CATALOG

2016-2017

ST. CLOUD TECHNICAL & COMMUNITY COLLEGE

Education that works

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Education that works

GENERAL CATALOG

2016 - 2017

1540 Northway Drive

St. Cloud, MN 56303-1240

Telephone: (320) 308-5000 (V)

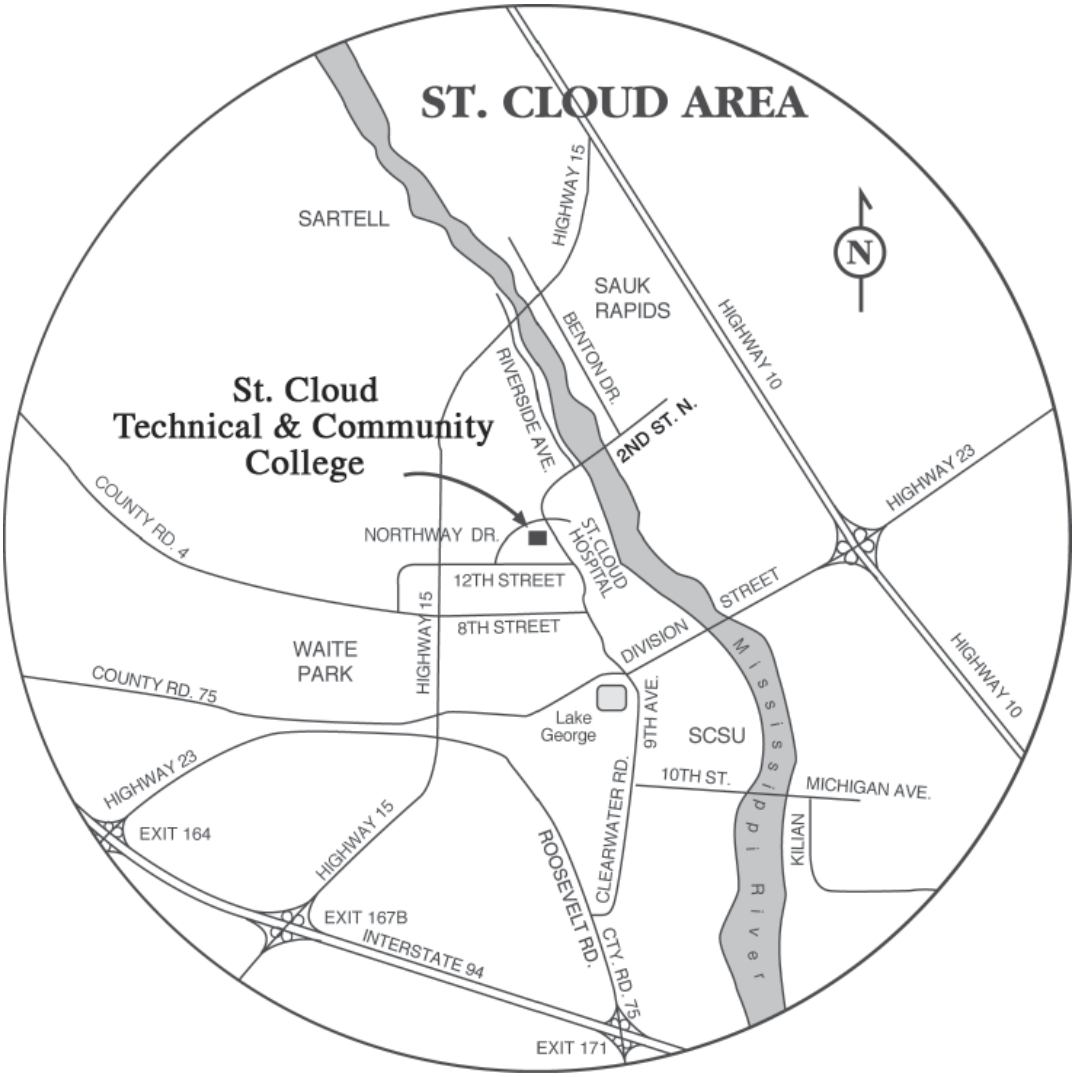
TTY (320) 308-5988

Toll Free: 800-222-1009

www.sctcc.edu

Upon printing of this catalog, all previous issues are revoked. Published June 2016.

This publication is available in accessible formats upon request by calling Judy Jacobson-Berg at (320) 308-5096. TTY users please call MN Relay Service at 711 to contact the college.



Location of St. Cloud Technical and Community College: 1540 Northway Drive, St. Cloud, MN 56303
(320) 308-5000 or 1-800-222-1009 or www.sctcc.edu.

The Admissions and Counseling Office is located in the northwest section of the 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.

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General Information

College Overview
As a highly recognized institution of technical programs and applied learning, St. Cloud Technical and Community College (SCTCC) is one of the fastest growing two-year colleges within 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.

St. Cloud Technical and Community College 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 accredited the college in 1985. In 1995, the college became a member of the newly-formed Minnesota State Colleges and Universities system. In 2010 SCTCC became a comprehensive technical and community college.

SCTCC offers 46 majors with over 90 certificate, diploma or degree options that can be completed in two years or less. The College serves over 6,000 students per year with 80% of the student population drawn from the five-county central Minnesota area. Committed to *delivering an education that works,* the college's primary goal is to prepare students for transfer or a rewarding career. Over the last decade approximately 95% of SCTCC graduates have found employment in their area of study.

Mission
St. Cloud Technical and Community College prepares students for lifelong learning by providing career, technical and transferable education.

Vision
St. Cloud Technical and Community College is the college of choice for quality career, technical and transferable education, focused on highly-skilled employment and lifelong learning opportunities.

Core Values
- Student success through collaboration and cooperation
- A friendly, respectful, enthusiastic, safe, and diverse atmosphere
- Student-centered from prospect through alumni
- Staff development and success
- A team oriented environment
- Relationships with industry and the community
- Quality and continuous improvement
- Innovation, creativity, and flexibility
- Contextual and technologically driven learning

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.

College Outcomes (continued)

• *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:
St. Cloud Technical and Community College is committed to providing equal education and employment opportunities to all persons regardless of race, color, creed, sex, age, religion, marital status, sexual orientation/ affectional preference, national origin, mental or physical 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.

St. Cloud Technical and Community College 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 of 1990 and the 1992 Crime Bill. Inquiries, complaints or grievances concerning the application of affirmative action, equal opportunity or Title IX at SCTCC should be referred to the affirmative action officer, Deb Holstad, located in office 1-402, or by telephone at (320) 308-3227. Inquiries about services offered under Section 504 of the Rehabilitation Act of 1973 or the Americans with Disabilities Act of 1990 should be referred to the counselor for students with disabilities, Judy Jacobson-Berg, who is located in office 1-410V, or by telephone at (320) 308-5096, or (320) 308-5988 (TTY).

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ACCREDITATIONS

St. Cloud Technical and Community College is accredited by
The Higher Learning Commission
30 North LaSalle Street, Suite 2400
Chicago, IL 60602
www.hlcommission.org

In addition to institutional accreditation, all programs offered at St. Cloud Technical and Community College are approved by the Minnesota State Colleges and Universities System. The following programs are accredited, licensed or approved by national, state or program specific agencies.

Automotive Service, Auto Body Repair and Medium/Heavy Truck are accredited by the National Automotive Technician Education Foundation (NATEF), 101 Blue Seal Drive, Suite 101, Leesburg, VA 20175. Telephone: (703) 669-6650.

Cardiovascular Technology is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), 1361 Park Street, Clearwater, FL 33756. Telephone: (727) 210-2350 Fax: (727) 210-2350, web site: http://www.caahep.org and Joint Review Committee on Education in Cardiovascular Technology (JRC-CVT), 1449 Hill Street, Whitinsville, MA 01588-1032. Telephone: (978) 456-5594 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 (312) 440-4563 or at 211 East Chicago Avenue, Chicago, IL 60611. The Commission's web site is http://www.ada.org/en/coda.

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 (312) 440-4653 or at 211 East Chicago Avenue, Chicago, IL 60611. The Commission's web address is: http://www.ada.org/en/coda.

Diagnostic Medical Sonography Generalist is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), 1361 Park Street, Clearwater, FL 33756. Telephone: (727) 210-2350 Fax: (727) 210-2350. http://www.caahep.org and Joint Review Committee on Education in Diagnostic Medical Sonography, 6021 University Blvd, Suite 500, Ellicott City, MO 21043. Telephone: (443) 973-3257. Fax: (866) 738-3444. 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.

Emergency Medical Services (EMS) courses are approved by the Minnesota Emergency Medical Services Regulatory Board (EMSRB) to teach Emergency Medical Responder (EMR) and Emergency Medical Technician (EMT) initial and refresher courses. The cardiopulmonary resuscitation (CPR) and first aid courses are conducted through the American Heart Association and National Safety Council standards. EMSRB, 2829 University Avenue SE, Suite 310, Minneapolis, MN 55414.

Energy Technical Specialist – Nuclear is certified by the Nuclear Energy Institute, 1201 F St. NW, Suite 1100, Washington, DC 20004-1218, Phone (202) 739-8000, Fax (202) 785-4019. http://www.nei.org/

Health Information Technology is accredited by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM), 223 North Michigan Avenue, 21st Floor, Chicago, IL 60601-5800. Telephone: (312) 223-1100. www.cahiim.org.

Associate Degree Nursing (ADN) is approved by the Minnesota State Board of Nursing. State of Minnesota Board of Nursing, 2829 University Avenue SE, 2nd floor, Minneapolis, MN 55414-3253. Telephone: (612) 617-2270 or (888) 234-2690.

Nursing Assistant is approved by the Minnesota Department of Health, 85 East Seventh Place, Suite 300, P.O. Box 64501, St. Paul, MN 55164-0501. Telephone: (651) 215-8705.

Paralegal is approved by the American Association for Paralegal Education (AAfPE). AAfPE Headquarters, 19 Mantua Road, Mt. Royal, NJ 08061, Telephone: (856) 423-2829, Fax: (856) 423-3420, Email: info@aafpe.org, http://www.aafpe.org/AAfPE/American_Association_for_Paralegal_Education.asp

Paramedicine is approved by the Minnesota Emergency Medical Services Regulatory Board (EMSRB) and nationally accredited by the "Committee on Accreditation of Educational Programs for the EMS Professions" (CoAEMSP), Suite 111-312, 8301 Lakeview Parkway, Rowlett, TX 75088. Telephone: (214) 703-8445. Fax (214) 703-8992 and Commission on Accreditation of Allied Health Education Programs (CAAHEP), 1361 Park Street, Clearwater, FL 33756. Telephone: (727) 210-2350. Fax: (727) 210-2350. http://www.caahep.org

Practical Nursing is approved by the Minnesota State Board of Nursing. State of Minnesota Board of Nursing, 2829 University Avenue SE, #200, Minneapolis, MN 55414-3253. Telephone: (612) 317-3000 or (888) 234-2690. The program is accredited by the Accreditation Commission for Education in Nursing (ACEN). ACEN, 3343 Peachtree Road NE, Suite 850, Atlanta, GA 30326. Telephone: (404)-975-5000.

Surgical Technology is accredited by Commission on Accreditation of Allied Health Education Programs (CAAHEP), 1361 Park Street, Clearwater, FL 33756. Telephone: (727) 210-2350. Fax: (727) 210-2350. http://www.caahep.org and Accreditation Review Council on Education in Surgical Technology and Surgical Assisting (ARC-STSA), 6 West Dry Creek Circle, Suite 110, Littleton, CO 80120. Phone: (303) 694-9262. Fax: (303) 741-3655.

Water Environmental Technologies is certified by the Minnesota Department of Health and the Minnesota Pollution Control Agency, 520 Lafayette Road, St. Paul, MN 55155-4194. Telephone: (651) 296-6300.

ADMISSIONS

ADMISSIONS POLICY

St. Cloud Technical and Community College 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 appropriate measures are taken to assess each student's ability to participate and benefit through placement testing and counseling. Based on the assessment and counseling, students are then provided with campus services or a referral to community services to be better prepared for successful participation.

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 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.

Priority will be given to completed applications received at least four weeks prior to the first day of class. The college will process applications until operating at capacity.

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.

ADMISSIONS PROCEDURES

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

1. **Submit an SCTCC Application**
   Available from the SCTCC Admissions Office, online at www.sctcc.edu/application or in most high school guidance offices.

2. **Pay a $20 Non-refundable Application Fee**
   Online payment is accepted with a credit card when completing the online application. If mailing a paper version of the application, please include the $20 fee with the application. Students who have previously paid the application fee at SCTCC are exempt from payment.

3. **Submit Transcripts**
   An official high school transcript or GED scores/certificate must be submitted with the application. Official college transcripts are required from students with previous college level course work when transferring credits. Official non-MnSCU college transcripts must be sent directly from the previous college in a sealed envelope. MnSCU college transcripts can be obtained electronically by SCTCC, but the Admissions Office must be aware that the student has previously attended a MnSCU institution.

   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 http://naces.org/members.htm/. 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. Students who cannot provide proof of high school graduation may be eligible for Admission, but may not receive financial aid.

Students Suspended from Other Institutions
(See MnSCU Policy 3.4)
Students on academic suspension from a Minnesota State College or University shall not be admitted to St. Cloud Technical and Community College 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 his/her previous college on academic suspension must complete the admissions appeal process to be considered for admission.

Any student who left his/her previous college on academic suspension and is subsequently accepted into SCTCC will be accepted on 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 MnSCU 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 institution may be denied admission to a Minnesota State College or University.

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.

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.

Unpaid Balance at Previous Institution
(See MnSCU 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.

International Student Admission Procedures

International student applicants must submit the following materials and information:

1. A completed international student application form available from the Admissions Office or online at www.sctcc.edu/international-students.
2. A $20 non-refundable application fee.
3. 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 http://naces.org/members.htm/. 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. Students must provide proof of high school graduation.
4. A completed Confidential Financial Information Form and Affidavit of Financial Support including bank statements.
5. Proof of English Proficiency, if English is a second language (TOEFL, Michigan or college transcripts demonstrating a satisfactory level of English proficiency).
6. Health insurance 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 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. Contact Records and Registration for additional information at (320) 308-5075.

Transfer Student Admissions

To apply as a transfer student, 12 quarter or 8 semester credits must have been completed with a passing grade at a regionally or nationally accredited college-level institution. Students who have earned less than 12 quarter or 8 semester credits should apply as a first year student.

Students who have earned college credits only through post secondary enrollment option (PSEO) should apply as a first year student. Applicants must submit:

1. A completed college application form. Questions concerning availability of program openings should be directed to the Admissions Office.
2. A $20 non-refundable application fee attached to the application form.
3. An official academic transcript from each previously attended college or university must be on file. The College can access and obtain most MnSCU transcripts electronically. The student must arrange to have any non-MnSCU transcripts sent to the College.

Transcripts are official only when recorded on the transcript form and sent directly from the sending institution to SCTCC or accessed through e-transcript. Transcripts mailed or presented by the student cannot be used for transfer.

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. Students must print their Record of Articulated College Credit and present it to the SCTCC Registration Office for review. Students and teachers can access articulated college credit information at http://cte-creditmn.com/.

Acceptance of Articulation Agreements Non-Member Districts

St. Cloud Technical and Community College 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 to the appropriate faculty member for approval. Records and Registration will contact the student with the results of the review.

Discovery Academy

Discovery Academy 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.

Courses available in 2016-17 include:

Health:
- Emergency Medical Responder

Automotive:
- Engine Performance
- Steering and Suspension
- Brakes
- Electrical/Electronic Systems

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

Construction:
- Construction Principles

If you would like more information about these courses, where they are offered, and how to apply, please contact St. Cloud Technical and Community College at (320) 308-5382.

Post Secondary Enrollment Option (PSEO)

Students wishing to attend SCTCC utilizing the PSEO program must submit a completed college application, Notice of Student Registration (NOSR) form, and a high school transcript by the application deadline (Fall Semester, June 1, and Spring Semester, November 1). Students must also schedule an appointment for ACCUPLACER testing and a meeting with the PSEO coordinator at SCTCC to discuss procedures and social aspects of using the program.

Who is Eligible for PSEO?

Students need to meet prerequisite requirements for the course. The college or university makes the final determination on a student's readiness.

- High school seniors must be in the upper one-half of their class or score at or above the 50th percentile on the ACT or SAT.
- Juniors must be in the upper one-third of their class or score at or above the 70th percentile on a test, such as the ACT or SAT.
- Sophomores may enroll in a career or technical education course at a MnSCU 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 or technical education 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.
- Campuses may require eligible 10th grade PSEO students who wish to enroll in a career and technical course to meet with a college counselor or advisor.
- Colleges and universities may admit students based on other documentation of ability to perform college-level work.

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 often scheduled individually.

If test scores are not achieved, college readiness courses may be required to prepare for the identified classes. The Post Secondary Enrollment Options 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. 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.

PSEO Books
The costs of books and tuition will be covered by the PSEO program. PSEO students are not charged fees for the use of books. However, the books are the property of the college and must be returned to the college book store by the last day of finals week each semester or the student will be required to make payment for the books. PSEO students withdrawing from the college should return their books immediately. Books will be available to PSEO students prior to the start of the semester. PSEO students will need a book authorization form to obtain their books. The form is available at admissions.

PSEO Parking
PSEO students are personally responsible to pay a $3 per credit fee to park on campus. The parking fee is due by the beginning of each semester; paid at the Financial Services Office. A parking permit will then be issued at the time of payment. PSEO students electing not to park on campus may have the parking fee waived by stopping by the Financial Services Office. Parking must be taken care of in order to obtain books.

PSEO Academic Requirements
PSEO students must maintain a cumulative GPA of 2.0 or better (C average). If a PSEO student's GPA falls below 2.0 the student will be ineligible to continue PSEO enrollment for one semester immediately following the occurrence. In addition, the student will be placed on Academic Warning with the College and will be required to meet with a counselor to form an Academic Success Plan prior to registration for another semester. 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.

Immunization Policy
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 and additional information are available from the Admissions Office. 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
(MnSCU 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. Resident Tuition Classification Request forms are available in 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.

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 Admissions Office or via the college's website at *http://www.sctcc.edu/safety*.

Academic Policies

Ability to Benefit Policy (ATB)

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 St. Cloud Technical and Community College to determine their ability to benefit from instruction. This policy does not restrict a student from enrolling in programs at St. Cloud Technical and Community College, but does apply to receiving financial aid. For more information, please contact the Admissions Office at (320) 308-5089.

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 a faculty advisor from their major and other students will be assigned to the advisors in 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 with information regarding liberal arts courses, transfer planning, initial advising questions, and major exploration. The Academic Advising Center is also assigned as advisors for students in the Associate in Arts Degree, Pre-Health, and Pre-Nursing Programs.

Both faculty advisors and advisors located in the Academic Advising Center can provide students with academic guidance and planning, initial registration or scheduling questions, and information about campus resources and policies.

Call (320) 308-5741 to schedule an appointment with the Academic Advising Center. Additional information is available at: http://www.sctcc.edu/advising.

Academic Forgiveness

Academic Forgiveness may only be granted once and is limited to St. Cloud Technical and Community College coursework. Students who have earned a cumulative grade point average of less than 2.0 may have the grades earned during that period of attendance forgiven. A student seeking academic forgiveness:

- May not be enrolled at St. Cloud Technical and Community College for at least three 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 petition for academic forgiveness.

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.

Academic Forgiveness does not extend to financial aid. All credits and all grades attempted will be included when determining satisfactory academic progress for financial aid purposes.

Academic Integrity

Academic dishonesty is considered a disciplinary offense under St. Cloud Technical and Community College's Student Code of Conduct. Academic dishonesty is defined as the submission of false academic records, cheating, plagiarism, altering, forging, or misusing a college academic record, acquiring or using test materials without faculty permission, acting alone or in cooperation with another to falsify records or to obtain dishonest grades, honors, or awards. Any acts of academic dishonesty will be subject to disciplinary action and could result in sanctions as described in the College's Student Code of Conduct. Students are ensured due process in academic misconduct situations.

Academic Standing (Satisfactory Academic Progress)

See MnSCU Policy 2.9 and Procedure 2.9.1
In accordance with federal and state regulations and MnSCU Policy 2.9, St. Cloud Technical and Community College 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 2.00

AND

- Meet or exceed a cumulative earned percentage of 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. Students on warning who do not achieve a cumulative 2.0 GPA and 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 can 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.

Students with an approved suspension appeal are placed on probation and must meet the cumulative satisfactory academic progress standards (cum GPA of 2.00 and 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 that standard will at the end of the term be suspended.

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.

- View the full SCTCC Satisfactory Academic Progress Policy at: http://sctcc.edu/SAP
- Visit www.mnscu.edu/board/policy/209.html
- The Academic Standing Appeal Form can be found at: http://www.sctcc.edu/academic-standing .

Auditing Classes

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 Application Forms" can be obtained from Records and Registration and must be returned during the free 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.

College Readiness Assessment

See MnSCU Policy 3.3

St. Cloud Technical and Community College requires all applicants, unless exempted, to complete a MnSCU approved academic assessment test before registering for classes. SCTCC uses the Accuplacer test. (Students who have taken the ACT test within three years may be exempt from taking the Accuplacer test). This assessment must be completed within 30 days of acceptance. 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 is accepted 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 fee will be assessed for each retest.

