 Practical Nursing Instructor BA, College Of Saint Benedict BS, College Of Saint Scholastica
McAllister, Eric (emcallister@sctcc.edu) (320) 308-5931 Welding Instructor Diploma, St. Cloud Technical & Community College AA, St. Cloud Technical & Community College BS, Bemidji State University BAS, Bemidji State University	Neeser, Louise (louise.neeser@sctcc.edu) (320) 308-5959 Assistant Director of Financial Aid BA, College of Saint Benedict MS, St. Cloud State University
McBroom, Pam (pmcbroom@sctcc.edu) (320) 308-5230 Reading Instructor BA, St. Cloud State University MA, St. Cloud State University	Newman, Lori (lori.groinus@sctcc.edu) Surgical Technology Instructor Diploma, St. Cloud Technical & Community College BS, St. Cloud State University MA, Saint Xavier University
Mergen, Robert (bmergen@sctcc.edu) (320) 308-5902 Construction Electrician Instructor BS, St. Cloud State University	Nicklin, Zackary (zackary.nicklin@sctcc.edu) (320) 308-5482 Director of Aviation Maintenance AA, Northland Community and Technical College AAS, Cochise College AAS, Cochise College BAS, Bemidji State University MS, Embry-Riddle Aeronautical University
Miller, Lisa (lmiller@sctcc.edu) (320) 308-6521 Registrar Diploma, St. Cloud Technical & Community College AA, St. Cloud Technical & Community College	Norgren, Elizabeth (elizabeth.norgren@sctcc.edu) (320) 308-6087 Library Technician BS, Emporia State University MLIS, Emporia State University
Missaghi, Soheyl (smissaghi@sctcc.edu) (320) 308-5409 English Instructor BA, St. Cloud State University MA, St. Cloud State University	Nowak, Eugene (enowak@sctcc.edu) (320) 308-3382 General Maintenance Worker
Moe, Lori (lori.moe@sctcc.edu) (320) 308-5359 Administrative Assistant for Academic Advising & K-12 Initiatives	Noyola, Martha (martha.noyola@sctcc.edu) Director of Advising and Career Services
Mohamed, Ali (ali.mohamed@sctcc.edu) (320) 308-5014 Academic Advisor BS, St. Cloud State University MS, St. Cloud State University	Nusbaum, Steve (steve.nusbaum@sctcc.edu) (320) 308-5386 Area Manufacturing Project Manager BA, St. Cloud State University
Mohr, Lisa (lisa.mohr@sctcc.edu) (320) 308-5486 Career Center Coordinator AA, Rochester Community and Technical College BA, University Of Minnesota Twin Cities MSED, University Of Wisconsin-La Crosse MS, Northern Kentucky University GC, Metropolitan State University	O'Brien, Kelly (kelly.obrien@sctcc.edu) (320) 308-1595 Director of Enrollment Services AAA, St. Cloud State University BS, Minnesota School Of Business
Mosack, Katey (katey.mosack@sctcc.edu) (320) 308-6173 Training & Outreach Manager - Sonography AA, Anoka-Ramsey Community College AAS, Argosy University	Pearson, Leanne (lpearson@sctcc.edu) (320) 308-5048 College Lab Assistant 1 - Auto Body Diploma, St. Cloud Technical & Community College AS, St. Cloud Technical & Community College
Naslund, Seth (seth.naslund@sctcc.edu) (320) 308-5983 Writing Center Coordinator	

Pengeston, Harris (hpengeston@sctcc.edu) (320) 308-5366
Help Desk Analyst - E-Learning
Certificate, Penn Foster College
AS, Penn Foster College
BS, Excelsior University
MBA, Metropolitan State University

Pfeffer, Robert (bpfeffer@sctcc.edu) (320) 308-5342
Web Application Developer
Diploma, St. Cloud Technical & Community College
BA, St. Cloud State University