Accuplacer

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

	Gen. Education	Gen. Studies
Reading Comprehension	78	62
Arithmetic	*scores set by major*	
Elementary Algebra	*Varies 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 three years, inclusive of the current calendar year, for reading and two years for mathematics. An official ACT assessment College Report is required.
- Students who provide official 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 official college or university transcripts showing completion of three ore 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 taking the Reading portion of the placement test.

Students with college credits as stated above should send a letter requesting to be exempted and include a copy of the student's college transcript(s), full name, student identification number, current mailing address, phone number, and signature to:

Assessment Center, SCTCC
1540 Northway Drive
St. Cloud, MN 56303-1240
(320) 308-6007

Students will be notified in writing only if they are exempted. The College and 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 (i.e. reader, interpreter, IEP) because of a disability or temporary disabling condition should call the above number to schedule testing. Documentation from a licensed medical practitioner will be required before accommodations can be arranged.

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 Admissions Office, and provide any supporting documentation (i.e., transcripts, letters, test scores, etc.)

The form and the documentation must be returned to the Admissions Office. The college readiness appeals will be reviewed regularly by an appeal committee. The student will be notified in writing of the committee's decision.

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. Students may not take previously failed courses by arrangement.

Credit By Exam (Test Out)

Test-outs may be written, oral, performance based, an interview or any combination of these. Academic advisors can supply additional information about course requirements and specific tests. The cost for test-out is determined annually and is published on the test-out form. The fees must be paid in the Financial Services Office prior to the exam. The exam fees will not be refunded for students failing to demonstrate the necessary competency. Credit awarded shall be noted on the official student transcript. Test-outs are not allowed if the course has previously been taken for credit or if the student is currently enrolled in the course. Students must be enrolled at St. Cloud Technical and Community College. The test out option is not available for all courses.

Credit For Prior Experiential Learning Based on Life/Work Experience

St. Cloud Technical and Community College students may apply to obtain course credit based on previous relevant life/work experience and learning. Students must document, through a portfolio process, how they have met the learning outcomes for a specific course. This type of credit does not apply toward the residency requirements of a major and will be noted as CR (credit by examination) on the college transcript. A non-refundable fee is charged for each course for which credit is being requested.

Credit Load

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.
Students who wish to enroll for more than the established maximum must secure permission from their academic advisors.
Students wishing to enroll for more than 25 credits must secure permission from their academic advisor and meet with a counselor.
Students are classified according to course credits earned: freshmen = 0 to 30, sophomore = 31 and more earned credits.

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. Forms to declare a major may be obtained from the Admissions Office. Upon declaring a major, students will be assigned an academic advisor from their program.

Grading System

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

"A" = Superior
"B" = Very good
"C" = Average
"D" = Passing (except specified majors)
"F" = Failing
"FN"= Failure due to non-attendance
"FW"= Failure due to unofficial withdrawal
"I" = Incomplete
"IP" = In progress
"NC" = No Credit
"P" = Passing
"W" = Withdraw
"CR" = Credit by examination. The "CR" is granted to students with advanced standing, test-out or credit by examination.
"AU" = Audit
"P" = indicates a "C" or better which means satisfactory progress.

Grade Changes
Grade changes on all courses must be completed by the end of the following term and approved by the academic dean.

Grade Point Average (GPA)

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

Grade	Grade Points		Credits		Points
A =	4.00	x	3	=	12.00
B =	3.00	x	3	=	9.00
C =	2.00	x	4	=	8.00
D =	1.00	x	3	=	3.00
F =	0.00	x	1	=	0.00
Total		14	=	32.00	
GPA Equals		32/14	=		2.28

Graduation Requirements

The college Graduation Requirements Policy governs the awarding of certificates, diplomas and degrees and is based in part on MnSCU policy 3.17 Degrees, Diplomas and Certificates. Students seeking to graduate from St. Cloud Technical and Community College 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 20 or more program credits at SCTCC for AAS or AS degrees.
- Earn 20 or more credits at SCTCC for an AA 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.
- Complete an Application for Graduation Form at least one (1) term prior to the anticipated date of graduation. Forms are available in the Office of Records and Registration.
- Petition any exceptions to program graduation requirements by requesting course substitution using a Student Petition form. Forms are available in the Financial Services Office.
- Participate in exit counseling if a student loan recipient.

Incomplete

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.

Internships, Practicums and 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, clinical, training associations, and other off-site work experiences.

Program Completion Options

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

Certificate
Student may choose to complete a Certificate. This is the most 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 also includes general studies and 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 in Applied Science Degree (AAS)
An Associate in 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. St. Cloud Technical and Community College 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 in Science (AS)
This degree option combines technical education with at least 30 general education credits. An Associate in Science degree is awarded upon completion of a 60 - 64 credit academic program in scientific, technological, or other professional fields. The Associate in 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 in Science degree is designed to transfer in its entirety to a related Baccalaureate program by way of an articulation agreement.

Associate in Arts (AA)
An Associate in 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, a wellness requirement and elective credits. It is designed for transfer to baccalaureate degree-granting institutions.

General Education Course Transfer
The Minnesota Transfer Curriculum 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 their website at www.mntransfer.org.

Program Open Enrollment
Programs and courses that have seats available are open for enrollment before the start of each semester. 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.

Repetition Of Courses
A student may repeat courses in an effort to improve their grades. The highest grade earned will be used in calculating the student's grade point average (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.

Service Learning
Service Learning is a type of experiential learning that engages students in service within the community as an integrated part of a course. Effective service learning courses involve students in course-relevant activities in partnership with a community organization.

Student Services

Career Services

SCTCC provides free career placement 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 the main building, room 1-448, provides a variety of reference materials, career and employer information, computers with internet access, a fax, and a telephone for students' and graduates' use.

The professionally staffed office provides student support by:

1. Assisting students with part-time, full-time and internship employment opportunities.
2. Assisting with personal, career-related needs including job seeking skills, mock interviews, labor market information, relocation assistance, job development, and cover letter/resume development.
3. Employer development to maximize employment opportunities for students.
4. Planning and facilitating events that enhance career opportunities for students, such as on-campus interviews, employer visits, and hosting an annual job fair for SCTCC students and graduates.
5. Following up on graduates to obtain placement data to meet state reporting requirements and provide consumer information to prospective students, legislators, high school counselors, and other interested people.

For additional information and/or to review placement data summaries by major, and listings of SCTCC graduates' past employers, call (320) 308-5926 or go to:
http://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 room 1-112 and is open from 7:30 am to 5:00 pm, Monday - Thursday and from 7:30 am to 3:00 pm on 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 with both technical and general courses through one-on-one and small group contact. Students may drop in, schedule an appointment, or be referred by faculty, counselors, and student service staff.

Services provided by the CAS are free to all students enrolled at St. Cloud Technical and Community College. 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 and writing 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
- energy and electronics

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.

The CAS also offers individual coaching on common academic skills that students may need to brush up on or learn about. Students work one-on-one with an academic coach to help them sharpen their skills so they can become a better student in all of their academic classes. Examples of areas that are included are:

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

Please visit the CAS Website (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. 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 the Financial Aid Office.

Counseling: Personal, Academic,

Career

The mission of the Counseling Office is to facilitate students' academic, career, and personal success. It provides a variety of services, including personal assessment to aid students or prospective students in choosing an appropriate program of study and counseling to assist in the completion of their programs.

Students are encouraged to use the counseling service for any type of academic or personal concerns. When appropriate, referrals are made to outside agencies.

Appointments are preferred. The Counseling Office may be reached through the Admissions Office at (320) 308-5089.

Disability Services

See MnSCU Policy 1B.4

Disability Counseling and Services, in collaboration with the college community provides equal educational access and opportunity for all qualified students with disabilities to participate in St. Cloud Technical and Community College programs, services and activities. 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 the college community about disabilities and ensure legal compliance with state and federal disability law as well as MnSCU policy 1B.4. Disability services will strive to: provide safe, confidential counseling and support services to students with disabilities; determine the implications of a student's disability and recommend appropriate accommodations which address the student's needs; and encourage self-determination, independence and personal responsibility for students with disabilities.

Appropriate and reasonable academic accommodations are determined on an individual basis. Accommodations must be specific to the disability need. Sufficient advance notice is required by qualified students when requesting accommodations. Some accommodations may require a 6 week notice to arrange. In accordance with the Americans with Disabilities Act and Amendments Act (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 alteration in the nature of a service, program or activity or in 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 St. Cloud Technical and Community College.

For Further Information Please Refer to:

- MnSCU Policy 1B.4
- St. Cloud Technical and Community College Student Handbook
- www.sctcc.edu/disability-services

Or Contact:

Judy Jacobson-Berg
jjacobsonberg@sctcc.edu
SCTCC, 1540 Northway Drive
St. Cloud, MN 56303
(320) 308-5096

Diversity Services/Mosaic

St. Cloud Technical and Community College's diversity services and MOSAIC programs offer academic, cultural and support services for students and student organizations. Services such as mentoring, text book loan program, study skills workshops, and scholarships provide an environment where all students can succeed.

The goal is to attract, support, retain and celebrate all of our students and the communities from which they come, and to ensure a welcoming climate for teaching and learning. Contact Admissions for more information at (320) 308-5089.

ELL Services

SCTCC employs an ELL coach/coordinator to work with students whose native language is not English. The staff assists students in the admissions and registration process, provides tutoring assistance in the Center for Academic Success (CAS), teaches college-readiness courses for non-native speakers, and is a general resource to any student new to American higher education. Information on ELL services is available through the Admissions Office at (320) 308-5014.

Housing

The Admissions Office provides a housing list to help students locate living quarters such as apartments, dorm rooms and single family dwellings. St. Cloud State University and St. Cloud Technical and Community College also have a cooperative agreement to provide residence hall space for SCTCC students. Contact the Admissions Office (320) 308-5089 for more information as soon as you are accepted to St. Cloud Technical and Community College.

Library

The Library is the College's center for reference and research services. The print and non-print collections are accessible through MnPALS Plus, an integrated library catalog system; MnLINK, the statewide virtual library; and WorldCat, a world-

wide library catalog. Inter-library loan services are available for borrowing materials located at other libraries. Through participation with Minitex and CMLE (Central Minnesota Libraries Exchange), access and delivery of materials is provided free to library users.

EBSCO eBooks, an extensive electronic book collection, can be accessed and read online while on or off-campus. The electronic subscription databases contain thousands of full-text articles and abstracts from journals, magazines and newspapers, with coverage extending throughout the disciplines.

The library provides an inviting environment for research, quiet or group study, and leisurely reading. It has individual and group study rooms, comfortable seating, study carrels, computer stations, equipment for video viewing, a photocopier, printers, laptop drop stations, and wireless computer capability.
Fall and Spring Hours:
Monday - Thursday: 8:00 a.m. to 7:00 p.m.
Friday: 8:00 a.m. to 4:00 p.m.
Summer Hours:
Monday - Thursday: 8:00 a.m. to 4:00 p.m.
Friday: Closed
Closed Saturday, Sunday, and Holidays

Library tours, classroom presentations, and individual research assistance are available upon request. To access library website, go to www.sctcc.edu/library.

Student Identification Card

The SCTCC Cyclone Card Office (room 1-131A) dispenses student IDs. Student ID cards serve a dual purpose. Used for "Cyclone Cash," your SCTCC ID card comes with a stored-value account which you may use to make purchases throughout the campus. The card can be used as a debit card if it is associated with US Bank. This is an optional service available to students.

As your official student ID, it's also your access to Learning Resources Center material, Student Health Services, off-campus recreational facilities, and a variety of other products and services that offer student discounts.

Student Life/Sports/Recreation

The Student Senate and the Student Activities Coordinator are located in the Student Center. Information about recreational and extra-curricular activities is available in the Student Center. Sports 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.

Student Rights, Responsibilities and Conduct

St. Cloud Technical and Community College 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 St. Cloud Technical and Community College and the Minnesota State Colleges and Universities Board of Trustees (MnSCU).

A number of offenses are defined by the St. Cloud Technical and Community College 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 due process in investigating complaints of conduct violations. 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 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.

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 his/her benefits as a veteran or a dependent of a veteran. It is located in room 1-133. The Veterans Resource center is typically staffed by the Central Regional Coordinator three days a week.

There are also several student employees in the Veterans Resource Center. In order to best respond to our veterans and military personnel needs, appointments are available to meet with the Central Regional Coordinator. If you have questions about your eligibility for benefits please contact us.

Laura Lamb
Central Regional Coordinator
MDVA Higher Education Veterans Program
Cell: (320) 493-8153
Email: laura.lamb@state.mn.us

Anita Baugh
VA Certifying Official
Phone: (320)308-5936
Email: abaugh@sctcc.edu

The staff in this office can help you understand your education benefits including:

- Federal Tuition Assistance
- GI Bill Kicker
- MN GI Bill
- Montgomery GI Bill
- Scholarships and Grants
- State Tuition Reimbursement
- Student Loan Repayment Program
- VA Education Programs

Students may also receive help with other VA programs, Tri-Care Insurance, military and retirement pay, family assistance, personal finance and budgeting, and veteran's employment. Many resources are available.

The Veterans Resource Center is partnered with many other 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

http://sctcc.edu/veterans-services

Financial Aid

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 you meet your educational expenses. The Financial Services Office can help you determine the financial aid programs for which you are eligible.

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. The Financial Services Office determines your eligibility by applying federal guidelines.

Steps To Receive Financial Aid

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

- You will need a PIN number to electronically sign your federal financial aid application. To apply for a PIN, go to www.pin.ed.gov. Parents may also apply for a PIN.
- Complete the federal financial aid application, which is also called the Free Application for Federal Student Aid (FAFSA). You can complete the FAFSA on-line at www.fafsa.gov. A paper form is also available at St. Cloud Technical and Community College (SCTCC). The college code for SCTCC is 005534. It takes approximately two weeks to process the on-line application and four weeks to process the paper version.
- After all documentation is received by SCTCC, you will be sent an award notification. Your notification will include the grants and some of the student loan eligibility for which you qualify.
- Separate applications are required for student loans, work study, and the child care grant program. Your award notification will direct you when and where to apply for these funds.

Disbursement

Financial aid, including scholarships, grants, work study and loans, disburse 2 weeks after the start of each semester. At that point, financial aid first pays off all tuition and fees the student owes the college; then, if there are funds left over, an overage check is available for the student. Excess aid can be paid to the student via direct deposit or check. Most financial aid awards are split evenly between fall and spring semester, except work study earnings, which are paid to the student worker **every two weeks.**

Financial Aid will only be paid for courses 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. Summer financial aid will be processed separately.

In order to qualify for a MN State Grant, the student's Free Application for Federal Student Aid (FAFSA) must be received by the Federal Processor no later than 30 days after the start of the term. Students whose FAFSA data is received by the Federal Processor after that date will be ineligible for MN State Grants for the term.

Types of Financial Aid

GRANTS

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

Federal Pell Grant

Undergraduate students may apply for the Federal Pell grant by completing the Free Application for Federal Student Aid (FAFSA).

Federal Supplemental Educational Opportunity Grant (FSEOG)

This federal program is designed for students who have exceptional financial need. Students must be Pell eligible.

Minnesota Grant

This is a grant for Minnesota residents who are attending an accredited post-secondary institution.

MnSCU Two-Year Occupational Grant Pilot Program

The program provides finanacial assistance to students enrolled in qualifying career and technical programs at MnSCU two-year colleges so that students can complete the program within two years or less and find employment in a high-demand occupation. It was created by the 2015 Minnesota Legislature and will be implemented for the 2016-2017 and 2017-2018 academic years as a pilot program. See http://www.ohe.state.mn.us/mPg.cfm?pageID=2163 for qualifying programs.

Post-Secondary Child Care Grant

This is a grant for Minnesota residents to help offset the cost of daycare to attend college.

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.

WORK-STUDY

Work-study is employment for students both on and 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.

LOANS

Loans are financial aid that must be paid back with interest.

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.

VETERANS ASSISTANCE

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

ENROLLMENT STATUS

Full Time	12 or more credits
3/4 Time	9-11 credits
1/2 Time	6-8 credits
less than 1/2 time	1-5 credits

The Minnesota State Grant requires 15 credits to be a full time student. Enrollment is determined at the end of the add/drop period, 12 credits is full-time for all other types of aid.

For additional information contact the Financial Aid Office by phone at (320) 308-5961 or by e-mail at financialaid@sctcc.edu. Additional information is available at www.sctcc.edu/financial-aid.

Records and Registration

Registration & Student Records

The Office of Records and Registration is responsible for maintaining the student record system and for the publication of the course schedule. 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.

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 the Accuplacer test or been informed they are exempt from testing. St. Cloud Technical and Community College will provide directions and deadlines for completing the Advising and Registration session.

Any student who has not attended classes for one year or longer will be required to re-activate their file with the Admissions Office and attend an Advising and Registration session. Students who have not attended classes for one semester must meet with their academic advisor prior to registration.

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 plan 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.

Note: Students who are on academic warning or academic probation must complete an academic success plan prior to registration. You can find the success plan at: www.sctcc.edu/successplan. Students on academic warning must meet with their advisor and students on academic probation must meet with a counselor to review their completed success plan.

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

Credits for transfer from MnSCU colleges and universities shall follow the MnSCU Undergraduate Transfer policy 3.21 and Policy 3.37 Minnesota Transfer Curriculum. 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 receive a list of courses transferred once the transfer evaluation is complete. Students may appeal the decision of the transfer credit evaluation as outlined in the MnSCU Undergraduate Transfer Policy beginning with the appeal procedure listed below.

Accreditation:
SCTCC will consider for transfer those credit courses taken from colleges and universities that are accredited by regional or national accrediting agencies.

Age of Credits:
Transfer of technical courses shall be allowed for courses that have been completed within the last 5 years (may be extended if an academic award was received and the student is working in the field). Specific or required math and science courses 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 content and goals of the course syllabus for which the student is seeking transfer. Content and goals from several courses can be combined to reach the 75% match.

Grade Point Average:
Grades earned at other institutions shall not be used in computing the GPA at St. Cloud Technical and Community College.

Grade Requirements:
Courses for which students receive a grade of "C" or higher shall be considered for transfer. Courses with a grade of D that are assigned to a goal area of the Minnesota Transfer Curriculum will also transfer but may not satisfy major or program 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 x .667=2.668).

Residency Requirements:
Diploma students must earn 1/3 of the technical/program credits at St. Cloud Technical and Community College. AS and AAS students must earn a minimum of 20 technical/program credits at SCTCC. AA students must earn a minimum of 20 of the required credits for the degree at SCTCC.

Transfer Appeal Process
If a student is not satisfied with the outcome of the above Transfer of Credit process, the appeal process is as follows:

1. Meet with the Registrar to provide clarification of the transfer. The clarification process involves faculty input and evaluation of the course description. The Registrar may require the student to produce a copy of course outlines or syllabi, and may do additional research on the course in question. The Registrar may or may not transfer additional classes after this meeting. If the student is not satisfied with the end result of this meeting, they may proceed to the next step.
2. A written appeal submitted to the Vice President of Student Services regarding the result of the transfer. The Vice President of Student Services will examine what courses have been completed and determine if any further action is necessary.
3. If a student is not satisfied with the college transfer appeal decision, the student may submit a request to the MnSCU Senior Vice Chancellor of Academic and Student Affairs for a system level appeal of the college transfer appeal decision.

Data Practices Policy

Minnesota State Colleges and Universities comply 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 <u>do not</u> include:

(1) Financial records of the student's parents or guardian;
(2) 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;
(3) 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;
(4) 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);
(5) 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;
(6) Medical and psychological *treatment* records that are maintained solely by the treating professional for treatment purposes;
(7) 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:
(1) To appropriate school officials who require access to educational records in order to perform their legitimate educational duties (see explanation below);
(2) To federal, state, or local officials or agencies authorized by law;
(3) In connection with a student's application for, or receipt of, financial aid;
(4) 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;
(5) 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;
(6) 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
(7) 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;
(8) 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:

(1) Student's name, hometown
(2) Participation in officially recognized activities and sports
(3) Dates of attendance (beginning and end dates of the semester)
(4) Classification (freshmen, sophomore)
(5) Degrees, honors and awards received
(6) Date of graduation
(7) Physical factors (height and weight) of athletes
(8) Photographs
(9) Enrollment status (e.g., undergraduate, graduate, full-time, or part-time)

Limited Directory Information for internal use within SCTCC and MnSCU includes students' college e-mail address. This is not released to outside entities but is available to students, faculty and staff within MnSCU and SCTCC.

Notice to students about Directory Information:
Students may direct that any or 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 his or her 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.

Financial Services

Access/Parking Fee and Parking Regulations

All students must pay a per credit access/parking fee. The fee is determined annually and posted at www.sctcc.edu/tuition. Daily parking permits are $2. Permits are available in the Business Office.

Access/parking fees will be charged to all St. Cloud Technical and Community College 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., the access to our buildings necessary to complete the mission of the College.

Students enrolled in purely online delivered courses will not be charged. Students on extended internships, or in situations where the student does not park on campus, may formally request a waiver of the fee. 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. A $10 fee will be charged for replacement of lost, stolen or damaged permits. One additional permit may be purchased for $10. Motorcycle permits will be issued at no extra charge provided a student qualifies for a regular permit.

Access/parking fees are reviewed annually and subject to change. Everyone using the parking lots between 7:00 am and 10:00 pm is required to display a current parking permit from the rear view mirror. No overnight parking is permitted. Vehicles without a properly displayed permit will receive a ticket. Parking is not available in Lot B.

The purchase of a permit does not guarantee the availability of a parking space at all times. 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 will prohibit a student from registering for classes and obtaining transcripts.

PSEO Student Parking

PSEO students are personally responsible to pay a $3 per credit fee to park on campus. The parking fee is due by the beginning of each semester; paid at the Business Office. A parking permit will then be issued at the time of payment. PSEO students electing not to park on campus may have the parking fee waived by stopping by the Business Office. Failure to pay the parking fee by the beginning of the semester will result in the assessment of a late fee..

PARKING VIOLATIONS

- Parking in prohibited area fine $15.
- Parking in grass area fine $15.
- Misuse of Handicapped Parking Only fine $200. (handicapped placard or handicapped license plate must be displayed to be eligible to park in the college lot)
- Blocking of Fire Lane fine $15.
- Altered/forged permit fine $60.
- Motorcycles should be parked in areas designated as "Motorcycle Parking." (located by Door 10)
- Visitor parking is designated for guests only. Visitor permits are available at the Information Center.

Circumstances under which vehicles will be ticketed and/or towed shall include (but not limited to) the following:

1. 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.
2. Vehicles parked in such a way to constitute a hazard, impede vehicular and pedestrian traffic, emergency responses and repair, or grounds operations.
3. Vehicles that have been autoclamped for 24 hours will be towed.

Circumstances under which vehicles will be ticketed and autoclamped are:

1. A vehicle displays a permit that has been reported as being lost or stolen, or one which has been altered or forged.
2. A vehicle has been issued three or more unpaid parking citations in the current academic year.
3. Charge for removal of auto clamp is $60.00.

Appeals Procedure for a SCTCC Parking Ticket

1. Tickets must be appealed within five (5) business days from date of issuance of ticket.
2. The parking appeals committee will meet every other Tuesday from 2:00 pm to 3:00 pm during the academic year to hear appeals.
3. Individuals may present their appeals in writing with the option to be present for their appeal. Appeals will be considered by the committee on a first come, first served basis. Written appeals forms are available in the Business Office.

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.

MSCSA Fee

The Minnesota State College Student Association (MSCSA) 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, and Waivers, MnSCU 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 St. Cloud Technical and Community College 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. Withdrawal forms are available in the Admissions Office. 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 class day of term	100%
6th through 10th class day of term	75%
11th through 15th class day of term	50%
16th through 20th class day of term	25%
after 20th class day of the term	0%

Summer term:

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

Waivers

The College President may waive amounts due to St. Cloud Technical and Community College 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 tuition. If the course is audited, tuition is free. 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. Senior citizens are responsible for all materials, personal property, or service charges for the course, including technology fee, parking fee, MSCSA fee, and health service fee.

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 your 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 College and Universities (MnSCU) 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.

Scroll down to GET STARTED.

- Click on Pay for College
- Pay Tuition Online
- Login with Username & 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 or (320) 308-5512.

Tuition Payment

Per MnSCU 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 Cloud Technical and Community College 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. Scroll Down to GET STARTED.

- Pay for College
- Pay Tuition Online
- Login with Username & Password
- 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 (ISIR with the Financial Aid Office) and agency awards (documents with the Business Office) are complete and on file prior to the deadline date. Students will be allowed to add courses to their schedules through the drop period. 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 in full, 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 $25 charge and be asked to make restitution by cash, money order or cashiers 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.

Accounting Careers

Accounting AAS Degree (70 Credits)

Program Description

The Accounting AAS Degree at SCTCC 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/Calculators	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	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 Non-Profit Accounting	2

Suggested Technical Studies Semester IV

ACCT2227	Intermediate Accounting II	4
ACCT2231	Income Tax II	2
ACCT2234	Auditing	3
ACCT2235	Accounting Comprehensive Review OR	
	ACCT 2280 Accounting Internship	2

General Education

ENGL1302	Analytical Writing	4
MNTC Goal Area 1 Communications Oral		3
MNTransfer General Education Electives		8

*Courses must be from at least 3 MNTC Goal Areas

Estimated cost of books, supplies and materials: $2,478

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

Accounting Careers

Accounting Diploma (61 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 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/Calculators	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	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 Non-Profit Accounting	2

Suggested Technical Studies Semester IV

ACCT2227	Intermediate Accounting II	4
ACCT2231	Income Tax II	2
ACCT2234	Auditing	3
ACCT2235	Accounting Comprehensive Review OR	
	ACCT 2280 Accounting Internship	2

General Studies

ENGL1100	Writing for the Workplace	3
General Studies Electives		3

Estimated cost of books, supplies and materials: $2,228

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

Accounting Careers

Accounting Clerk Diploma (34 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 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.

Suggested Technical Studies Semester I

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

Suggested Technical Studies Semester II

ACCT1216	Accounting Principles II	4
ACCT1219	Spreadsheets-Microsoft Excel	2
ACCT1220	Payroll Accounting	2
ACCT1225	QuickBooks	3
BUSM1217	Business Communications	3
BUSM1290	Job Seeking/Keeping Skills	1

General Studies

ENGL1100	Writing for the Workplace	3
GBEH1100	Human Relations	3

Estimated cost of books, supplies and materials: $1,320

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

Administrative Support Careers

Administrative Assistant AAS Degree (60 Credits)

Program Description

The Administrative Support AAS Degree prepares a graduate for a variety of administrative and clerical support functions. The program consists of core administrative courses designed to develop basic office skills, including keyboarding, oral and written communications, business math skills (10-key), customer service, and computer operations.

Administrative Support AAS Degree graduates successfully complete internships in a variety of general, legal, medical, educational, and governmental offices. Internship sites serve as potential employment and references. Graduates are employed in a variety of firms and organizations.

Degree specific requirements: All students are required to purchase a program-specific laptop.

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

Career Opportunities:

Administrative support is needed in all job sectors: business, education, government, health, manufacturing, and more.

Technical Studies Prerequisites

* BUSM1207 Basic Keyboarding is a developmental course, required only if students are unable to key text at a speed of 35 words per minute with five or fewer errors on a 2 minute timing. Students must show proof with a high school transcript, Articulated Credit certificate or other documentation showing they have completed a keyboarding course that meets these requirements. Otherwise, this course is available fall and summer semester.

Suggested Technical Studies Semester I

ADMS1207	Administrative Office Procedures	3
BUSM1217	Business Communications	3
BUSM1260	Applied Business Mathematics/Calculators	3
CPTR1210	Introduction to Computers	3

Suggested Technical Studies Semester II

ADMS1203	Intermediate Microsoft Applications	3
ADMS1208	Administrative Support Applications	3
ADMS1210	AAS Practicum	2
ADMS1215	Bookkeeping for Non-Accountants	2
BUSM1212	Customer Relationship Management	3

Suggested Technical Studies Semester III

ADMS1204	Computer Applications in Business II	3
ADMS1206	Keyboard Speedbuilding	1
ADMS2240	Administrative Office Management and Supervision	3

Suggested Technical Studies Semester IV

ADMS2211	Administrative Support AAS Internship	3
ADMS2214	Digital Publications	3
BUSM1290	Job Seeking/Keeping Skills	1
BUSM2210	Project Management	3
BUSM2275	Legal Environment of Business	3

General Education

DVRS1304	Diversity and Social Justice	3
CRTK1300	Introduction to Critical Thinking	3
MNTC Goal Area 5 Social Sciences		3
MNTC Goal Area 1 Communications-Written		3
MNTC Goal Area 1 Communications-Oral		3

Estimated cost of books, supplies and materials:

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

Administrative Support Careers

Office Technology Assistant Diploma (32 Credits)

Program Description
The Office Technology diploma prepares students for employment in the administrative and clerical support field. Students will use computer software for document processing and file management tasks.

Degree Specific Program Requirements: All students are required to purchase a program-specific laptop.

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

Career Opportunities
Graduates of the Office Technology Assistant Program become employed in a variety of businesses.

Technical Studies Prerequisites
* BUSM1207 Basic Keyboarding is a developmental course, required only if students are unable to key text at a speed of 35 words per minute with five or fewer errors on a 2 minute timing. Students must show proof with a high school transcript, Articulated Credit certificate or other documentation showing they have completed a keyboarding course that meets these requirements. Otherwise, this course is available fall and summer semester.

Suggested Technical Studies Semester I

ADMS1207	Administrative Office Procedures	3
BUSM1217	Business Communications	3
BUSM1260	Applied Business Mathematics/Calculators	3
CPTR1210	Introduction to Computers	3

Suggested Technical Studies Semester II

ADMS1203	Intermediate Microsoft Applications	3
ADMS1206	Keyboard Speedbuilding	1
ADMS1208	Administrative Support Applications	3
ADMS2214	Digital Publications	3
BUSM1212	Customer Relationship Management	3
BUSM1290	Job Seeking/Keeping Skills	1

General Studies

GBEH1100	Human Relations	3
ENGL1100	Writing for the Workplace	3

Estimated cost of books, supplies and materials: $2,600

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

Advertising Communication and Design

Advertising Communication and Design AAS Degree (64 Credits)

Program Description

The advertising student studies the various forms of advertising mediums while developing the design skills and creative talent necessary to sell ideas, concepts and products. Innovation, confidence, organizational skills, and strong leadership skills are developed throughout the curriculum with a substantial focus on communications – oral, written, and interpersonal. Advertising is an exciting career choice with unlimited opportunity for creativity and job advancement.

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 opportunities exist with advertising agencies, newspapers, in-house advertising departments, magazine publishers, radio and television stations, media companies, direct marketing and outdoor advertising businesses.

Suggested Technical Studies Semester I

ADVR1200	Introduction to Advertising	4
ADVR1221	Computer Imaging and Editing	3
ADVR1230	Copywriting	4

Suggested Technical Studies Semester II

ADVR1211	Computer Design and Layout	3
ADVR1216	Drawing with the Computer	4
ADVR1265	Visual Design	3
ADVR1270	Media Research and Planning	3

Suggested Technical Studies Semester III

ADVR2206	Ad-Ventures	2
ADVR2260	Advertising Campaign Development	4
ADVR2281	Broadcast	4

Suggested Technical Studies Semester IV

ADVR2250	Retail Advertising	3
ADVR2290	Portfolio Construction and Presentation	3
ADWD1235	Web Design Fundamentals	3
ADWD2275	Social Media Marketing	4

General Education

ART1340	Digital Photography	4
ART1310	2D Design	4
MNTC Goal Area 5 Soc Sci or MNTC Goal Area 9 Ethic		3
MNTC Goal Area 1 Communications Oral		3
MNTC Goal Area 1 Communications Written		3

Estimated cost of books, supplies and materials: $1,458

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

Advertising Communication and Design

Advertising Communication and Design Diploma (34 Credits)

Program Description

The advertising student studies the various forms of advertising mediums while developing the design skills and creative talent necessary to sell ideas, concepts and products. Innovation, confidence, organizational skills, and strong leadership skills are developed throughout the curriculum with a substantial focus on communications – oral, written, and interpersonal. Advertising is an exciting career choice with unlimited opportunity for creativity and job advancement.

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

Career Opportunities

This program prepares students for entry level positions in the advertising field.

Suggested Technical Studies Semester I

ADVR1200	Introduction to Advertising	4
ADVR1221	Computer Imaging and Editing	3
ADVR1230	Copywriting	4

Suggested Technical Studies Semester II

ADVR1211	Computer Design and Layout	3
ADVR1216	Drawing with the Computer	4
ADVR1270	Media Research and Planning	3
ADVR2250	Retail Advertising	3

General Education

ART1310	2D Design	4
MNTC Goal Area 1 Communications Written		3
MNTC Goal Area 1 Communications Oral		3

Estimated cost of books, supplies and materials: $775

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

Advertising Communication and Design

Advertising Web Design and Development AAS Degree
(60 Credits)

Program Description
In this program, students will learn the basics of designing and developing a web site. The courses focus on web page planning, writing, basic design, layout and construction, setup and maintenance of a web site. In addition, students will look at design issues specific to web-based presentations, learn web page layout, effective navigation and delve into the design process.

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

Career Opportunities
Employment areas for web design graduates include creating, updating web pages with corporations, and emerging Internet businesses and organizations. Potential career opportunities may include digital media producer, webmaster, project coordinator and more.

Suggested Technical Studies Semester I

ADVR1200	Introduction to Advertising	4
ADVR1221	Computer Imaging and Editing	3
ADWD1205	Foundations of Web Technologies	2

Suggested Technical Studies Semester II

ADVR1265	Fundamentals of Design II	3
ADWD1235	Web Design Fundamentals	3
ADWD2275	Social Media Marketing	4

Suggested Technical Studies Semester III

ADVR1244	Multimedia for Web Design	4
ADWD1245	Advanced Website Design and Development	4
ADWD2235	Scripting for Interactive Websites	3

Suggested Technical Studies Semester IV

ADVR2248	Website Content Management Systems	3
ADWD2260	Design and Development for the Mobile Web	3
ADWD2265	Emerging Web Technologies	2
ADWD2272	Web Design Project	3

General Education

ART1310	2D Design	4
MNTC Goal Area 9	Ethical/Civic Responsibility	3
MNTC Goal Area 1	Communications Oral	3
MNTC Goal Area 5	Social, Behavioral Sciences	3
MNTC Goal Area 1	Communications Written	3
MNTC Goal Area 6	Humanities/Fine Arts	3

Estimated cost of books, supplies and materials: $1,250

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

Advertising Communication and Design

Advertising Web Design and Development Diploma (51 Credits)

Program Description

In this program, students will learn the basics of designing and developing a web site. The courses focus on web page planning, writing, basic design, layout and construction, setup and maintenance of a web site. In addition, students will look at design issues specific to web-based presentations, learn web page layout, effective navigation and delve into the design process.

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

Career Opportunities

Employment areas for web design graduates include creating, updating web pages with corporations, and emerging Internet businesses and organizations. Potential career opportunities may include digital media producer, webmaster, project coordinator and more.

Suggested Technical Studies Semester I

ADVR1200	Introduction to Advertising	4
ADVR1221	Computer Imaging and Editing	3
ADWD1205	Foundations of Web Technologies	2

Suggested Technical Studies Semester II

ADVR1265	Fundamentals of Design II	3
ADWD1235	Web Design Fundamentals	3
ADWD2275	Social Media Marketing	4

Suggested Technical Studies Semester III

ADVR1244	Multimedia for Web Design	4
ADWD1245	Advanced Website Design and Development	4
ADWD2235	Scripting for Interactive Websites	3

Suggested Technical Studies Semester IV

ADVR2248	Website Content Management Systems	3
ADWD2260	Design and Development for the Mobile Web	3
ADWD2265	Emerging Web Technologies	2
ADWD2272	Web Design Project	3

General Education

ART1310	2D Design	4
MNTC Goal Area 1 Communications Oral		3
MNTC Goal Area 1 Communications Written		3

Estimated cost of books, supplies and materials: $1,150

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

Architectural Construction Technology

Architectural Construction Technology AAS Degree (61 Credits)

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.

Suggested Technical Studies Semester I

ARCH1503	Introduction to Architectural Drafting	2
ARCH1506	Intro to Architectural CAD	3
ARCH1522	Residential Design Principles	2
CNST1502	Building Materials and Methods	3

Suggested Technical Studies Semester II

ARCH1510	CAD and Design Studio	6
ARCH1534	Residential Design and Presentation	2
CNST1506	Estimating for the Construction Trades I	3

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

MNTC Goal Area 5 Social Sciences	3
MNTC Goal Area Goal 4 Math/Logic	3
MNTC Goal Area 1 Communications-Written	3
MNTC Goal Area 1 Communications-Oral	3
MNTransfer General Education Electives	3

Estimated cost of books, supplies and materials: $2,604

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

Architectural Construction Technology

Architectural Construction Technology Diploma (52 Credits)

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 studies courses are technically focused and not designed for transfer.

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

Suggested Technical Studies Semester I

ARCH1503	Introduction to Architectural Drafting	2
ARCH1506	Intro to Architectural CAD	3
ARCH1522	Residential Design Principles	2
CNST1502	Building Materials and Methods	3

Suggested Technical Studies Semester II

ARCH1510	CAD and Design Studio	6
ARCH1534	Residential Design and Presentation	2
CNST1506	Estimating for the Construction Trades I	3

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 Studies

ENGL1100	Writing for the Workplace	3
GBEH1100	Human Relations	3

Estimated cost of books, supplies and materials: $2,804

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

Auto Body Collision Technology

Auto Body Collision Technician AAS Degree (72 Credits)

Program Description

The Auto Body Collision Repair program is designed to meet the needs of today's high-tech and fast-paced automotive 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.

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 Auto Body Collision Technology program is accredited by the National Automotive Technicians Education Foundation, Inc. (NATEF), 101 Blue Seal Drive, Suite 101, Leesburg, VA 20175, (703) 669-6650, www.natef.org.

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

Career Opportunities

The Auto Body Collision Technology 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. There are also opportunities for employment with an AAS degree as insurance company and body shop estimators, shop managers, and factory dealer representatives.

Suggested Technical Studies Semester I

ABCT1502	Collision Welding and Cutting	3
ABCT1506	Intro to Collision Repair	4
ABCT1510	Collision Repair Lab I	3
ABCT1514	Basic Collision Repair	4
ABCT2502	Estimating	2
TRAN1518	Transportation Hazardous Materials	1

Suggested Technical Studies Semester II

ABCT1518	Refinishing Lab I	3
ABCT1522	Refinishing	4
ABCT2507	Electrical Systems	2
ABCT2531	Mechanical Systems	3
TRAN1520	Workplace Perceptions and Expectations	2
TRAN2514	Basic Air Conditioning	2

Suggested Technical Studies Semester III

ABCT1526	Refinishing Lab II	3
ABCT1530	Color Match and Blend	3
ABCT2510	Damage Analysis and Measuring Systems	3
ABCT2514	Plastic Repair	2
ABCT2518	Collision Repair Lab II	1

Suggested Technical Studies Semester IV

ABCT2522	Structural Damage Repair	4
ABCT2527	Collision Repair Lab III	4
ABCT2542	Supervised Internship	3
ABCT2544	New Technologies	1

General Education

MNTC Goal 2	Critical Thinking	3
MNTC Goal 1	Communications	6
MNTC Goals 3 through 10		6

Estimated cost of books, supplies and materials: $5,060

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

Auto Body Collision Technology

Auto Body Collision Technician Diploma (65 Credits)

Program Description

The Auto Body Collision Repair program is designed to meet the needs of today's high-tech and fast-paced automotive 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.

Accreditation information: The Auto Body Collision Technology program is accredited by the National Automotive Technicians Education Foundation, Inc. (NATEF), 101 Blue Seal Drive, Suite 101, Leesburg, VA 20175, (703) 669-6650, www.natef.org.

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

The Auto Body Collision Technology 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

ABCT1502	Collision Welding and Cutting	3
ABCT1506	Intro to Collision Repair	4
ABCT1510	Collision Repair Lab I	3
ABCT1514	Basic Collision Repair	4
ABCT2502	Estimating	2
TRAN1518	Transportation Hazardous Materials	1

Suggested Technical Studies Semester II

ABCT1518	Refinishing Lab I	3
ABCT1522	Refinishing	4
ABCT2507	Electrical Systems	2
ABCT2531	Mechanical Systems	3
TRAN1520	Workplace Perceptions and Expectations	2
TRAN2514	Basic Air Conditioning	2

Suggested Technical Studies Semester III

ABCT1526	Refinishing Lab II	3
ABCT1530	Color Match and Blend	3
ABCT2510	Damage Analysis and Measuring Systems	3
ABCT2514	Plastic Repair	2
ABCT2518	Collision Repair Lab II	3

Suggested Technical Studies Semester IV

ABCT2522	Structural Damage Repair	4
ABCT2527	Collision Repair Lab III	4
ABCT2542	Supervised Internship	3
ABCT2544	New Technologies	1

General Studies

GBEH1100	Human Relations	3
ENGL1100	Writing for the Workplace	3

Estimated cost of books, supplies and materials: $4,640

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

Automotive Service Technician

Automotives Service Technician AAS Degree (72 Credits)

Program Description

The Automotive Service Technician AAS Degree prepares students for entry-level positions in the automotive repair industry. Graduates will be 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.

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 Automotive Service Technician program is accredited by the National Automotive Technicians Education Foundation, Inc. (NATEF), 101 Blue Seal Drive, Suite 101, Leesburg, VA 20175, (703) 669-6650, www.natef.org.