Pflipsen, Andrew (andrew.pflipsen@sctcc.edu) (320) 308-5580
Vice President of Student Affairs

Pichelmann, Matthew (matthew.pichelmann@sctcc.edu)
(320) 308-5406
Academic Advisor
AA, St. Cloud Technical & Community College
BA, St. Cloud State University
MS, St. Cloud State University

Plante, Kerby (kplante@sctcc.edu) (320) 308-5920
Director of Student & Academic Support Services

Plumski, Judith (judith.plumski@sctcc.edu) (320) 308-5145
College Lab Assistant - Nursing

Pomije, Brittany (brittany.pomije@sctcc.edu) (320) 308-5979
Student Services Specialist
BS, St. Cloud State University

Possail, Sarah (spossail@sctcc.edu) (320) 308-5074
Systems Analyst
BA, Dordt College

Preimesberger, Joseph (jpreimesberger@sctcc.edu)
(320) 308-5589
College Lab Assistant 1 - Fire/EMS

Primus, Amy (amy.primus@sctcc.edu)
Surgical Technology Lab Assistant

Quandt, Julianne (julianne.quandt@sctcc.edu) (320) 308-5365
Digital Marketing Specialist

Ramanathan, Gajendranathan (gramanathan@sctcc.edu)
(320) 308-6594
Accounting & Computer Technology Instructor
AB, University Of Toledo
BBA, University Of Toledo
MBA, University Of Toledo

Ramsay, Melissa (melissa.ramsay@sctcc.edu) (320) 308-5956
Sociology Instructor
BS, Minnesota State University, Mankato
MS, Minnesota State University, Mankato

Randall, Charlotte (crandall@sctcc.edu) (320) 308-5385
Dental Assistant Instructor
AAS, St. Cloud Technical & Community College
AAS, St. Cloud Technical & Community College
BT, Minnesota State University , Mankato
BS, South Dakota State University
BS, Minnesota State University, Mankato
MS, Southwest Minnesota State University

Rausch, Jason (jrausch@sctcc.edu) (320) 308-5669
Information Technology Specialist 4
AAS, Alexandria Technical and Community College

Reese, Aguirre (aguirre.reese@sctcc.edu) (320) 308-5252
College Bookstore Supervisor
AAS, St. Cloud State Technical & Community College
BAS, Southwest Minnesota State University

Reisinger, Jeremy (jreisinger@sctcc.edu) (320) 308-5934
Chemistry Instructor
BA, Hamline University
MS, University Of Minnesota

Reyes, Carly (creyes@sctcc.edu) (320) 308-5096
Student Support Manager

Rhodes, Anne (arhodes@sctcc.edu) (320) 308-5046
Interpreter
AAS, Saint Paul College

Richardson, Kevin (krichardson@sctcc.edu) (320) 308-3382
General Maintenance Worker

Roske, Alexander (aroske@sctcc.edu) (320) 308-5515
Academic Technology Support Specialist
AAS, St. Cloud Technical & Community College

Rothstein, Nicole (nicole.rothstein@sctcc.edu) (320) 308-3382
General Maintenance Worker

Russell, Lori (lori.russell@sctcc.edu) (320) 308-5980
Foundations Operations Coordinator

Sadat, Manshor (manshor.sadat@sctcc.edu) (320) 308-6641
Assistant to the Dean of Business, IT and Education