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

Career Opportunities

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

Suggested Technical Studies Semester I

AUTO1508	Automotive Wheel Alignment	4
AUTO1510	Chassis Electrical	4
TRAN1502	General Service	2
TRAN1504	Electrical I	3
TRAN1516	Scan Tool Data Acquisition	1
TRAN1518	Transportation Hazardous Materials	1

Suggested Technical Studies Semester II

AUTO1512	Engine Repair Theory	2
AUTO1516	Brakes	4
AUTO1523	Advanced Chassis Electrical	2

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

AUTO2511	Automatic Transmission and Transaxle Overhaul	3
AUTO2520	Engine Driveability	3
AUTO2523	Advanced Electronic Systems	2
TRAN2514	Basic Air Conditioning	2

Technical Electives *Choose 6 Credits*

AUTO1514	Engine Repair Lab	4
AUTO2512	Driveline Repair	3
AUTO2516	Advanced Air Conditioning	2
AUTO2538	Supervised Internship	1-4
AUTO2540	Light Duty Diesel	2

General Education

MNTC Goal 2	Critical Thinking	3
MNTC Goal 1	Communications	6
MNTC Goals 3 through 10		6

Estimated cost of books, supplies and materials: $4,275

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

Automotive Service Technician

Automotives Service Technician Diploma (67 Credits)

Program Description
The Automotive Service Technician diploma prepares students for entry-level positions in the automotive repair industry. Graduates will be 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.

Program accreditation information: The Automotive Service Technician program is accredited by the National Automotive Technicians Education Foundation, Inc. (NATEF), 101 Blue Seal Drive, Suite 101, Leesburg, VA 20175, (703) 669-6650, www.natef.org.

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

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

Suggested Technical Studies Semester I

AUTO1508	Automotive Wheel Alignment	4
AUTO1510	Chassis Electrical	4
TRAN1502	General Service	2
TRAN1504	Electrical I	3
TRAN1516	Scan Tool Data Acquisition	1
TRAN1518	Transportation Hazardous Materials	1

Suggested Technical Studies Semester II

AUTO1512	Engine Repair Theory	2
AUTO1514	Engine Repair Lab	4
AUTO1516	Brakes	4
AUTO1523	Advanced Chassis Electrical	2

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

AUTO2511	Automatic Transmission and Transaxle Overhaul	3
AUTO2512	Driveline Repair	3
AUTO2516	Advanced Air Conditioning	2
AUTO2520	Engine Driveability	3
AUTO2523	Advanced Electronic Systems	2
TRAN2514	Basic Air Conditioning	2

General Studies

General Studies Electives		7

Estimated cost of books, supplies and materials: $4,015

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

Biomedical Equipment Technology

Biomedical Equipment Technician AAS Degree (60 Credits)

Program Description

The Biomedical Equipment Technician (BMET) AAS Degree trains and prepares students in troubleshooting, calibration and repair of biomedical instruments, equipment and support systems. The BMET program offers courses that expose students to a variety of instruments and equipment located in hospitals and clinics across the nation. The biomedical field is a fast growing field with demand for qualified technicians.

Program 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.

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

Biomedical equipment technicians may be employed by hospitals, clinics, private sector and the military.

Suggested Technical Studies Semester I

ETEC1511	DC Electronics	3
ETEC1512	AC Electronics	3
ETEC1515	Industrial Safety	2
TECH1530	Computer Applications	2

Suggested Technical Studies Semester II

ETEC1507	Digital Electronics	3
ETEC1521	Analog Circuits	3
ETEC1541	Mechanical Systems	3

Suggested Technical Studies Semester III

BMET2420	Biomedical Technology	4
ETEC1531	Instrumentation I	3
HLTH1440	Medical Terminology	1
MSNA1230	Introduction to Networks I	2
MSNA1240	Hardware Support	3

Suggested Technical Studies Semester IV

BMET2400	Biomedical Instrumentation	4
BMET2410	Biomedical Equipment Technician Internship	2
MSNA1245	Software Support	2
MSNA1255	Introduction to Networks II	2

General Education

PHYS1300	General Physics	4
CRTK1300	Introduction to Critical Thinking	3
BLGY1320	Human Biology	4
MNTC Goal Area 1 Communications-Written		4
MNTC Goal Area 1 Communications Oral		3

Estimated cost of books, supplies and materials: $2,450

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

Business Management

Business Management AS Degree (60 Credits)

Program Description

This degree builds a strong foundation in general business topics and gives students the ability to choose to concentrate in accounting, finance and credit, or sales management, marketing. Each elective area focuses students' practical knowledge in their field of study and provides opportunities to apply these skills in a variety of settings.

The Business Management AS Degree at SCTCC is a flexible degree designed for students who want to continue their education and/or enter the workforce. Emphasis is placed on developing skills in decision-making, interpersonal communication, critical thinking, project management and problem solving.

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

Career Opportunities

Graduates entering the work environment are likely to be employed by a variety of public and private organizations within the areas of professional sales, customer service, management, purchasing, banking, recovery, financial services, and accounting within retail, wholesale, and service organizations.

Core Studies

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

Technical Electives *Choose 12 Elective Credits*

ACCT1216	Accounting Principles II	4
ACCT1217	Cost Accounting	4
ACCT1219	Spreadsheets-Microsoft Excel	2
ACCT1220	Payroll Accounting	2
ACCT1225	QuickBooks	3
ACCT2225	Computerized Accounting Projects	2
ACCT2226	Intermediate Accounting I	4
ACCT2230	Income Tax I	4
ACCT2231	Income Tax II	2
ADWD2275	Social Media Marketing	4
FNCR1200	Personal Money Management	3
FNCR1220	Principles of Banking	3
FNCR1250	Credit Law	3
FNCR1260	Risk Management and Commercial Real Estate	3
FNCR2245	Consumer Lending	3
SAMG1200	Principles of Marketing	3
SAMG1206	Strategic Customer Service	3
SAMG1211	Professional Sales Fundamentals	3
SAMG1221	Branding and Promotion	3
SAMG2245	Marketing Strategies	3
SAMG2255	Professional Sales Strategies	3
SAMG2270	Managing Human Resources	3
SAMG2280	Sales Force Management	3
SAMG2285	Entrepreneurship	3

General Education

ECON2330	Introduction to Microeconomics	3
ENGL1302	Analytical Writing	4
ECON2320	Introduction to Macroeconomics	3
MNTC Goal Area 1	Communications Oral	3
MNTC Goal Area 4	Math 1300 or 1350	3
MNTC Goal Area 6	Humanities	3
MNTC Goal Area 7	Diversity	3
MNTC Goal Area 8	Global Perspectives	3
MNTC Goal Area 9	Ethical/Civic Responsibility	3
MNTransfer	General Education Electives	3

Estimated cost of books, supplies and materials: $3,015

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: The Cardiovascular Technology program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), 1361 Park Street, Clearwater, FL 33756.Telephone:(727) 210-2350 Fax: (727) 210-2350, web site: http://www.caahep.org/ and Joint Review Committee on Education in Cardiovascular Technology (JRC-CVT), 1449 Hill Street, Whitinsville, MA 01588-1032.Telephone: (978) 456-5594 http://www.jrccvt.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.

Technical Studies Prerequisites

HLTH1440 Medical Terminology..... 1
BLGY2310 Human Anatomy and Physiology I..... 4
MNTC Goal Area 1 Communications-Oral 3

* Current CPR, AHA Healthcare Provider, required
* Applicants must complete Anatomy and Physiology I by the end of spring term prior to starting the program. 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.
* NOTE: MOST CLINICAL SITES ARE LOCATED IN THE FIVE STATE AREA. ADDITIONAL SITES IN OTHER STATES MAY ALSO BE AVAILABLE.

Suggested Technical Studies Semester I

ICVT1422 Cardiovascular Instrumentation..... 3
ICVT1441 Introduction to Clinics..... 3

Suggested Technical Studies Semester II

ICVT1402 Cardiovascular Anatomy and Physiology..... 4
ICVT1423 Catheterization Lab Fundamentals I..... 2
ICVT1443 Cardiovascular Clinic I..... 5

Suggested Technical Studies Semester III

ICVT2405 Cardiovascular Pathology..... 3
ICVT2426 Catheterization Lab Fundamentals II..... 4
ICVT2446 Cardiovascular Clinical II..... 5

Suggested Technical Studies Semester IV

ICVT2450 Applied Clinical Internship..... 13

General Education

BLGY2320 Human Anatomy/Physiology II..... 4
MNTC Goal Area 4 Math 1300 or 1330 or 1350..... 3
MNTC Goal Area 1 ENGL1302 or ENGL 1303..... 3

Estimated cost of books, supplies and materials: $4,060

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 prepared 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 studies courses are technically focused and not designed for transfer.

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
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 Studies

ENGL1100	Writing for the Workplace	3
GBEH1100	Human Relations	3

Estimated cost of books, supplies and materials: $1,730

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

Center for Manufacturing and Applied Engineering

Production Technologies Certificate (16 Credits)

Program Description

This certificate will provide courses designed to be an introduction to production technologies and provide initial information to start students on a career pathway. Included in coursework; students will engage in topics of technical mathematics, introductory computer skills, print interpretation, manufacturing processes, quality control, maintenance, and safety.

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

Technical Studies

CMAE1502 Technical Math 3
CMAE1506 Introduction to Computers 2
CMAE1510 Print Reading 2
CMAE1514 Safety..... 2
CMAE1518 Manufacturing Processes 2
CMAE1522 Quality 2
CMAE1526 Maintenance Awareness 2
CMAE1528 Career Success Skills..... 1

Estimated cost of books, supplies and materials: $450

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

Center for Manufacturing and Applied Engineering

Automation Technologist Certificate (30 Credits)

Program Description

This certificate will provide courses designed to be an introduction to production technologies and automation technologies to start students on a career pathway. Included in coursework; students will engage in topics of technical mathematics, introductory computer skills, print interpretation, manufacturing processes, quality control, maintenance, and safety. Also included in coursework, students will engage in topics of AC/DC power, digital electronics, analog circuits, and motor controls.

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

Technical Studies Semester I

CMAE1502 Technical Math	3
CMAE1506 Introduction to Computers	2
CMAE1510 Print Reading	2
CMAE1514 Safety	2
CMAE1518 Manufacturing Processes	2
CMAE1522 Quality	2
CMAE1526 Maintenance Awareness	2

Technical Studies Semester II

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

Estimated cost of books, supplies and materials: $1050

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

Center for Manufacturing and Applied Engineering

Machine Technology Certificate (30 Credits)

Program Description

This certificate will provide courses designed to be an introduction to production technologies and machining technology and provide initial information to start students on a career pathway. Included in coursework; students will engage in topics of technical mathematics, introductory computer skills, print interpretation, manufacturing processes, quality control, maintenance, and safety. Also included in coursework, students will engage in topics of machine tool print reading, machine tool technology theory and lab principles, machining math, introduction to computer numerical control, and geometric dimensioning and tolerancing.

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

Technical Studies Semester I

CMAE1502 Technical Math	3
CMAE1506 Introduction to Computers	2
CMAE1510 Print Reading	2
CMAE1514 Safety	2
CMAE1518 Manufacturing Processes	2
CMAE1522 Quality	2
CMAE1526 Maintenance Awareness	2

Technical Studies Semester II

CMAE1530 Machining Math	2
CMAE1532 Machine Tool Print Reading	2
CMAE1534 Machine Tool Technology Theory	2
CMAE1536 Machine Tool Technology, Lab I	2
CMAE1538 Machine Tool Technology, Lab II	2
CMAE1540 Introduction to CNC	3
CMAE1542 Geometric Dimensioning & Tolerancing	2

Estimated cost of books, supplies and materials: $1050

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

Center for Manufacturing and Applied Engineering

Welding Technology Certificate (30 Credits)

Program Description

This certificate will provide courses designed to be an introduction to production technologies and welding fundamentals to start students on a career pathway. Included in coursework, students will engage in topics of technical mathematics, introductory computer skills, print interpretation, manufacturing processes, quality control, maintenance, and safety. Also included in coursework; students will engage in topics of welding print reading and interpreting symbols, following welding procedures, safety, metallurgy and mechanical properties of materials, and hands on experience with specific welding processes including oxyacetylene cutting and welding, shielded metal arc welding, gas metal arc welding, flux core arc welding, and gas tungsten arc welding.

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

Technical Studies Semester I

CMAE1502 Technical Math	3
CMAE1506 Introduction to Computers	2
CMAE1510 Print Reading	2
CMAE1514 Safety	2
CMAE1518 Manufacturing Processes	2
CMAE1522 Quality	2
CMAE1526 Maintenance Awareness	2

Technical Studies Semester II

CMAE1560 Interpreting Symbols	2
CMAE1562 Oxy Fuel	3
CMAE1564 SMAW	3
CMAE1566 GMAW/FCAW	3
CMAE1568 GTAW	3
CMAE1570 Metallurgy	1

Estimated cost of books, supplies and materials: $1050

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

Child, Adult Care and Education/Paraprofessional

Child, Adult Care and Education/Paraprofessional
AAS Degree (60 Credits)

Program Description
The Child, Adult Care and Education (CACE) AAS Degree covers human development, behavior management, learning environments, planning curriculums, implementing strategies for learning, and practical experience. In addition, site visits, service learning and two internships help students gain real-world experience in multiple areas of child and adult care, choosing from early childhood studies, special education, infant care, school involvement, and senior centers.

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 Child and Adult Care and Education graduates may be found in early childhood centers, school settings, long-term care facilities, licensed family child care, facilities for people with disabilities, as well as those who are interested in starting their own business as child care providers.

Technical Studies Prerequisites
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 for CACE1460.

Suggested Technical Studies Semester I

CACE1400	Professional Relations in CACE Careers	3
CACE1420	Foundations of Development	3
CACE1440	Guidance: Managing the Physical and Social Environment	3
CACE1444	Planning and Implementing Curriculum	3
CACE1460	Internship I	3

Suggested Technical Studies Semester II

CACE1404	Safety, Health and Nutrition	3
CACE1422	Profiles of the Exceptional Child	3
CACE1424	School-Age Strategies for Learning	3
CACE1464	Internship II	3

Suggested Technical Studies Semester III

CACE1426	Children with Difficult Behaviors	3
CACE1470	Professional and Leadership Development	1

Suggested Technical Studies Semester IV

CACE1428	Family and Community Relations	3
CACE1448	Literature and Language Development Experiences	3

Technical Electives*Choose 7 credits*

CACE1455	Aging: Activities and Adaptations	3
CACE1473	Strategies in Reading for the Paraprofessional	2
CACE1474	Strategies in Math for Paraprofessionals	2
CACE1476	Writing Strategies for Paraprofessionals	1
CACE1478	Technology Strategies for Paraprofessionals	1
CACE1479	Autism Spectrum Disorder (ASD)	1
CACE1480	Caring for Children with Special Health Needs	2

General Education

ENGL1302	Analytical Writing	4
MNTC Goal Area 1 Oral Communications		3
MNTC Goal Area 3 Natural Sci. or Goal 4 Math/Logic		3
MNTC Goal Area 5 Historical/Social and Behavior Sc		3
MNTC Goal Area 7 Diversity		3

Estimated cost of books, supplies and materials: $1,770

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

Child, Adult Care and Education/Paraprofessional

Child and Adult Care and Education AS Degree (60 Credits)

Program Description

The Child, Adult Care and Education (CACE) AS Degree covers human development, behavior management, learning environments, planning curriculums, implementing strategies for learning, and practical experience. In addition, site visits, service learning and two internships help students gain real-world experience in multiple areas of child and adult care, choosing from early childhood studies, special education, infant care, school involvement, and senior centers. The AS degree is designed to allow students to continue their education at partnering Universities.

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 AS 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 Child and Adult Care and Education graduates may be found in early childhood centers, school settings, long-term care facilities, licensed family child care, facilities for people with disabilities, as well as those who are interested in starting their own business as child care providers.

Technical Studies Prerequisites

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 for CACE1460.

Suggested Technical Studies Semester I

CACE1400	Professional Relations in CACE Careers	3
CACE1420	Foundations of Development	3
CACE1440	Guidance: Managing the Physical and Social Environment	3
CACE1444	Planning and Implementing Curriculum	3
CACE1460	Internship I	3

Suggested Technical Studies Semester II

CACE1404	Safety, Health and Nutrition	3
CACE1422	Profiles of the Exceptional Child	3
CACE1424	School-Age Strategies for Learning	3
CACE1464	Internship II	3
CACE1470	Professional and Leadership Development	1

General Education

ENGL1302	Analytical Writing	4
SOCI1350	Sociology of Marriage and Family	3
MNTC Goal Area 1 Oral Communications		3
MNTC Goal Area 2 Critical Thinking		3
MNTC Goal Area 3 Natural Science Biology with lab		4
MNTC Goal Area 4 Math 1300 recommended		3
MNTC Goal Area 5 History/Social and Behavioral Sci		3
MNTC Goal Area 7 Diversity		3
MNTC Goal Area 8 Global Perspective		3
MNTC Goal Area 9 Ethic and Civic Responsibility		3

Estimated cost of books, supplies and materials: $1,770

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

Child, Adult Care and Education/Paraprofessional

Child and Adult Care and Education Diploma (34 Credits)

Program Description

Learning to care for and working with children, youth, families, and/or the elderly is important to students of the Child, Adult Care and Education (CACE) diploma program. In a non-lecture-based format, students enjoy an interactive, hands-on experience and gain valuable information, insight, and networking opportunities with guest speakers, discussions, and many other activities.

The Child, Adult Care and Education diploma covers human development, behavior management, learning environments, planning curriculums, implementing strategies for learning, and practical experience. In addition, site visits, service learning and two internships help students gain real-world experience in multiple areas of child and adult care, choosing from early childhood studies, special education, infant care, school involvement, and senior centers.

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 diploma.

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

Career Opportunities

Graduates enjoy a consistently high placement rate in their new careers. Career opportunities for Child and Adult Care and Education graduates may be found in early childhood centers, school settings, long-term care facilities, licensed family child care, facilities for people with disabilities, as well as those who are interested in starting their own business as child care providers.

Technical Studies Prerequisites

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 for CACE1460.

Suggested Technical Studies Semester I

CACE1400	Professional Relations in CACE Careers	3
CACE1420	Foundations of Development	3
CACE1440	Guidance: Managing the Physical and Social Environment	3
CACE1444	Planning and Implementing Curriculum	3
CACE1460	Internship I	3

Suggested Technical Studies Semester II

CACE1404	Safety, Health and Nutrition	3
CACE1422	Profiles of the Exceptional Child	3
CACE1424	School-Age Strategies for Learning	3
CACE1464	Internship II	3
CACE1470	Professional and Leadership Development	1

General Studies

DVRS1304	Diversity and Social Justice	3
ENGL1100	Writing for the Workplace	3

Estimated cost of books, supplies and materials: $970

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

Computer Programming

Computer Programmer AAS Degree (71 Credits)

Program Description

E-commerce and the Internet have become an integral daily life. Students will receive extensive exposure to current methodologies, languages, programming procedures, and business data processing applications. Programming students will design and write programs for e-commerce, business applications, and network and mobile environments. Students will develop skills critical to the field in customizing, programming, debugging and testing computer programs along with learning to follow instructions provided by system documentation, review results and make necessary corrections to achieve desired program output. The program emphasizes development of strong communication, problem solving and decision making skills as well as integrating team-based learning - all skills necessary to prepare students for today's work environment.

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: All students in the Computer Programmer major are required to purchase a laptop computer for their coursework. 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

The use of stand-alone and networked computers is rapidly increasing in all levels of government and business. Employment potential is outstanding for competent Computer Programmer graduates.

Suggested Technical Studies Semester I

CMSC1203	Structured Programming Logic	3
CMSC1206	Basic Networking/ Security	3
CMSC1212	Web Markup Language	3
CMSC1225	Java Language I	3

Suggested Technical Studies Semester II

CMSC1215	XML	3
CMSC1216	Database Modeling I	3
CMSC1217	Data Analytics	3
CMSC1255	PHP	3
CMSC2266	Java Language II	3

Suggested Technical Studies Semester III

BUSM1290	Job Seeking/Keeping Skills	1
CMSC2201	Database Modeling II	3
CMSC2202	Web Scripting Language	3
CMSC2203	C# Programming	3
CMSC2204	Mobile Device Programming/Connectivity	3

Suggested Technical Studies Semester IV

CMSC2205	Internship	3
CMSC2220	Cryptography	3
CMSC2240	Advanced C# Programming	3
CMSC2268	Network Programming	3
CMSC2279	Systems Analysis and Design	3

General Education

CMST1320	Introduction to Communication Studies	3
ENGL1302	Analytical Writing	4
MATH1300	College Algebra	3
MNTC Goal Area 5 Social Sciences		3
MNTC Goal Area 6 Humanities		3

Estimated cost of books, supplies and materials: $2,850

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

Culinary Arts

Culinary Arts AAS Degree (66 Credits)

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
CULN1240	Stocks, Soups, Sauces	3
CULN1220	Introduction to Pantry Food Preparation	2
CULN1230	Vegetables, Potato, Rice and Farinaceous Products	2
CULN1260	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

CULN1280	Foodservice Internship	2

Suggested Technical Studies Semester IV

ACCT1215	Accounting Principles I	4
BUSM 1275	Legal Environment of Business	3
SAMG1215	Principles of Management	3

Suggested Technical Studies Semester V

BUSM1212	Customer Relationship Management	3
BUSM1290	Job Seeking/Keeping Skills	1
CPTR1210	Introduction to Computers	3

General Education

CRTK1300	Introduction to Critical Thinking	3
DVRS1304	Diversity and Social Justice	3
ECON1310	Personal Finance	3
MNTC Goal Area 1 Communications-Written		4
MNTC Goal Area 1 Communications-Oral		3

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

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

Culinary Arts

Culinary Arts Diploma (38 Credits)

Program Description

The Culinary Arts Program is designed to prepare students for the food service industry by exploring all facets of food preparation, planning, and service. The program provides training in nutrition, sanitation, and the operation of equipment in addition to food preparation techniques. Technical classes are supplemented with a variety of assessments, demonstrations, training, preparation and service experiences. Students will have many opportunities to participate in college and community events that provide practical experience in the field, including membership in the local Chef's Society.

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

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 Farinaceous Products	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 *May Term

CULN1280	Foodservice Internship	2

General Studies

GBEH1100	Human Relations	3

Estimated cost of books, supplies and materials: $565

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

Dental Assistant

Dental Assistant AAS Degree (60 Credits)

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 of the American Dental Association, 211 East Chicago Avenue, Chicago, IL 60611, (312) 440-4563, http://www.ada.org/en/coda . 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 Prerequisites

MNTC Goal Area 1 Communications-Oral	3
MNTC Goal Area 1 Communications-Written	3
MNTC Goal Area 3 Natural Science	4

* 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 information meeting, and background check.

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

MNTransfer Psychology	3
MNTC Goal Area 2, 6, 7, 8, 9 or 10	3

Estimated cost of books, supplies and materials: $5,110

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

Dental Assistant

Dental Assistant Diploma (53 Credits)

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 of the American Dental Association, 211 East Chicago Avenue, Chicago, IL 60611, (312) 440-4563, http://www.ada.org/en/coda . 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).
The general studies courses are technically focused and not designed for transfer.

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 Prerequisites

ENGL1100	Writing for the Workplace	3
GBEH1100	Human Relations	3

* 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.

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

MNTransfer	Psychology	3

Estimated cost of books, supplies and materials: $5,110

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

Dental Hygienist

Dental Hygiene AAS Degree (80 Credits)

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 planing), and administering local anesthesia and nitrous oxide.

Upon graduation, students must successfully complete the National Dental Hygiene Board Exam, the Central Regional 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 of the American Dental Association, 211 East Chicago Avenue, Chicago, IL 60611, (312) 440-4563, http://www.ada.org/en/coda .

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

BLGY HUMAN ANATOMY and PHYSIOLOGY I (w/lab)	3
BLGY HUMAN ANATOMY and PHYSIOLOGY II(w/lab)	3
BLGY MICROBIOLOGY (w/have lab)	3
CHEM GENERAL CHEMISTRY (w/lab)	3
MNTC Goal Area 1 Communications Oral	3
MNTC Goal Area 1 Communications Written	3
MNTC Goal Area 5 Psychology	3
MNTC Goal Area 5 Sociology	3
PHIL1320 Ethics	3

* Applicant may apply only after successful completion of 3 of the 4 science courses listed above. Priority will be given to those students who have completed all 4 of the science courses listed above at an accredited college or university and to those students who have completed the largest portion of the general education component.
* Dental Hygiene applicants: Students being considered for admission into the SCTCC Dental Hygiene program will be limited to retaking classes: a maximum of 1 retake for a science prerequisite course and a maximum of 1 retake for a required general education course.

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 and Oral Pathology	3
DEHY1480	Pre-Clinical Dental Hygiene I	3

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: $7,580

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

Electrical Construction Technology

Electrical Construction Technology AAS Degree (81 Credits)

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 journeyperson'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 and 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 and A. C. Fund.	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	A. C. Motor Control II	4
ELEC2532	Solid State and 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 4 Mathematics and Logic	3
MNTC Goal Area 6 Humanities	3
MNTransfer General Education Electives	3

Estimated cost of books, supplies and materials: $2,375

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

Electrical Construction Technology

Electrical Construction Technology Diploma (72 Credits)

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, www.dli.mn.gov . Credit is given toward the state electrical license upon completion of this two year course. 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 journeyperson'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 and 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 and A. C. Fund.	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	A. C. Motor Control II	4
ELEC2532	Solid State and 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

Estimated cost of books, supplies and materials: $2,015

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

Energy and Electronics

Energy Technical Specialist AAS Degree (60 Credits)

Program Description

This degree program has been developed to train students in the field of energy technology. The Energy Technical Specialist Associate in Applied Science degree will convey the skills and knowledge necessary to be successful in both the traditional and renewable energy fields.

Students enrolled in the Energy Technical Specialist program will study core curriculum providing a strong base in electrical, electronic and mechanical systems. Students may select an area of specialization to complete their program of study from the following: Wind Energy, Ethanol, Biodiesel, Fossil Fuels, or Power Generation.

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

Career Opportunities

The Energy Technical specialist AAS program trains students to work in the growing field of energy and electronics.

Suggested Technical Semester I

ETEC1511	DC Electronics	3
ETEC1512	AC Electronics	3
ETEC1515	Industrial Safety	2
RNEW1300	Introduction to Renewable Energy	3

Suggested Technical Studies Semester II

ETEC1507	Digital Electronics	3
ETEC1523	Print Reading and Design	3
ETEC1541	Mechanical Systems	3

Suggested Technical Studies Semester III

ETEC1531	Instrumentation I	3
ETEC2512	Hydraulics	3
ETEC2513	Pneumatics	3
ETEC2516	Mechanical Systems II	4
TECH1552	Basic Metal Joining and Fabrication	2

Suggested Technical Studies Semester IV

ETEC2543	Programmable Logic Control	3
ETEC2546	Power Plant Technology	4
ETEC2547	Mechanical Fundamentals for Process Control	3

Technical Electives

Selected to meet the area of specialization if other than Fossil Fuels 10

General Education

MNTC Goal 1	Communications-Written	3
MNTC Goal 3	Environmental Science	3
MNTC Goal 3	Physics or Chemistry	3
MNTC Goal 4	Mathematics	3
MNTransfer	General Education Electives	3

SCTCC Recommended General Education (these are the required courses for the Nuclear program)

ENVR 1305	Environmental Science	4
ENGL 1302	Analytical Writing	4
MATH 1300	College Algebra	3
PHYS 1300	Physics	4

Estimated cost of books, supplies and materials: $2,472

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

Energy and Electronics

Energy Technical Specialist-Nuclear AAS Degree (74 Credits)

Program Description

The Energy Technical Specialist-Nuclear AAS Degree prepares student with both electrical and mechanical technician skills to work at a nuclear facility. This program strives to give students the core training in which safety is paramount. The curriculum meets the national standards for nuclear power generation. SCTCC has partnered with energy consortiums and power generation companies to establish this major and ensure it meets industry and regulatory requirements.

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 in this program have the opportunity to do a job shadow at the local nuclear plant. The nuclear plant requires full access badging, background checks and drug/alcohol screening. Students must earn a grade of B or higher in each required course to meet the program requirements. This program does not accept general education transfer courses to meet program requirements.

Accreditation Information: The Energy Technical Specialist Program – Nuclear is accredited by the Nuclear Energy Institute, 1201 F St. NW, Suite 1100, Washington, D.C. 20004-1218, (202) 739-8000, Fax: (202) 785-4019, http://www.nei.org .

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

Career Opportunities

Graduates of this program receive a nationally recognized certificate that is accepted at all nuclear facilities. Graduates of the program will have the skills and knowledge necessary to obtain entry-level employment in the nuclear energy industry.

Suggested Technical Semester I

ETEC1511	DC Electronics	3
ETEC1512	AC Electronics	3
ETEC1515	Industrial Safety	2
RNEW1300	Introduction to Renewable Energy	3

Suggested Technical Studies Semester II

ETEC1507	Digital Electronics	3
ETEC1523	Print Reading and Design	3
ETEC1541	Mechanical Systems	3

Suggested Technical Studies Semester III *Summer*

NUCP2500	Nuclear Energy Fundamentals	3
NUCP2512	Nuclear Plant In Processing	1
NUCP2516	Nuclear Plant Electrical Job Shadow	1
NUCP2520	Nuclear Plant Mechanical Job Shadow	1

Suggested Technical Studies Semester IV

ETEC1531	Instrumentation I	3
ETEC2512	Hydraulics	3
ETEC2513	Pneumatics	3
ETEC2516	Mechanical Systems II	4
NUCP2504	Nuclear Plant Materials and Protection	4
TECH1552	Basic Metal Joining and Fabrication	2

Suggested Technical Studies Semester V

ETEC2543	Programmable Logic Control	3
ETEC2546	Power Plant Technology	4
ETEC2547	Mechanical Fundamentals for Process Control	3
NUCP2508	Nuclear Plant Operating Systems	4

General Education

MATH1300	College Algebra	3
PHYS1300	General Physics	4
ENVR1305	Environmental Science	4
ENGL1302	Analytical Writing	4

Estimated cost of books, supplies and materials: $2,472

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

Energy and Electronics

Instrumentation and Process Control AAS Degree (60 Credits)

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	Industrial Safety	2
TECH1550	Basic CADD	2

Suggested Technical Studies Semester II

ETEC1507	Digital Electronics	3
ETEC1521	Analog Circuits	3
TECH1556	Basic Manual - Automated Machining	2

Suggested Technical Studies Semester III

ETEC1531	Instrumentation I	3
ETEC2512	Hydraulics	3
ETEC2513	Pneumatics	3
ETEC2541	Electric Motor Control I	3

Suggested Technical Studies Semester IV

ETEC2531	Instrumentation II	3
ETEC2542	Electric Motor Control II	3
ETEC2543	Programmable Logic Control	3
ETEC2545	Networking Systems	2

Technical Electives *Choose from ETEC*

	Technical Electives *Choose from ETEC*	2

General Education

CMST1320	Introduction to Communication Studies	3
ENGL1302	Analytical Writing	4
MATH1300	College Algebra	3
PHYS1300	General Physics	4
MNTC Goal Area 5 Social Sciences		3

Estimated cost of books, supplies and materials: $2,107

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

Energy and Electronics

Instrumentation and Process Control Diploma (56 Credits)

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 studies courses are technically focused and not designed for transfer

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	Industrial Safety	2
TECH1550	Basic CADD	2

Suggested Technical Studies Semester II

CADD1522	Applied Physics	4
ETEC1507	Digital Electronics	3
ETEC1521	Analog Circuits	3
TECH1556	Basic Manual - Automated Machining	2

Suggested Technical Studies Semester III

ETEC1531	Instrumentation I	3
ETEC2512	Hydraulics	3
ETEC2513	Pneumatics	3
ETEC2541	Electric Motor Control I	3
TECH1552	Basic Metal Joining and Fabrication	2

Suggested Technical Studies Semester IV

ETEC2531	Instrumentation II	3
ETEC2542	Electric Motor Control II	3
ETEC2543	Programmable Logic Control	3
ETEC2545	Networking Systems	2

General Education

ENGL1100	Writing for the Workplace	3
GBEH1100	Human Relations	3
MATH1300	College Algebra	3

Estimated cost of books, supplies and materials: $2,147

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

Energy and Electronics

Mechatronics AAS Degree (60 Credits)

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	Industrial Safety	2
TECH1550	Basic CADD	2

Suggested Technical Studies Semester II

ETEC1507	Digital Electronics	3
ETEC1521	Analog Circuits	3
ETEC1541	Mechanical Systems	3
TECH1556	Basic Manual - Automated Machining	2

Suggested Technical Studies Semester III

ETEC2512	Hydraulics	3
ETEC2513	Pneumatics	3
ETEC2541	Electric Motor Control I	3

Suggested Technical Studies Semester IV

ETEC2542	Electric Motor Control II	3
ETEC2543	Programmable Logic Control	3
ETEC2544	Automated Manufacturing Systems	3
ETEC2545	Networking Systems	2

Technical Electives*Choose from ETEC*

	Technical Electives*Choose from ETEC*	2

General Education

CMST1320	Introduction to Communication Studies	3
ENGL1302	Analytical Writing	4
MATH1300	College Algebra	3
PHYS1300	General Physics	4
MNTC Goal Area 5 Social Sciences		3

Estimated cost of books, supplies and materials: $2,521

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

Energy and Electronics

Mechatronics 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
MATH1300	College Algebra	3
TECH1530	Computer Applications	2
TECH1550	Basic CADD	2

Suggested Technical Studies Semester II

CADD1522	Applied Physics	4
ETEC1507	Digital Electronics	3
ETEC1521	Analog Circuits	3
ETEC1541	Mechanical Systems	3
TECH1556	Basic Manual - Automated Machining	2

Estimated cost of books, supplies and materials: $1,741

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

Energy and Electronics

Mechatronics Diploma (56 Credits)

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 studies courses are technically focused and not designed for transfer

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	Industrial Safety	2
TECH1550	Basic CADD	2

Suggested Technical Studies Semester II

CADD1522	Applied Physics	4
ETEC1507	Digital Electronics	3
ETEC1521	Analog Circuits	3
ETEC1541	Mechanical Systems	3
TECH1556	Basic Manual - Automated Machining	2

Suggested Technical Studies Semester III

ETEC2512	Hydraulics	3
ETEC2513	Pneumatics	3
ETEC2541	Electric Motor Control I	3
TECH1552	Basic Metal Joining and Fabrication	2

Suggested Technical Studies Semester IV

ETEC2542	Electric Motor Control II	3
ETEC2543	Programmable Logic Control	3
ETEC2544	Automated Manufacturing Systems	3
ETEC2545	Networking Systems	2

General Education

ENGL1100	Writing for the Workplace	3
GBEH1100	Human Relations	3
MATH1300	College Algebra	3

Estimated cost of books, supplies and materials: $2,161

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

Energy and Electronics

Robotics and Automation Technology AAS Degree (60 Credits)

Program Description

The Robotics and Automation Technology program prepares individuals for the future of manufacturing. As production systems become more streamlined, the equipment that is used becomes more complex. Employers are looking for intelligent technicians who can build, repair, install, maintain, and program manufacturing equipment, as well as solve engineering problems and design robotic and automated systems. This program prepares individuals with knowledge and skills in the areas of Robotic Programming, Electronics, Flexible Manufacturing, CAD Systems, Industrial Communications and Overall System Integration. Technologies such as robot controllers, sensors, and electrical control systems have created a need for highly specialized training that this degree offers.

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

Career Opportunities

Graduates from the Robotics and Automation Technology program find exciting employment opportunities as robotics/automation technicians in building, installing, maintaining, programming and repairing robotic & automated equipment used in a variety of industries such as, automated manufacturing, robotics, aerospace, paper manufacturing, food processing, petro-chemical production, power generation, mining, maintenance and telecommunications.

Suggested Technical Studies Semester I

ETEC1511	DC Electronics	3
ETEC1512	AC Electronics	3
ETEC1515	Industrial Safety	2

Suggested Technical Studies Semester II

ETEC1507	Digital Electronics	3
ETEC1521	Analog Circuits	3
ETEC1523	Print Reading and Design	3
ETEC1541	Mechanical Systems	3

Suggested Technical Studies Semester III

ETEC2512	Hydraulics	3
ETEC2513	Pneumatics	3
ETEC2541	Electric Motor Control I	3
ETEC2553	Robotics I	4

Suggested Technical Studies Semester IV

ETEC2542	Electric Motor Control II	3
ETEC2543	Programmable Logic Control	3
ETEC2555	Robotics II	4

General Education

CMST1320	Introduction to Communication Studies	3
ENGL1302	Analytical Writing	4
MATH1300	College Algebra	3
PHYS1300	General Physics	4
MNTC Goal Area 5 Social Sciences		3

Estimated cost of books, supplies and materials: $2,492

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

Energy and Electronics

Robotics and Automation Technology Diploma (56 Credits)

Program Description

The Robotics and Automation Technology program prepares individuals for the future of manufacturing. As production systems become more streamlined, the equipment that is used becomes more complex. Employers are looking for intelligent technicians who can build, repair, install, maintain, and program manufacturing equipment, as well as solve engineering problems and design robotic and automated systems. This program prepares individuals with knowledge and skills in the areas of Robotic Programming, Electronics, Flexible Manufacturing, CAD Systems, Industrial Communications and Overall System Integration. Technologies such as new generation robot controllers, sensors, and electrical control systems have created a need for a highly specialized training that this degree offers.

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

Career Opportunities

Graduates from the Robotics and Automation Technology program find exciting employment opportunities as robotics/automation technicians in building, installing, maintaining, programming and repairing robotic & automated equipment used in a variety of industries such as, automated manufacturing, robotics, aerospace, paper manufacturing, food processing, petro-chemical production, power generation, mining, maintenance and telecommunications.

Suggested Technical Studies Semester I

ETEC1511	DC Electronics	3
ETEC1512	AC Electronics	3
ETEC1515	Industrial Safety	2

Suggested Technical Studies Semester II

ETEC1507	Digital Electronics	3
ETEC1521	Analog Circuits	3
ETEC1523	Print Reading and Design	3
ETEC1541	Mechanical Systems	3

Suggested Technical Studies Semester III

ETEC2512	Hydraulics	3
ETEC2513	Pneumatics	3
ETEC2541	Electric Motor Control I	3
ETEC2553	Robotics I	4

Suggested Technical Studies Semester IV

ETEC2542	Electric Motor Control II	3
ETEC2543	Programmable Logic Control	3
ETEC2555	Robotics II	4

General General Education

ENGL1100	Writing for the Workplace	3
GBEH1100	Human Relations	3
MATH1300	College Algebra	3
PHYS1300	General Physics	4

Estimated cost of books, supplies and materials: $2,492

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

Farm Management

Farm Business Management Diploma (60 Credits)
Farm Business Management Advanced 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.

DIPLOMA Technical Courses

Year 1

FBMT1112	Foundations for Farm Business Management	4
FBMT1211	Introduction to Farm Business Management	4
FBMT1213	Managing a Farm System in a Global Economy	2

Year 2

FBMT1121	Preparation for Farm Business Analysis	4
FBMT1122	Implementing the System Management Plan	4
FBMT1223	Using System Analysis in Total Farm Planning	2

Year 3

FBMT1131	Managing and Modifying Farm System Data	4
FBMT1132	Interpreting and Using Farm System Data	4
FBMT1233	Application of Productive Enterprise Information	2

Year 4

FBMT2141	Interpreting and Evaluation of Financial Data	4
FBMT2142	Interpreting Trends in Business Planning	4
FBMT2243	Financial Instruments in Farm System Management	2

Year 5

FBMT2151	Strategies in Farm System Data Management	4
FBMT2152	System Information for Financial Planning	4
FBMT2253	System Plans and Projections	2

Year 6

FBMT2161	Examination of Farm System Management	4
FBMT2162	Refining Farm System Management	4
FBMT2263	Evaluating Farm System Programs	2

Advanced Certificate Technical Courses

Year 1

FBMT2930	Fund of Financial Management	3
FBMT2931	Applied Financial Management	3
FBMT2950	Farm Management Decision Making	2
FBMT2951	Farm Management Communications	2

Year 2

FBMT2932	Fund of Fin Management/Strategic Planning	3
FBMT2933	Applied Fin Management/Strategic Planning	3
FBMT2952	Modern Agricultural Technology	2
FBMT2953	Farm Business and/or Family Transition	2

Year 3

FBMT2934	Fund of Fin Management/Business Plan	3
FBMT2935	Applications in Fin Management/Business Plans	3
FBMT2954	Farm Management Personnel Management	2
FBMT2955	Farm Management Enterprise Alternatives	2

Estimated cost of books, supplies and materials: $325

Finance and Credit

Finance and Credit AAS Degree (60 Credits)

Program Description

The Finance and Credit Program will prepare students for career opportunities in the Finance and Credit industry. Preparing students for a diverse employment market, courses cover a variety of business related areas including accounting, banking, communications, computer applications, management, math, and sales.

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

Career Opportunities

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

Suggested Technical Studies Semester I

ACCT1215	Accounting Principles I	4
BUSM1267	Introduction to Business	2
CPTR1210	Introduction to Computers	3
FNCR1220	Principles of Banking	3

Suggested Technical Studies Semester II

ACCT1216	Accounting Principles II	4
ACCT1219	Spreadsheets-Microsoft Excel	2
FNCR1200	Personal Money Management	3
SAMG1206	Strategic Customer Service	3

Suggested Technical Studies Semester III

BUSM2275	Legal Environment of Business	3
FNCR1260	Risk Management and Commercial Real Estate	3
SAMG1211	Professional Sales Fundamentals	3
SAMG1215	Principles of Management	3

Suggested Technical Studies Semester IV

FNCR1250	Credit Law	3
FNCR2245	Consumer Lending	3
FNCR2275	Internship	3

General Education

ECON1310	Personal Finance	3
MNTC Goal Area 1 Communications-Oral		3
MNTC Goal Area 1 Communications-Written		3
MNTC Goal Area 2 Critical Thinking		3
MNTC Goal Area 4 Mathematics and Logic		3

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

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

Finance and Credit

Finance and Credit Diploma (54 Credits)

Program Description

The Finance and Credit Program will prepare students for career opportunities in the Finance and Credit industry. Preparing students for a diverse employment market, courses cover a variety of business related areas including accounting, banking, communications, computer applications, management, math, and sales.