Salner, Ryan (rsalner@sctcc.edu) (320) 308-5029 Computer Systems Networking Instructor AAS, St. Cloud Technical & Community College BS, University Of Wisconsin-Stout MS, St. Cloud State University	Smieja, Adam (adam.smieja@sctcc.edu) (320) 308-5945 Mathematics Instructor BAS, University of Minnesota Duluth MS, Bemidji State University
Savage, Lisa (lisa.savage@sctcc.edu) (320) 308-3382 General Maintenance Worker AAS, Northland Community and Technical College	Smieja, Katie (ksmieja@sctcc.edu) (320) 308-5134 Mathematics Instructor AA, Minnesota State University, Mankato BS, Minnesota State University, Mankato MED, College Of Saint Scholastica MS, Bemidji State University
Schiller, Melanie (melanie.schiller@sctcc.edu) Student Accounts Coordinator	Smith, Allen (allen.smith@sctcc.edu) (320) 308-5088 Machine Tool Technology Instructor Diploma, Wisconsin Indianhead Technical College BS, University Of Wisconsin-Stout
Schimek, Sandra (sschimek@sctcc.edu) (320) 308-5081 General Business, Finance & Economics Instructor BFA, University of Wisconsin, Milwaukee MBA, Marquette University MM, Yale University School of Music Graduate Certificate, Bemidji State University DBA, Metropolitan State University	Smith, Lowell (lsmith@sctcc.edu) (320) 308-5405 Paramedicine Instructor BS, Minot State University MAT, Bemidji State University
Schmitz, Chad (chad.schmitz@sctcc.edu) (320) 308-6011 IT Support Services Supervisor BS, St. Cloud State University	Solinger, Melissa (melissa.solinger@sctcc.edu) (320) 308-6640 College Lab Assistant - Dental
Shahbaz, Muhammad (muhammad.shahbaz@sctcc.edu) ... (320) 308-5025 Data Architect	Sorenson, Christopher (csorenson@sctcc.edu) (320) 308-0059 Biology Instructor BS, Logan College Of Chiropractic DC, Logan College Of Chiropractic MS, St. Cloud State University
Shand, Rebecca (rshand@sctcc.edu) (320) 308-0970 Business, Instructor BS, University of Minnesota MED, University of Minnesota MBA, St. Cloud State University	Stacken, Kelsey (kelsey.stacken@sctcc.edu) (320) 308-5389 Academic Advisor BS, Minnesota State University Moorhead MS, Minnesota State University Moorhead
Shay, Dora (dora.shay@sctcc.edu) (320) 308-5028 Account Clerk - Bookstore	Stang, Jayme (jstang@sctcc.edu) (320) 308-1541 Enrollment Analyst BS, St. Cloud State University AS, Northwest Technical College
Shay, Timmy (tshay@sctcc.edu) (320) 308-5915 Medium/Heavy Truck Technician Instructor Diploma, Alexandria Technical and Community College	Steven, Danielle (danielle.steven@sctcc.edu) (320) 308-5485 Administrative Assistant for Health Sciences & Nursing
Silman, Joseph (jsilman@sctcc.edu) (320) 308-6595 Computer Programming Instructor AS, City University BS, City University MS, University Of Wisconsin-Stout	Straley, Dawn (dawn.straley@sctcc.edu) (320) 308-5437 Associate Degree Nursing Instructor AS, North Hennepin Community College BSN, College of St. Scholastica MSN, Capella University
Simonson, Julie (jsimonson@sctcc.edu) (320) 308-5464 Human Resources Specialist BS, St. Cloud State University	Theisen, Jason (jtheisen@sctcc.edu) (320) 308-6012 Director of Facilities
Skoczen, Hayley (hayley.skoczen@sctcc.edu) (320) 308-5178 Nursing Student Success Mentor Diploma, St. Cloud Technical & Community College AA, St. Cloud Technical & Community College	

Thiesen, Kenneth (kthiesen@sctcc.edu) (320) 308-5925

Farm Business Management Instructor
BS, South Dakota State University
MS, Southwest Minnesota State University

Thompson, Aaron (aaron.thompson@sctcc.edu) ... (320) 308-5016

Automotives Lab Assistant
Diploma, St. Cloud Technical & Community College

Tillman, Edward (etillman@sctcc.edu) (320) 308-5050

Biology Instructor
BA, University Of Northern Iowa
MA, University Of Northern Iowa