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

Career Opportunities

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

Suggested Technical Studies Semester I

ACCT1215	Accounting Principles I	4
BUSM1267	Introduction to Business	2
CPTR1210	Introduction to Computers	3
FNCR1220	Principles of Banking	3

Suggested Technical Studies Semester II

ACCT1216	Accounting Principles II	4
ACCT1219	Spreadsheets-Microsoft Excel	2
FNCR1200	Personal Money Management	3
SAMG1206	Strategic Customer Service	3

Suggested Technical Studies Semester III

BUSM2275	Legal Environment of Business	3
FNCR1260	Risk Management and Commercial Real Estate	3
SAMG1211	Professional Sales Fundamentals	3
SAMG1215	Principles of Management	3

Suggested Technical Studies Semester IV

FNCR1250	Credit Law	3
FNCR2245	Consumer Lending	3
FNCR2275	Internship	3

General Studies

ECON1310	Personal Finance	3
ENGL1100	Writing for the Workplace	3
GBEH1100	Human Relations	3

Estimated cost of books, supplies and materials: $1,350

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

Health Data Specialist

Health Data Specialist AAS Degree (60 Credits)

Program Description

The Health Data Specialist (HDS) program at SCTCC integrates curriculum from the health information technology and computer programming field to meet the changing data processing needs of the healthcare industry. As healthcare information moves to electronic platforms, the HDS program gives students a solid background in security, database modeling and cryptography, all relevant skills in the storage, maintenance and use of digital healthcare data.

Students will apply computer programming, troubleshooting, and information technology skills to the installation, maintenance, and upgrade of standard, customized or proprietary medical software and associated hardware. The HDS program provides instruction in telecommunications, electronic healthcare records software applications, computer security and data privacy. Students will also use varied electronic health record software applications to replicate patient information and patient encounters. Legal issues and data security and integrity are covered in this program.

Degree Specific Program Requirements:
All students in this program must have a laptop meeting current specifications of the program as found on the SCTCC website. Students who have earned a grade of "C" or better, in all technical classes, as well as an overall GPA of 2.5 or better will have satisfied the program requirements for the AAS degree. 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).

Career Opportunities

Jobs in these areas include healthcare integration, healthcare systems analyst, clinical information technology consultant, technology support specialist, data/application analyst, application specialist, documentation specialist, and clinical quality data coordinator.specialist, and clinical quality data coordinator.

Suggested Technical Studies Semester I

CMSC1203	Structured Programming Logic	3
CMSC1212	Web Markup Lanaguage	3
CMSC1225	Java Language I	3
HITM1215	Health Information Foundations	3
HITM1228	Administrative Medical Terminology	3

Suggested Technical Studies Semester II

CMSC1216	Database Modeling I	3
CMSC1217	Data Analytics	3
CMSC1255	PHP	3

Suggested Technical Studies Semester III

CMSC1206	Basic Networking/ Security	3
CMSC2201	Database Modeling II	3
HITM2220	Legal Aspects of Health Information	3
HITM2212	Quality Improvement and Healthcare Statistics	3

Suggested Technical Studies Semester IV

BUSM1212	Customer Relationship Management	3
CMSC2220	Cryptography	3
HITM1240	Computerized Health Information	3

General Education

MATH1300	College Algebra	3
MNTC Goal Area 1	Communications Oral	3
MNTC Goal Area 1	Communications-Written	3
MNTC Goal Area 5	Social Sciences	3
MNTC Goal Area 6	Humanities	3

Estimated cost of books, supplies and materials: $2,350 plus laptop

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

Health Information Management (HIT) combines the disciplines of medicine, information management, and computer technology within the healthcare industry. The Heath Information Technology (HIT) curriculum includes courses in computer applications, biological sciences, medicine, and health information collection, processing, retrieval, evaluation, dissemination and management, as well as general education. The provision for technical and managerial experience is an important aspect of the curriculum. The curriculum includes an educational clinical internship, during which students report to a healthcare facility and experience activities in the environment of the workplace.

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: All students in this program must have a laptop meeting current specifications of the program as found on the SCTCC website. Students who have earned a grade of "C" or better, in all technical courses will have satisfied the program requirements for the AAS degree. 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. Some students may need to meet site-specific internship requirements which may include completion of the following: confidentiality agreements, health forms, physical examination, drug test(s), immunization, or annual Mantoux (TB) screening.

Accreditation Information: The Health Information Technology Program is accredited by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM), 223 North Michigan Avenue, 21st Floor, Chicago, IL 60601-5800, (312) 223-1100, www.cahiim.org .
The general education courses may transfer and are part of the Minnesota Transfer Curriculum (MnTC).

Career Opportunities

Jobs in these areas include healthcare integration, healthcare systems analyst, clinical information technology consultant, technology support specialist, data/application analyst, application specialist, documentation specialist, and clinical quality data coordinator.

Technical Studies Prerequisites

BUSM1207 Basic Keyboarding is a developmental course, required only if students are unable to key text at a speed of 35 words per minute with five or fewer errors on a 2 minute timing. Students must show proof with a high school transcript, Articulated Credit certificate or other documentation showing they have completed a keyboarding course that meets these requirements. Otherwise, this course is available fall and spring semester.

Suggested Technical Studies Semester I

HITM1215	Health Information Foundations	3
HITM1228	Administrative Medical Terminology	3
HITM1229	Administrative Pharmacology	3
HITM2220	Legal Aspects of Health Information	3

Suggested Technical Studies Semester II

HITM1227	ICD-CM Coding	3
HITM1235	ICD-PCS Coding	2
HITM1244	Anatomy and Physiology for Health Information	4
HITM1250	Data and Software Applications for HIT	3

Suggested Technical Studies Semester III

HITM1226	CPT Coding	3
HITM2204	Administrative Pathophysiology	3
HITM2209	HIT Professional Practice Experience I	2
HITM2212	Quality Improvement and Healthcare Statistics	3
HITM2215	HIT Management and Supervision	3

Suggested Technical Studies Semester IV

HITM1240	Computerized Health Information	3
HITM2210	Medical Billing and Reimbursement	3
HITM2211	HIT Professional Practice Experience II	1
HITM2224	Advanced Medical Coding	3
HITM2244	HIT Comprehensive Review	1

General Education

MNTC Goal Area 1 Communications Oral	3
MNTC Goal Area 1 Communications Written	3
MNTC Goal Area 2 or 6 Critical Thinking or Humanities	3
MNTC Goal Area 4 Mathematics and Logic	3
MNTC Goal Area 5 Social Sciences	3

Estimated cost of books, supplies and materials: $3,867

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

Health Information Technology

Office Technology Assistant/Medical-Diploma (36 Credits)

Program Description

Medical Office Technology Assistants work with physicians and other medical support staff. The Medical Office Technology students learn insurance coding and reimbursement, computerized medical records, and other medical office procedures.

Degree Specific Program Requirements: All students in this program must have a laptop meeting current specifications of the program as found on the SCTCC website. Students who have earned a grade of "C" or better, 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 studies courses are technically focused and not designed for transfer.

Career Opportunities

Medical Office Technology Assistants become employed in clinics, hospitals, insurance offices, medical testing facilities, long-term care facilities, and industrial medical facilities. After a few years of employment, the assistants may decide to do remote billing or medical coding.

Technical Studies Prerequisites

BUSM1207 Basic Keyboarding is a developmental course, required only if students are unable to key text at a speed of 35 words per minute with five or fewer errors on a 2 minute timing. Students must show proof with a high school transcript, Articulated Credit certificate or other documentation showing they have completed a keyboarding course that meets these requirements. Otherwise, this course is available fall and spring semester.

Suggested Technical Studies Semester I

HITM1215	Health Information Foundations	3
HITM1226	CPT Coding	3
HITM1228	Administrative Medical Terminology	3
HITM1229	Administrative Pharmacology	3
HITM2220	Legal Aspects of Health Information	3

Suggested Technical Studies Semester II

HITM1227	ICD-CM Coding	3
HITM1235	ICD-PCS Coding	2
HITM1240	Computerized Health Information	3
HITM1244	Anatomy and Physiology for Health Information	4
HITM1250	Data and Software Applications for HIT	3
HITM2210	Medical Billing and Reimbursement	3

General Education

DVRS1304	Diversity and Social Justice	3

Estimated cost of books, supplies and materials: $2,918

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)

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.

HEALTH SCIENCES BROAD FIELD REQUIREMENTS

MNTC Goal 1 Communication
- ENGL 1302 Analytical Writing (required) 4
  AND
- Choose one from:
- CMST 1320 Intro to Communication Studies OR
  CMST 2310 Interpersonal Communication.....3

MNTC Goal 3 Natural Sciences
- BLGY 1325 Nutrition 3
- BLGY 1351 General Biology 4
- BLGY 2310 Human Anat/Phys I 4
- BLGY 2320 Human Anat/Phys II.....4
- BLGY 2330 Microbiology.....4
- CHEM 1340 Intro to General Chemistry.....4

MNTC Goal Goal 4 Mathematical/Logical Reasoning
- MATH 1300 College Algebra 3
- MATH 1350 Intro to Statistics.....3

MNTC Goal 5 Social, Behavior Sciences and History
- PSYC 1300 Intro to Psychology.....3
- PSYC 1304 Life Span Development 3

MNTC Goal 7 Human Diversity
- DVRS 1304 Diversity and Social Justice..... 3

MNTC **Goal 9 (and 6) Ethic & Civic Resp.**
- PHIL 1320 Ethics..... 3

Elective Credits..... 12
These can be additional MNTC courses or other college level courses including program specific courses. Please consult with your advisor for course selection.

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

Heating Air Conditioning and Refrigeration

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

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 A/C	4
HART1540	Internship - Residential	2

Suggested Technical Studies Semester II

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

Suggested Technical Studies Semester III

HART2506	Commercial Refrigeration I	4
HART2510	Commercial Electrical and Controls	3
HART2522	Commercial Air Conditioning	3
HART2530	Commercial Load Calculating	2
HART2540	Internship - Commercial	2

Suggested Technical Studies Semester IV

HART2502	Commercial Refrigeration II	4
HART2514	Compressor Operation and Troubleshooting	3
HART2518	Commercial Troubleshooting	2
HART2526	Commercial Heating and HVAC Systems	3
HART2534	Commercial HVAC Controls	2

General Education

MNTC Goal Area 1 Communications-Written		3
MNTC Goal Area 1 Communications-Oral		3
MNTC Goal Area 4 Mathematics		3
MNTransfer General Education Electives		6

Courses must be from at least 3 Goal Areas

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 and Refrigeration

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

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 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 A/C	4
HART1540	Internship - Residential	2

Suggested Technical Studies Semester II

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

Suggested Technical Studies Semester III

HART2506	Commercial Refrigeration I	4
HART2510	Commercial Electrical and Controls	3
HART2522	Commercial Air Conditioning	3
HART2530	Commercial Load Calculating	2
HART2540	Internship - Commercial	2

Suggested Technical Studies Semester IV

HART2502	Commercial Refrigeration II	4
HART2514	Compressor Operation and Troubleshooting	3
HART2518	Commercial Troubleshooting	2
HART2526	Commercial Heating and HVAC Systems	3
HART2534	Commercial HVAC Controls	2

General Studies

ENGL1100	Writing for the Workplace	3
GBEH1100	Human Relations	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 and Refrigeration

Residential Heating and Air Conditioning 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. This diploma emphasizes residential service, maintenance, and installation of forced air furnaces, heat pumps, and air conditioning systems. Students will gain knowledge in troubleshooting of electrical controls, motors, service and maintenance of residential heating and air conditioning systems.

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 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 A/C	4
HART1540	Internship - Residential	2

Suggested Technical Studies Semester II

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

General Studies

ENGL1100	Writing for the Workplace	3
GBEH1100	Human Relations	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 Infrastructure

Network Administration AAS Degree (60 Credits)

Program Description

The Network Administration major reflects current Information Technology (IT) industry requirements, with a focus on certifications. Students learn theoretical knowledge and hands-on proficiency in a high-demand industry. General Education courses help to develop student interpersonal communications 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, providing them the opportunity 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, 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).

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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.

Suggested Technical Studies Semester I

MSNA1214	Windows Desktop Operating Systems	3
MSNA1230	Introduction to Networks I	2
MSNA1235	Introduction to Virtualization	2
MSNA1240	Hardware Support	3

Suggested Technical Studies Semester II

BUSM1290	Job Seeking/Keeping Skills	1
MSNA1213	MS Server Infrastructure OS	3
MSNA1245	Software Support	2
MSNA1255	Introduction to Networks II	2
MSNA2211	Linux Server	3

Suggested Technical Studies Semester III

MSNA1205	Intro to Help Desk	3
MSNA1225	Cisco Routing and Switching Essentials	3
MSNA2201	MS Server AD Configuration	3
MSNA2245	IT Security Fundamentals	2

Suggested Technical Studies Semester IV

MSNA2215	MSNA Internship	2
MSNA2226	MSNA Capstone	2
MSNA2235	Cisco Routing and Switching - Scaling Networks	3
MSNA2260	MS Server Applications	3

Technical Electives*Choose 3 Credits*

ADWD1205	Foundations of Web Technologies	2
ADWD1235	Web Design Fundamentals	3
CMSC1203	Structured Programming Logic	3

General Education

CRTK1300	Introduction to Critical Thinking	3
CMST2302	Small Group Communication	3
MNTC Goal Area 1 Communications-Oral		3
MNTC Goal Area 1 Communications-Written		3
MNTC Goal Area 4 Math/Logic*Excludes MATH1331*		3

Estimated cost of books, supplies and materials: $1,894

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

Information Technology Infrastructure

PC Specialist Diploma (32 Credits)

Program Description

The PC Specialist diploma will train students, through theory and hands-on practice, in basic computer hardware, operating system, networking and application installation, configuration and use. The diploma can be used as a stand-alone course of study or as an opportunity for students to continue their education in the information technology field.

Technical courses include microcomputer hardware, software, networking and computer security, as well as application skills.

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 diploma.

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

Career Opportunities

Graduates of the PC Specialist major will be able to enter the job market as entry level help desk workers in the Information Technology field. PC Specialists will provide end users with basic hardware, operating system software and networking support, as well as application program use and troubleshooting.

Suggested Technical Studies Semester I

MSNA1205	Intro to Help Desk	3
MSNA1214	Windows Desktop Operating Systems	3
MSNA1230	Introduction to Networks I	2
MSNA1235	Introduction to Virtualization	2
MSNA1240	Hardware Support	3
MSNA2245	IT Security Fundamentals	2

Suggested Technical Studies Semester II

BUSM1290	Job Seeking/Keeping Skills	1
MSNA1213	MS Server Infrastructure OS	3
MSNA1245	Software Support	2
MSNA1255	Introduction to Networks II	2

Technical Electives*Choose 3 Credits*

ADWD1205	Foundations of Web Technologies	2
ADWD1235	Web Design Fundamentals	3
CMSC1203	Structured Programming Logic	3

General Studies

GBEH1100	Human Relations	3
ENGL1100	Writing for the Workplace	3

Estimated cost of books, supplies and materials: $1,192

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)

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

LSCE2506	Construction Design and Surveying Principles	5
LSCE2510	Surveying Principles II	3
LSCE2522	Civil CADD III	3
LSCE2530	Utility Design II	3

General Education

MATH1300	College Algebra	3
MATH1321	College Trigonometry	3
	MNTC Goal Area 1 Communications-Written	4
	MNTC Goal Area 1 Communications-Oral	3
	MNTC Goal Area 2, 5, 6, or 7 Critical Thinking, So	3

Estimated cost of books, supplies and materials: $2,995

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

Land Surveying/Civil Engineering

Land Surveying/Civil Engineering Diploma (63 Credits)

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 diploma.

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

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
LSCE1522	Technical Computations I	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

LSCE2506	Construction Design and Surveying Principles	5
LSCE2510	Surveying Principles II	3
LSCE2522	Civil CADD III	3
LSCE2530	Utility Design II	3

General Studies

GBEH 1100 or Gen Ed from Goal 5/Goal 6/Goal 7	3
ENGL 1100 or General Education from Goal 1	3

Estimated cost of books, supplies and materials: $2,795

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

Legal Support Careers

Legal Administrative Assistant AAS Degree (60 Credits)

Program Description

Legal Administrative Assistant [LAA] professionals are critical to the support of attorneys and other staff in law firms, corporate legal departments, government agencies, and other legal service facilities. Well-trained legal administrative assistant professionals assist attorneys and other legal professionals in the creation and retention of quality legal documentation and assist with other administrative duties. Students learn family law, legal research and writing, and other important areas of law appropriate to a legal administrative assistant.

Degree Specific Program Requirements: All students are required to purchase a program-specific laptop.

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

Career Opportunities

The Legal Administrative Assistant graduates successfully complete internships in law firms, court administration offices, and other legal service facilities. These internship sites may lead to full-time jobs. There is a strong demand in the legal workplace for Legal Administrative Assistant graduates.

Technical Studies Prerequisites

BUSM1207 Keyboarding is required only if students are unable to key text at a speed of 35 words per minute with five or fewer errors on a 2 minute timing. Students must show proof with a high school transcript, Articulated Credit certificate or other documentation showing they have completed a keyboarding course that meets the requirements. Otherwise this course is available fall and spring semesters.

Suggested Technical Studies Semester I

CPTR1210	Introduction to Computers	3
LEGL1206	Paralegal Basic Law I	3
LEGL1208	Administrative Legal Office Procedures	3
LEGL1210	Ethics for Legal Professionals	2

Suggested Technical Studies Semester II

ADMS1203	Intermediate Microsoft Applications	3
BUSM1260	Applied Business Mathematics/Calculators	3
LEGL1203	Legal Research and Writing	4
LEGL1215	Paralegal Basic Law II	3

Suggested Technical Studies Semester III

ADMS1204	Computer Applications in Business II	3
BUSM1212	Customer Relationship Management	3
BUSM1217	Business Communications	3

Suggested Technical Studies Semester IV

BUSM1290	Job Seeking/Keeping Skills	1
LEGL1204	Administrative Legal Transcription	3
LEGL2204	Family Law	3
LEGL2210	Legal Administrative Assistant Internship	4

General Education

CRTK1300	Critical Thinking	3
DVRS1304	Diversity and Social Justice	3
ENGL1302	Analytical Writing	4
MNTC Goal Area 1	Communications Oral	3
MNTC Goal Area 6	Humanities	3

Estimated cost of books, supplies and materials: $3,547

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

Legal Support Careers

Office Technology Assistant/Legal Diploma (33 Credits)

Program Description
Legal Office Technology Assistants work with lawyers and other legal support staff. Students complete courses in computers, litigation, family law, real estate, estate planning, probate, civil, corporate, criminal, and bankruptcy law, and more.

Degree Specific Program Requirements: All students are required to purchase a program-specific laptop.

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

Career Opportunities
Legal Office Technology Assistants become employed in law firms, court administrator offices, and other legal service facilities. There is a strong demand in the legal workplace for Legal Office Technology Assistant graduates.

Technical Studies Prerequisites
BUSM1207 Keyboarding is required only if students are unable to key text at a speed of 35 words per minute with five or fewer errors on a 2 minute timing. Students must show proof with a high school transcript, Articulated Credit certificate or other documentation showing they have completed a keyboarding course that meets the requirements. Otherwise this course is available fall and spring semesters.....

Suggested Technical Studies Semester I

BUSM1217	Business Communications	3
CPTR1210	Introduction to Computers	3
LEGL1206	Paralegal Basic Law I	3
LEGL1208	Administrative Legal Office Procedures	3
LEGL1210	Ethics for Legal Professionals	2

Suggested Technical Studies Semester II

ADMS1203	Intermediate Microsoft Applications	3
BUSM1260	Applied Business Mathematics/Calculators	3
BUSM1290	Job Seeking/Keeping Skills	1
LEGL1204	Administrative Legal Transcription	3
LEGL1215	Paralegal Basic Law II	3

General Studies

ENGL1100	Writing for the Workplace	3
GBEH1100	Human Relations	3

Estimated cost of books, supplies and materials: $2,900

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

Legal Support Careers

Paralegal AS Degree (60 Credits)

Program Description

The Paralegal Program prepares paralegal professionals to assist attorneys in law firms, corporate legal departments, government agencies, and other legal service facilities. This program will provide students with hands-on experiences in specific legal procedures as they relate to areas of law. Paralegal students will also enhance their communication, critical thinking, creative thinking, analytical, human diversity, ethical, and global perspective competencies in their required general education curriculum.

Attorneys and other legal professionals are able to provide legal services to the public more efficiently and economically by utilizing paralegal assistance. Paralegals are trained to prepare legal documents, analyze procedural and substantive legal problems, interview clients and witnesses, manage cases, and other important legal tasks.

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 2.5 or better will have satisfied the program requirements for the AS degree. All students are required to purchase a program specific laptop computer.

Accreditation Information: The Paralegal program is affiliated with the American Association for Paralegal Education (AAfPE), 19 Mantua Road, Mt. Royal, NJ 08061, (856) 423-2829, Fax: (856) 423-3420, www.aafpe.org .

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

Career Opportunities

Paralegal graduates will find careers in law firms, courts, corporations, government agencies (such as police departments and the FBI), and jobs requiring legal background in many other venues. A paralegal degree may lead to other advanced legal degrees in criminal justice, jurisprudence, and other legal-related graduate studies.

Technical Studies Prerequisites

BUSM1207 Keyboarding is required only if students are unable to key text at a speed of 35 words per minute with five or fewer errors on a 2 minute timing. Students must show proof with a high school transcript, Articulated Credit certificate or other documentation showing they have completed a keyboarding course that meets the requirements. Otherwise this course is available fall and spring semesters.....

Suggested Technical Studies Semester I

LEGL1206	Paralegal Basic Law I	3
LEGL1210	Ethics for Legal Professionals	2

Suggested Technical Studies Semester II

LEGL1203	Legal Research and Writing	4
LEGL1215	Paralegal Basic Law II	3

Suggested Technical Studies Semester III

LEGL2205	Wills, Trusts and Estate Administration	3
LEGL2206	Real Estate	3
LEGL2207	Litigation	3

Suggested Technical Studies Semester IV

LEGL2204	Family Law	3
LEGL2208	Corporate Law	3
LEGL2209	Paralegal Internship	2

General Education

ENGL1302	Analytical Writing	4
DVRS1304	Diversity and Social Justice	3
MATH1350	Statistics	3
POLS1304	Introduction to American Politics	3
MNTC Goal 1	Comunications-Oral	3
MNTC Goal 2	Critical Thinking	3
MNTC Goal 5	Social,Behavior Science	3
MNTC Goal 6	Humanities/Arts	3
MNTC Goal 8	Global Perspective	3
MNTransfer	General Education Electives	3

Estimated cost of books, supplies and materials: $2,000 plus laptop

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

Liberal Arts and Sciences

Associate in Arts Degree (60 credits)

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 Colleges and Universities (MnSCU) system and was designed to give students certainty on how their general education courses transfer within MnSCU. The MnTC is the core of the Associate in Arts Degree and serves as the key to all undergraduate education at SCTCC and all MnSCU institutions. The courses that students complete at SCTCC can help them earn a degree at any MnSCU institution and are often transferable to other colleges and universities.

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 20 semester credits applied toward the degree must be taken from SCTCC.
4. Completion of specific degree requirements below.

A detailed planner for the Associate in Arts Degree can be found at: http://www.sctcc.edu/aa-degree.

2016-17 AA Degree requirements:

Minnesota Transfer Curriculum (MnTC) Requirements - 40 credits in 10 goal areas

These two criteria must be met to complete the MnTC:

• All ten goal areas listed below must be completed.

• At least 40 semester credits from courses listed in the MnTC must be satisfactorily completed. One course may satisfy more than one goal area, but the course credits may be counted only once.

Goal 1 Communication (two courses)
- ENGL 1302 Analytical Writing (required) 4
- AND
- Choose one from:
- CMST 1320 Intro to Communication Studies 3
- CMST 2300 Introduction to Public Speaking..... 3
- CMST 2302 Small Group Communication 3
- CMST 2310 Interpersonal Communication..... 3

Goal 2 Critical Thinking (one course)
- CRTK 1300 Critical Thinking (require)..... 3

Goal 3 Natural Sciences (two courses from two different subjects, one must be lab course) 7

Goal 4 Mathematical/Logical Reasoning (one course) 3

Goal 5 History and the Social and Behavior Sciences (three courses from three different subjects) 9

Goal 6 The Humanities and Fine Arts (three courses from different subjects)..... 9

Goal 7 Human Diversity (two courses)
- DVRS1304 required 6

Goal 8 Global Perspective (one course)..... 3

Goal 9 Ethical and Civic Responsibility (one course)..... 3

Goal 10 People and the Environment (one course)..... 3

Wellness Requirement..... 2
Choose from: BLGY 1325, HPER 1310, 1360, PSYC 1350

Elective Credits..... 18
(After completing the MNTC, the balance of the 60 semester credits for the degree may be met by taking college-level course-work appropriate to the student's transfer program).

For full MNTC course listings go to http://www.sctcc.edu/prospective-students/programs-majors/mntransfer-courses.

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

Liberal Arts and Sciences

Coaching Certificate (15 Credits)

Program Description

The Coaching certificate is ideal for students planning a career as an educator, students planning to coach interscholastic sports, licensed high school teachers preparing for head coaching positions, and students seeking to develop a foundation for future coaching opportunities at any level. The Coaching certificate provides students with a background in coaching styles and methods. It also prepares students to deal with the mental aspect of coaching and sports. Prevention and care for athletic injuries, and treating athletic related emergencies is also covered. Specific coaching and training techniques for football, volleyball, basketball, baseball and softball are also included.

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. Many youth sports organizations also recommend the coursework included in the Coaching certificate.

Required Technical Studies

HPER1315	Sports Related First Aid and CPR/AED	2
HPER1320	Prevention and Care of Athletic Injuries	2
HPER1325	Psychology of Sports and Coaching	3
HPER1330	Coaching Methods	3
HPER1360	Weight Training and Conditioning	1

Technical Electives*Choose 4 credits*

HPER1335	Football Coaching Theory and Skills Improvement	2
HPER1340	Volleyball Coaching Theory and Skills	2
HPER1345	Basketball Coaching Theory and Skills Improvement	2
HPER1355	Baseball Coaching Theory and Skills Improvement	2
HPER1365	Softball Coaching Theory and Skills Improvement	2

Estimated cost of books, supplies and materials: $550

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

Machine Tool Technology

***Machine Operator Diploma* - 33 credits**

Program Description
The Machine Operator program is designed to give students the necessary skills to enter the labor market as a machine operator, machinist, or a tool and die or mold-maker apprentice. Graduates can expand to areas such as tool making, multi-axis CNC programmer precision machining, setup specialist, CNC applications/sales, machining technician, CNC machining including Swiss CNC turning technology.

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

Career Opportunities
The program is designed to give students the necessary skills to enter the labor market as a machine operator, machinist, or a tool and die or mold-maker apprentice.

Suggested Technical Studies Semester I

MACH1503	Machine Technology I	4
MACH1507	Machining Math	4
MACH1510	Machine Technology II	4
MACH1517	Blueprint Reading I	1
TECH1550	Basic CADD	2

Suggested Technical Studies Semester II

MACH1511	Machine Tool Technology III	5
MACH1519	Blueprint Reading II	1
MACH1540	CNC Fundamentals	2
TECH1530	Computer Applications	2
TECH1552	Basic Metal Joining and Fabrication	2

General Studies

ENGL1100	Writing for the Workplace	3
GBEH1100	Human Relations	3

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

Machine Tool Technology

Machine Tool Technology AAS Degree

Program Description
MACHINE TOOL TECHNOLOGY (60 credits required)
ADVANCED CNC/CAM MACHINIST CONCENTRATION (68 credits required)
CNC MOLDMAKER/CAM MACHINIST CONCENTRATION (68 credits required)

The Machine Tool Technology program develops students' skills to convert various materials into intricate, precise and usable parts. Student will learn to work from blueprints and written specifications to select the proper machinery, materials, and tools, and gain proficiency with machine tools such as lathes, mills, grinders, drill-presses, computers, and computerized numerical control (CNC) machines.

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

Career Opportunities
The program is designed to give students the necessary skills to enter the labor market as a machine operator, machinist, or a tool and die or mold-maker apprentice. Graduates can expand to areas such as tool making, multi-axis CNC programmer precision machining, setup specialist, CNC applications/sales, machining technician, CNC machining including Swiss CNC turning technology.

Suggested Technical Studies Semester I

MACH1503	Machine Tool Technology I	4
MACH1510	Machine Tool Technology II	4
MACH1517	Blueprint Reading I	1
TECH1550	Basic CADD	2

Suggested Technical Studies Semester II

MACH1511	Machine Tool Technology III	5
MACH1514	Intro to Swiss	2
MACH1519	Blueprint Reading II	1
MACH1532	CAM I 2D	1
MACH1540	CNC Fundamentals	2
TECH1530	Computer Applications	2
TECH1552	Basic Metal Joining and Fabrication	2

Suggested Technical Studies Semester III

MACH1525	Geometric Dimensioning and Tolerancing	1
MACH2504	CNC Milling/Turning	4
MACH2510	Cutting Tool Technology	1
MACH2514	Metallurgy	1
MACH2523	High Performance Manufacturing	1
MACH2528	Introduction to Electrical Discharge Machining	2

STUDENTS MUST COMPLETE ONE OF THE THREE OPTIONS TO EARN A DEGREE:

CNC Machinist:

MACH1528	Jigs and Fixtures	1
MACH2542	CNC Milling, Set-up and Operation with 4th Axis	4
MACH2545	CNC Turning, Set-up and Operation	4

Advanced CNC/CAM Machinist Concentration:

MACH1528	Jigs and Fixtures	1
MACH2512	CAM II 3D/Solid Model	2
MACH2516	CAM III 4th/5th Axis Programming	2
MACH2519	Advanced CNC Milling	2
MACH2527	Advanced CNC Turning	2
MACH2531	Multiaxis VMC	2
MACH2535	Live Tooling Turning Center	2
MACH2539	Advanced EDM	1
MACH2540	Swiss CNC Turning Advanced	2
MACH2544	CNC/CAM Capstone	1

CNC Moldmaker/CAM Machinist Concentration:

MACH2512	CAM II 3D/Solid Model	2
MACH2548	Plastics Applications and Chemistry	1
MACH2550	Mold Design Theory	2
MACH2552	Mold Design Applied	2
MACH2554	Base, Force & Cavity	5
MACH2558	Ejector System, Runners and Gates	4
MACH2562	Mold Press Operation	1

General Education

MATH1300	College Algebra	3
MATH1321	College Trigonometry	3
MNTC Goal 1 Communications Written		3
MNTC Goal 1 Communications Oral		3
MN Goal Area 5 or 7 Social Sciences/Diversity		3

Estimated cost of books, supplies and materials: $3,975

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

Machine Tool Technology

Machine Tool Technology Diploma

Program Description
MACHINE TOOL TECHNOLOGY (55 credits required)
ADVANCED CNC/CAM MACHINIST CONCENTRATION (63 credits required)
CNC MOLDMAKER/CAM MACHINIST CONCENTRATION (63 credits required)

The Machine Tool Technology program develops students' skills to convert various materials into intricate, precise and usable parts. Student will learn to work from blueprints and written specifications to select the proper machinery, materials, and tools, and gain proficiency with machine tools such as lathes, mills, grinders, drill-presses, computers, and computerized numerical control (CNC) machines.

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

Career Opportunities
The program is designed to give students the necessary skills to enter the labor market as a machine operator, machinist, or a tool and die or mold-maker apprentice. Graduates can expand to areas such as tool making, multi-axis CNC programmer precision machining, setup specialist, CNC applications/sales, machining technician, CNC machining including Swiss CNC turning technology.

Suggested Technical Studies Semester I

MACH1503	Machine Tool Technology I	4
MACH1507	Machining Math	4
MACH1510	Machine Tool Technology II	4
MACH1517	Blueprint Reading I	1
TECH1550	Basic CADD	2

Suggested Technical Studies Semester II

MACH1511	Machine Tool Technology III	5
MACH1514	Intro to Swiss	2
MACH1519	Blueprint Reading II	1
MACH1532	CAM I 2D	1
MACH1540	CNC Fundamentals	2
TECH1530	Computer Applications	2
TECH1552	Basic Metal Joining and Fabrication	2

Suggested Technical Studies Semester III

MACH1525	Geometric Dimensioning and Tolerancing	1
MACH2504	CNC Milling/Turning	4
MACH2510	Cutting Tool Technology	1
MACH2514	Metallurgy	1
MACH2523	High Performance Manufacturing	1
MACH2528	Introduction to Electrical Discharge Machining	2

STUDENTS MUST COMPLETE ONE OF THE THREE OPTIONS TO EARN A DIPLOMA:

CNC Machinist:

MACH1528	Jigs and Fixtures	1
MACH2542	CNC Milling, Set-up and Operation with 4th Axis	4
MACH2545	CNC Turning, Set-up and Operation	4

Advanced CNC/CAM Machinist Concentration:

MACH1528	Jigs and Fixtures	1
MACH2512	CAM II 3D/Solid Model	2
MACH2516	CAM III 4th/5th Axis Programming	2
MACH2519	Advanced CNC Milling	2
MACH2527	Advanced CNC Turning	2
MACH2531	Multiaxis VMC	2
MACH2535	Live Tooling Turning Center	2
MACH2539	Advanced EDM	1
MACH2540	Swiss CNC Turning Advanced	2
MACH2544	CNC/CAM Capstone	1

CNC Moldmaker/CAM Machinist Concentration:

MACH2512	CAM II 3D/Solid Model	2
MACH2548	Plastics Applications and Chemistry	1
MACH2550	Mold Design Theory	2
MACH2552	Mold Design Applied	2
MACH2554	Base, Force & Cavity	5
MACH2558	Ejector System, Runners and Gates	4
MACH2562	Mold Press Operation	1

General Studies

GBEH1100	Human Relations	3
ENGL1100	Writing for the Workplace	3

Estimated cost of books, supplies and materials: $3,690

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

Mechanical Design Technology

Mechanical Design Technology AAS Degree

Program Description
MECHANICAL DESIGN (68 credits required)
REVERSE ENGINEERING/RAPID PROTOTYPE CONCENTRATION (60 credits required)

The Mechanical Design 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.

Reverse Engineering/Rapid Prototyping Concentration (requires 60 credits total):
This concentration area has students use the reverse engineering and rapid prototyping processes to discover the technological principles of an assembly through analysis of its function and operation. This involves taking the assemblies apart and analyzing the components physical size using various hand and computerized measuring instruments.

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 of both concentrations 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. The concentration areas prepare the graduate for advancement from their entry level position into either the designer position in a company or into a reverse engineering position or a position in the rapid prototyping department.

Suggested Technical Studies Semester I

CADD1502	Mechanical CADD I	3
CADD1512	CADD Applications I	3
TECH1530	Computer Applications	2
TECH1556	Basic Manual - Automated Machining	2

Suggested Technical Studies Semester II

CADD1507	Mechanical CADD II	3
CADD1516	CADD Applications II	3
CADD1520	SolidWorks Foundations	3

Suggested Technical Studies Semester III

CADD2505	Production CADD I	3
CADD2509	Production CADD II	3
CADD2529	Manufacturing Systems	2
TECH1552	Basic Metal Joining and Fabrication	2

Suggested Technical Studies Semester IV

CADD2532	Geometric Dimensioning and Tolerancing	2
CADD2541	Basic CAM	2
CADD2542	Reverse Engineering	2
TECH1540	Technical Communications	1

STUDENTS MUST COMPLETE AT LEAST ONE OPTION TO EARN AN AAS DEGREE:

Mechanical Design

CADD1522	Applied Physics	4
CADD1530	Basic Electric Circuits	1
CADD2510	Design Concepts	3
CADD2514	Computer- Aided Design	3
CADD2518	Statics and Strength of Materials	3
CADD2522	Machine Design	3

Reverse Engineering/Rapid Prototype Concentration

RERP 2506	Measurement Systems	3
RERP 2510	3D Scanning to Solid Model	2
RERP 2514	Rapid Prototyping Technologies	3
RERP 2518	Advanced Reverse Engineering	1

General Education

MATH1300	College Algebra	3
MATH1321	College Trigonometry	3
MNTC Goal Area 1 Communications		3
MNTC Electives From Goal Area 2, 3, 5, 6, 7, 8, 9, 10		6

Estimated cost of books, supplies and materials: $3,615

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

Mechanical Design Technology

Mechanical Design Technology Diploma

Program Description
MECHANICAL DESIGN (66 credits required)
REVERSE ENGINEERING/RAPID PROTOTYPE CONCENTRATION (58 credits required)

The Mechanical Design Technology program consists of a concentration of computer-aided design technology and related math and general studies courses. Student 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.

Mechanical Design Concentration (requires 66 credits total):
This concentration 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.

Reverse Engineering/Rapid Prototyping Concentration (requires 58 credits total):
This concentration area has students use the reverse engineering and rapid prototyping processes to discover the technological principles of an assembly through analysis of its function and operation. This involves taking the assemblies apart and analyzing the components physical size using various hand and computerized measuring instruments.
The general studies courses are technically focused and not designed for transfer.

Career Opportunities
Graduates of both concentrations 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. The concentration areas prepare the graduate for advancement from their entry level position into either the designer position in a company or into either a reverse engineering position or a position in the rapid prototyping department.

Suggested Technical Studies Semester I

CADD1502	Mechanical CADD I	3
CADD1512	CADD Applications I	3
TECH1500	Applied Algebra	3
TECH1522	Manufacturing Math	4
TECH1530	Computer Applications	2
TECH1556	Basic Manual - Automated Machining	2

Suggested Technical Studies Semester II

CADD1507	Mechanical CADD II	3
CADD1516	CADD Applications II	3
CADD1520	SolidWorks Foundations	3

Suggested Technical Studies Semester III

CADD2505	Production CADD I	3
CADD2509	Production CADD II	3
CADD2529	Manufacturing Systems	2
TECH1552	Basic Metal Joining and Fabrication	2

Suggested Technical Studies Semester IV

CADD2532	Geometric Dimensioning and Tolerancing	2
CADD2541	Basic CAM	2
CADD2542	Reverse Engineering	2
TECH1540	Technical Communications	1

STUDENTS MUST COMPLETE AT LEAST ONE OPTION TO EARN A DIPLOMA:

Mechanical Design

CADD1522	Applied Physics	4
CADD1530	Basic Electric Circuits	1
CADD2510	Design Concepts	3
CADD2514	Computer- Aided Design	3
CADD2518	Statics and Strength of Materials	3
CADD2522	Machine Design	3

Reverse Engineering/Rapid Prototype Concentration

RERP 2506	Measurement Systems	3
RERP 2510	3D Scanning to Solid Model	2
RERP 2514	Rapid Prototyping Technologies	3
RERP 2518	Advanced Reverse Engineering	1

General Studies

ENGL1100	Writing for the Workplace	3
GBEH1100	Human Relations	3

Estimated cost of books, supplies and materials: $3,345

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

Mechanical Design and Manufacturing Technology

Mechanical Design and Manufacturing Technology
Advanced Technical Certificate (18 Credits)

Program Description
This advanced certificate allows students to expand the breadth of computer-aided design (CAD) or computerized numerical control (CNC) and related technologies. The cross-functional nature of the advanced certificate broadens their experience in machining or design applications.

Degree Specific Program Requirements: To enroll in this program, a student must have graduated from either the Machine Tool Technology or Mechanical Design Technology program with at least a 3.0 GPA and instructor approval.

Career Opportunities
Technicians with drafting and design background will often assist engineers and designers with the design and development of new products and tools and the modernizing of present equipment. Graduates will find placement opportunities in both large and small companies. The cross-functional nature of the advanced certificate gives graduates options in both machining and design technology.

Suggested Technical Studies *Machine Tool Grads

CADD1502	Mechanical CADD I	3
CADD1507	Mechanical CADD II	3
CADD1512	CADD Applications I	3
CADD1516	CADD Applications II	3
CADD1520	SolidWorks Foundations	3
CADM3502	CMM Operations	2
TECH1540	Technical Communications	1

Suggested Technical Studies *Mechanical Design Grads

MACH1540	CNC Fundamentals	2
MACH2504	CNC Milling/Turning	4
MACH2510	Cutting Tool Technology	1
MACH2514	Metallurgy	1
MACH2542	CNC Milling Setup and Operations with 4th Axis	4
MACH2545	CNC Turning Setup and Operation	4
CADM3502	CMM Operations	2

Estimated cost of books, supplies and materials: $1,010

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)

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 certified by the National Automotive Technicians Education Foundation, Inc. (NATEF), 101 Blue Seal Drive, Suite 101, Leesburg, VA 20175, (703) 669-6650, www.natef.org . The Medium Heavy Truck Technician Program is ASE Certified and graduates are prepared for the Automotive Service Excellence examinations.

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.

Suggested Technical Studies Semester I

MHTT1502	Diesel Engine I	4
MHTT1507	Mobile Hydraulics	3
MHTT1508	Truck Computer Systems	2
TRAN1502	General Service	2
TRAN1504	Electrical I	3
TRAN1518	Transportation Hazardous Materials	1

Suggested Technical Studies Semester II

MHTT1514	Truck Brake Systems	4
MHTT1518	Truck Steering/Suspension	3
MHTT1522	Electrical II	2
MHTT1526	Truck Maintenance I	3
TRAN2514	Basic Air Conditioning	2

Suggested Technical Studies Semester III

MHTT1510	Truck Power Train	4
MHTT2502	Diesel II	4
TRAN1520	Workplace Perceptions and Expectations	2

Suggested Technical Studies Semester IV

MHTT2506	Diesel III	4
MHTT2522	Electrical III	3
MHTT2530	Truck Heating and AC Systems	2
MHTT2546	Truck Preventive Maintenance and Troubleshooting	4

Technical Electives *choose from MHTT*

	Technical Electives *choose from MHTT*	5

General Education

MNTC Goal 1	Communications	6
MNTC Goal 2	Critical Thinking	3
MNTC Goals 3 through 10		6

Estimated cost of books, supplies and materials: $5,186

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

Medium/Heavy Truck Technician

Medium/Heavy Truck Technician Diploma (67 Credits)

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 certified by the National Automotive Technicians Education Foundation, Inc. (NATEF), 101 Blue Seal Drive, Suite 101, Leesburg, VA 20175, (703) 669-6650, www.natef.org . The Medium Heavy Truck Technician Program is ASE Certified and graduates are prepared for the Automotive Service Excellence examinations.

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.