Timp-Pilon, Michele (mtimppilon@sctcc.edu) (320) 308-5210

English Instructor
BA, College Of Saint Benedict
MA, St. Cloud State University

Tomlinson, Michael (michael.tomlinson@sctcc.edu) (320) 308-5428

Science Lab Assistant

Trousil, Julie (jtrousil@sctcc.edu) (320) 308-5565

Administrative Assistant for Liberal Arts & Sciences
AAS, St. Cloud Technical & Community College

Tuoy-Giel, Anne (anne.tuoy-giel@sctcc.edu) (320) 308-2920

Associate Degree Nursing Instructor
BSN, Grand Canyon University
MPH, Des Moines University
MS, Minnesota State University Moorhead
DNP, Winona State University

Tuoy-Giel, William (william.tuoy-giel@sctcc.edu) (320) 308-5070

TRIO Director
BA, Arizona State University-Main Campus
MED, Northern Arizona University
EDD, Capella University

Urban, Peter (peter.urban@sctcc.edu) (320) 308-5995

System Administrator

Volkmoth, Brian (bvolkmuth@sctcc.edu) (320) 308-5670

Computer Systems Networking Instructor
AAS, St. Cloud Technical & Community College
BAS, Metropolitan State University

Wagner, Jeffrey (jeffrey.wagner@sctcc.edu) (320) 308-5026

Vice President of Administration
BA, University Of North Dakota

Wallace, Catherine (kwallace@sctcc.edu) (320) 308-5976

Director of Marketing & Communications
BA, College of St. Benedict
MS, St. Cloud State University

Wallin, Nancy (nwallin@sctcc.edu) (320) 308-5060

English Instructor
BA, St. Cloud State University
MA, St. Cloud State University

Walter, Daniel (daniel.walter@sctcc.edu) (320) 308-5300

Training & Outreach Manager

Watson, Fox (fox.watson@sctcc.edu) (320) 308-5923

Financial Aid Assistant

Wehlage, Kimberly (kimberly.wehlage@sctcc.edu) (320) 308-5090

Administrative Assistant, Vice President of Student Affairs
AAS, St. Cloud Technical & Community College

Welle, Abby (abby.welle@sctcc.edu) (320) 308-5985

ESOL Coordinator

Welle, Ryan (ryan.welle@sctcc.edu) (320) 308-5403

Administrative Assistant for Health Sciences & Nursing

White, Sarah (sarah.white@sctcc.edu)

PT Sonography Instructor
AA, St. Cloud Technical and Community College
AS, St. Cloud Technical and Community College
AAS, St. Cloud Technical and Community College
BS, Southern New Hampshire University

Wieberdink, Karen (karen.wieberdink@sctcc.edu) (320) 308-5932

Electrical Construction Instructor
AAS, Minnesota West Community and Technical College

Wilson, Lucy (lwilson@sctcc.edu) (320) 308-5063

Accounting Instructor
MS, Clarkson University
JD, St. John's University, School of Law

Wolters, Kimberly (kwolters@sctcc.edu) (320) 308-5069

Financial Aid Assistant
AA, Anoka-Ramsey Community College

Workman, Sheryl (sheryl.workman@sctcc.edu) ... (320) 308-0974

Advertising Design Instructor
AA, St. Cloud Technical & Community College
AAS, St. Cloud Technical & Community College
BS, Bemidji State University

Wulfekuhle, Dean (dean.wulfekuhle@sctcc.edu)... [\(320\) 308-5757](tel:3203085757)

Accommodations Specialist

AA, Minnesota State Community and Technical College

BS, St. Cloud State University

Zormeier, Lynn (lzormeier@sctcc.edu)..... [\(320\) 308-5065](tel:3203085065)

Medical Record Technology Instructor

AAS, St. Cloud Technical & Community College

AAS, St. Cloud Technical & Community College

AA, St. Cloud Technical & Community College

BS, College of Saint Scholastica

MS, Minnesota State University Mankato