Suggested Technical Studies Semester I

MHTT1502	Diesel Engine I	4
MHTT1507	Mobile Hydraulics	3
MHTT1508	Truck Computer Systems	2
TRAN1502	General Service	2
TRAN1504	Electricity and Electronic Principles	3
TRAN1518	Transportation Hazardous Materials	1

Suggested Technical Studies Semester II

MHTT1514	Truck Brake Systems	4
MHTT1518	Truck Steering/Suspension	3
MHTT1522	Electrical II	2
MHTT1526	Truck Maintenance I	3
TRAN2514	Basic Air Conditioning	2

Suggested Technical Studies Semester III

MHTT1510	Truck Power Train	4
MHTT2502	Diesel II	4
TRAN1520	Workplace Perceptions and Expectations	2

Suggested Technical Studies Semester IV

MHTT2506	Diesel III	4
MHTT2522	Electrical III	3
MHTT2530	Truck Heating and AC Systems	2
MHTT2546	Truck Preventive Maintenance and Troubleshooting	4

Technical Electives *Choose from MHTT*

	Technical Electives *Choose from MHTT*	8

General Studies

	General Studies Electives	4
	Communications-Written	3

Estimated cost of books, supplies and materials: $4,926

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

Nursing (A. D.N)

Nursing - LPN to ADN Mobility AS Degree (64 Credits)

Program Description

This 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, specialized dementia care facilities, and ambulatory clinics. Graduates are eligible to articulate to BSN/BAN programs in the MnSCU system as part of the MnSCU 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 A.D.N. Program is approved by the Minnesota State Board of Nursing, 2829 University Ave SE, 2nd Floor, Minneapolis, MN 55414-3253, (612) 617-2270 or (888) 234-2690, http://mn.gov/boards/nursing . 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).

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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.

Technical Studies Prerequisites

BLGY2310	Human Anatomy/Physiology I	4
BLGY2320	Human Anatomy/Physiology II	4
BLGY2330	Microbiology	4
CMST2310	Interpersonal Communication OR CMST 1320 Intro to Communication Studies	3
ENGL1302	Analytical Writing	4
PHIL1320	Ethics	3
PSYC1304	Life Span Developmental Psychology	3
BLGY1325	Nutrition	3
GERO1300	Introduction to Gerontology	3
Practical Nursing Credits granted for advanced standing		9

* THE FOLLOWING LICENSE/REGISTRATIONS MUST BE CURRENT AND ON FILE PRIOR TO ADMISSION INTO THE PROGRAM CPR/AED Adult, Child and Infant (Health Care Provider Level)Minn. Board of Nursing LPN License

* A minimum grade of "C" or better and a cumulative GPA of 3.0 or above in prerequisite coursework is required to be considered for admission and must be maintained.

Technical Studies Semester I

NURS2401	Transitional Nursing Concepts	3
NURS2415	Nursing Concepts I	5
NURS2418	Clinical Concepts I	4

Technical Studies Semester II

NURS2411	Professional Nursing Concepts	3
NURS2421	Nursing Concepts II	5
NURS2424	ClinicalConcepts II	4

Estimated cost of books, supplies and materials: $3,100

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

Paramedicine

Paramedicine AAS Degree (64 Credits)

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 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: All Paramedicine students are required to have an iPad 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 accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), 1361 Park Street, Clearwater, FL 33756, (727) 210-2350, Fax: (727) 210-2350, http://www.caahep.org. Committee on Accreditation of Educational Programs for EMS Professions (CoAEMSP), Suite 111-312, 8301 Lakeview Parkway, Rowlett, TX 75088, (214) 703-8992, www.coaemsp.org and MN Emergency Medical Services Regulatory Board (EMSRB), 2829 University Ave SE, Suite 310, Minneapolis, MN 55414, (651) 201-2800, Fax: (651) 201-2812, https://mn.gov/boards/emsrb .

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.

Technical Studies Prerequisites

HLTH1440	Medical Terminology	1
BLGY1320	Human Biology	4

* AHA CPR for Healthcare Provider and EMT Basic are also required before beginning the Paramedicine program. (must submit AHA CPR and MN EMSRB EMTB card)

* In addition the following must be completed: A medical examination, vaccinations against Hepatitis B or signed release form, Mantous test, mandatory attendance at an informational meeting and background check.

Suggested Technical Studies Semester I

EMSP1401	EMS Operations	3
EMSP1402	Paramedicine Skills I	3
EMSP1403	Introduction to Pharmacology	1
EMSP1405	Medical Emergencies	3

Suggested Technical Studies Semester II

EMSP1404	Emergency Pharmacology for Paramedics	2
EMSP1407	Cardiology I	2
EMSP1410	Cardiology II	4
EMSP1432	Support Services Internship	2

Suggested Technical Studies Semester III *Summer*

EMSP1409	Paramedicine Skills II	2
EMSP1441	ALS Ambulance Internship	2
EMSP2438	Emergency Department Internship	3

Suggested Technical Studies Semester IV

EMSP2412	Paramedicine Skills III	2
EMSP2420	Specialized Populations	2
EMSP2425	Advanced Trauma Care	2
EMSP2430	ALS Ambulance Internship II	2
EMSP2435	Critical Care Internship	2

Suggested Technical Studies Semester V

EMSP2442	Acute Care Internship	2
EMSP2481	Paramedicine Internship	6
EMSP2485	Paramedicine Skills IV	2

General Education

CMST1320	Introduction to Communication Studies	3
CRTK1300	Introduction to Critical Thinking	3
PSYC1304	Life Span Developmental Psychology	3
MNTC Goal Area 1 ENGL1302 or ENGL 1303		3

Estimated cost of books, supplies and materials: $2,250

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

Paramedicine

Community Paramedic Certificate (13 Credits)

Program Description

The program will provide paramedics with education and training to expand their emergency medical services to more broadly serve communities in the areas of primary care, public health, disease management, prevention and wellness, mental health and oral health. The Community Paramedic program incorporates theoretical knowledge with extensive clinical application and experience. This training provides students with the opportunity to enter the field with the skills and knowledge to guide patients in their overall health needs.

Accreditation:
The Community Paramedic is approved by the State of Minnesota Emergency Medical Service Board (EMSRB), 2829 University Ave SE, Suite 310, Minneapolis, MN 55414, (651) 201-2800, Fax: (651) 201-2812, https://mn.gov/boards/emsrb . Graduates will be eligible for certification by EMSRB and the national certification exam (CP-C).

Degree Specific Program Requirements: Current certified Paramedics will be eligible to enroll in the Community Paramedic Program; two years of full time experience as a Paramedic will be required upon completion of this program. 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 certificate

Career Opportunities

Career opportunities for Community Paramedics include: private ambulance services, hospitals, industry, and city health agencies. Some of the roles include Community Paramedic, Care Coordinator, and Paramedic..

Technical Studies Prerequisites

Suggested Technical Studies Semester I

IHCP 2010	Community Based Needs & Strategies for Care	3
IHCP 2015	Role of Community Paramedic in Continuum of Care	3
IHCP 2020	Community Assessment, Resources, & Interation	3
IHCP 2025	Community Paramedic Internship	4

Estimated cost of books, supplies and materials: $700.00

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

Plumbing

Plumbing, Shop Management AAS Degree (60 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. 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

General Education

ENGL1302	Analytical Writing	4
CMST1320	Introduction to Communication Studies	3
MNTC Goal Area 5 Social Sciences		3
MNTC Goal Area 4 Mathematics and Logic		3
MNTC Goal Area 6 Humanities		3
MNTransfer General Education Electives		4

Estimated cost of books, supplies and materials: $1,710

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 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 Studies

GBEH1100	Human Relations	3
General Studies Electives		3

Estimated cost of books, supplies and materials: $1,240

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

Practical Nursing

Practical Nursing Diploma (40 Credits)

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 State Board of Nursing, 2829 University Ave SE, 2nd Floor, Minneapolis, MN 55414-3253, (612) 617-2270 or (888) 234-2690, http://mn.gov/boards/nursing accredited by the Higher Learning Commission, and is accredited by the Accreditation Commission for Education in Nursing (ACEN), 3343 Peachtree Road NE, Suite 850, Atlanta, GA 30326, (404) 975-5000, www.acenursing.org.

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, medical offices, 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
BLGY1320	Human Biology OR (BLGY 2310 and 2320 if continuing to A.D.N.)	4
MNTC Goal Area 1 Written	(ENGL 1302 if continuing to A.D.N.)	3
PSYC1304	Life Span Developmental Psychology	3

*THE FOLLOWING CERTIFICATIONS/REGISTRATIONS MUST BE CURRENT AND ON FILE PRIOR TO ADMISSION INTO THE PROGRAM: CPR/AED Adult, Child & Infant (Healthcare Provider Level) -- HLTH1402 NA or verification of completion of a 75 hour NA course.

* Applicant may only apply after successful completion of acceptance requirements. These courses must be completed prior to starting the program. In addition, students must have completed the Accuplacer with scores above the cutoff points for Practical Nursing or successful completion of equivalent course work.

* A minimum grade of "C" or better and a cumulative GPA of 2.5 or above in prerequisite coursework is required to be considered for admission and must be maintained.

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	Family Health Nursing	3
PRSG2460	Mental Health Nursing	2

Estimated cost of books, supplies and materials: $1,740

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

Sales, Management, Marketing

Sales, Management, Marketing AAS Degree (60 Credits)

Program Description

This degree 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/Calculators	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
SAMG1221	Branding and Promotion	3
SAMG1241	Internship I	2
SAMG1251	Financial Strategies for Business	3

Suggested Technical Studies Semester III

SAMG2245	Marketing Strategies	3
SAMG2255	Professional Sales Strategies	3
SAMG2266	Internship II	2

Suggested Technical Studies Semester IV

SAMG2270	Managing Human Resources	3
SAMG2280	Sales Force Management	3
SAMG2285	Entrepreneurship	3

General Education

MNTC Goal Area 1 Communications Oral	3
MNTC Goal Area 1 Communications Written	3
MNTC Goal Area 2 or 6 Critical Thinking/Humanities	3
MNTC Goal Area 5 Social/Behavioral Sciences	3
MNTransfer General Education Electives	3

Estimated cost of books, supplies and materials: $2,436

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

Sales, Management, Marketing

Sales, Management, Marketing Diploma (51 Credits)

Program Description

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

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/Calculators	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
SAMG1221	Branding and Promotion	3
SAMG1241	Internship I	2
SAMG1251	Financial Strategies for Business	3

Suggested Technical Studies Semester III

SAMG2245	Marketing Strategies	3
SAMG2255	Professional Sales Strategies	3
SAMG2266	Internship II	2

Suggested Technical Studies Semester IV

SAMG2270	Managing Human Resources	3
SAMG2280	Sales Force Management	3
SAMG2285	Entrepreneurship	3

General Studies

ENGL1100	Writing for the Workplace	3
GBEH1100	Human Relations	3

Estimated cost of books, supplies and materials: $2,038

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

Sales, Management, Marketing

Sales, Marketing, Management Associate Diploma (31 Credits)

Program Description

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

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/Calculators	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 Studies

GBEH1100	Human Relations	3
ENGL1100	Writing for the Workplace	3

Estimated cost of books, supplies and materials: $1,352

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

Sonography

Diagnostic Medical Sonography-Generalist
AAS Degree (64 Credits)

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 nationally accredited by the Commission on Accreditation of Allied Health Educational Programs (CAAHEP), 1361 Park Street, Clearwater, FL 33756, (727) 210-2350, Fax: (727) 210-2350, http://www.caahep.org and by Joint Review Committee in Diagnostic Medical Sonography, 6021 University Blvd., Suite 500, Ellicott City, MO 21043, (443) 973-3257, Fax: (866) 738-3444, www.jrcdms.org . 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.

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.

Technical Studies Prerequisites

HLTH1440	Medical Terminology	1
BLGY2310	Human Anatomy/Physiology I	4
BLGY2320	Human Anatomy/Physiology II	4
PHYS1300	General Physics	4
MATH1300	College Algebra	3
ENGL1302	Analytical Writing	4
CMST2300	Introduction to Public Speaking	3

* Students may take any MNTC Goal 1 Written course for 4 credits and any Goal 1 Oral course for 3 credits. The communications courses shown above are recommended.
* Applicants may only apply to the Sonography program after successful completion of the acceptance requirements.
* Current Healthcare Provider certificate, CPR/AED required before beginning the Sonography program. Students are required to maintain this certificate throughout the program.

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

DMSG1409	Professional Development and Growth in Sonography	1
DMSG1410	Ultrasound Cross-Sectional Anatomy II	3
DMSG1411	Diagnostic Medical Sonography II	3
DMSG1412	Clinical Ultrasound Lab II	5

Suggested Technical Studies Semester III

DMSG2407	Sonography Board Reviews	1
DMSG2412	Clinical Ultrasound Internship I	11

Suggested Technical Studies Semester IV

DMSG2413	Clinical Ultrasound Internship II	4

Estimated cost of books, supplies and materials: $4,483

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

Surgical Technology

Surgical Technology AAS Degree (60 Credits)

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, 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. 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 nationally accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), Accreditation Review Council on Education in Surgical Technology and Surgical Assisting (ARC-STSA), 6 West Dry Creek Circle, Suite 110, Littleton, CO 80120, (303) 694-9262, Fax: (303) 741-3655, www.arcstsa.org and by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), 1361 Park Street, Clearwater, FL 33756, (727) 210-2350, Fax: (727) 210-2350, http://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	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
MN Transfer Goal 1 Written		3

* THE FOLLOWING CERTIFICATION MUST BE CURRENT AND ON FILE PRIOR TO ADMISSION INTO THE PROGRAM: CPR/ AED Adult, Child and Infant (Healthcare Provider Level)
* 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 *May term

SURG1443	Surgical Procedures II	1
SURG1463	O. R. Clinical Lab II	3

Estimated cost of books, supplies and materials: $3,065

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

Surgical Technology

Surgical Technology Diploma (49 Credits)

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, 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. 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 nationally accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), Accreditation Review Council on Education in Surgical Technology and Surgical Assisting (ARC-STSA), 6 West Dry Creek Circle, Suite 110, Littleton, CO 80120, (303) 694-9262, Fax: (303) 741-3655, www.arcstsa.org and by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), 1361 Park Street, Clearwater, FL 33756, (727) 210-2350, Fax: (727) 210-2350, http://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
BLGY1320	Human Biology	4
CMST2310	Interpersonal Communication	3
DVRS1304	Diversity and Social Justice	3
PHIL1320	Ethics	3

* THE FOLLOWING CERTIFICATION MUST BE CURRENT AND ON FILE PRIOR TO ADMISSION INTO THE PROGRAM: CPR/ AED Adult, Child and Infant (American Heart Association Health Care Provider Level)

* All acceptance requirement courses must be completed with a grade of "C" or better and cumulative GPA of 2.5 prior to admission into 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 *May Term

SURG1443	Surgical Procedures II	1
SURG1463	O. R. Clinical Lab II	3

Estimated cost of books, supplies and materials: $3,065

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

Water Environment Technologies

Water Environment Technologies AAS Degree (62 Credits)

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 accredited by the Minnesota Department of Health http://www.health.state.mn.us/divs/eh/water/wateroperator/ and the Minnesota Pollution Control Agency https://www.pca.state.mn.us/water/water-quality-rules , 520 Lafayette Road, St. Paul, MN 55155-4194, (651) 296-6300. 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 in the Water Industry	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 *May term

WETT1546	Collection and Disinfection Systems Operation	3
WETT1550	Strategic Planning for Success	3

Technical Electives

	Technical Electives	3

General Education

General Education (15 credits total required)

MNTC Goal Area 1 Communications-Written	3
MNTC Goal Area 1 Communications-Oral	3
MNTC Goal Areas 2,5,6,7,8,9,10	3-6
MNTC Goal Areas 3,4,10	3-6

Estimated cost of books, supplies and materials: $1,590

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

Water Environment Technologies

Water Environment Technologies Diploma (50 Credits)

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 accredited by the Minnesota Department of Health http://www.health.state.mn.us/divs/eh/water/wateroperator/ and the Minnesota Pollution Control Agency https://www.pca.state.mn.us/water/water-quality-rules , 520 Lafayette Road, St. Paul, MN 55155-4194, (651) 296-6300. 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 in the Water Industry	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 *May 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 Goal Areas 2 through 10		3

Estimated cost of books, supplies and materials: $1,130

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

Welding/Fabrication

Welding/Fabrication Diploma (37 Credits)

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 studies courses are technically focused and not designed for transfer.

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 I	5
WELD1515	Thermal Welding and Cutting Process	3
WELD1520	Metallurgy and Safety in Fabrication	3
WELD1529	Print Reading and Math Applications	2

Suggested Technical Studies Semester II

WELD1533	Fabrication Print Reading	1
WELD1540	Arc Welding Processes II	6
WELD1545	Gas Tungsten Arc Welding	4
WELD1558	Robotics, Inspection, and Testing	3

General Studies

ENGL1100	Writing for the Workplace	3
GBEH1100	Human Relations	3

Estimated cost of books, supplies and materials: $1,795

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

Minnesota Transfer Curriculum Courses

1 - Written/Oral Communication (Goal Area 1)

CMST 1320	Introduction to Communication Studies	3 Credits
CMST 2300	Introduction to Public Speaking	3 Credits
CMST 2302	Small Group Communication	3 Credits
CMST 2310	Interpersonal Communication	3 Credits
CMST 2315	Persuasion and the Media	3 Credits
ENGL 1302	Analytical Writing	4 Credits
ENGL 1303	Technical Writing	3 Credits
ENGL 2304	Analytical and Research Writing	2 Credits
ENGL 2310	Introduction to Creative Writing	3 Credits

2 - Critical Thinking (Goal Area 2)

CRTK 1300	Introduction to Critical Thinking	3 Credits
PHIL 1340	Introduction to Logic	3 Credits
WMST 1300	Introduction to Women's Studies	3 Credits

3 - Natural Science (Goal Area 3)

ASTR 1300	Astronomy	3 Credits
ASTR 1301	Astronomy Lab	1 Credit
BLGY 1320	Human Biology	4 Credits
BLGY 1325	Nutrition	3 Credits
BLGY 1351	General Biology	4 Credits
BLGY 2310	Human Anatomy/Physiology I	4 Credits
BLGY 2320	Human Anatomy/Physiology II	4 Credits
BLGY 2330	Microbiology	4 Credits
CHEM1305	Chemistry for the Non-Scientist	4 Credits
CHEM 1340	Introduction to General Chemistry	4 Credits
CHEM1342	Organic and Biological Chemistry	5 Credits
EASC 1310	Meteorology	4 Credits
ENVR 1305	Environmental Science	4 Credits
ENVR 1310	Environmental Issues	3 Credits
ENVR 1315	Natural Resource Conservation	3 Credits
GEOL1300	Geology	4 Credits
PHYS 1300	General Physics	4 Credits

4 - Mathematics (Goal Area 4)

MATH 1300	College Algebra	3 Credits
MATH 1321	College Trigonometry	3 Credits
MATH 1331	Applications of Mathematical Reasoning	3 Credits
MATH 1350	Introduction to Statistics	3 Credits
MATH 1380	Precalculus	5 Credits
MATH 2310	Calculus I	4 Credits
MATH 2320	Calculus II	4 Credits
PHIL 1340	Introduction to Logic	3 Credits

5 - Social, Behavior Sciences, History (Goal Area 5)

ANTH 1300	Introduction to Cultural Anthropology	3 Credits
ANTH 2300	Anthropology of Science Fiction	3 Credits
DVRS 1304	Diversity and Social Justice	3 Credits
ECON 2320	Introduction to Macroeconomics	3 Credits
ECON 2330	Introduction to Microeconomics	3 Credits
GEOG 1300	World Regional Geography	3 Credits
GERO 1300	Gerontology	3 Credits
HIST 1310	American History Until 1877	3 Credits
HIST 1311	The United States Since 1877	3 Credits
HIST 1320	World History to 1500	3 Credits
HIST 1330	World War II	3 Credits
HIST 1340	Contemporary World History	3 Credits
POLS 1304	Introduction to American Politics	3 Credits
POLS 1320	Public Issues	3 Credits
PSYC 1300	Introduction to Psychology	3 Credits
PSYC 1304	Life Span Developmental Psychology	3 Credits
PSYC 1310	Psychology of Women	3 Credits
PSYC 1320	Psychology of Trauma	3 Credits
PSYC 1350	Positive Psychology	3 Credits
PSYC 2310	Abnormal Psychology	3 Credits
SOCI 1310	Introduction to Sociology	3 Credits
SOCI 1320	Social Problems	3 Credits
SOCI 1350	Sociology of Marriage and Family	3 Credits
SOCI 1360	The Politics of Food	3 Credits
SOCI 2305	Environmental Sociology	3 Credits
SSCI 1300	Introduction to the Social Sciences	3 Credits

6 - Humanities-Arts, Lit and Philosophy (Goal Area 6)

ART 1300	Art Appreciation	3 Credits
ART 1310	2D Design	4 Credits
ART 1321	Drawing I	4 Credits
ART 1330	Painting I	4 Credits
ART 1340	Digital Photography	4 Credits
ENGL 1321	Introduction to Modern Fiction	3 Credits
ENGL 1322	Introduction to Literature	3 Credits
ENGL 1330	American Literature About War	3 Credits
ENGL 1340	Introduction to Multicultural Literature	3 Credits
ENGL 1341	Introduction to Women's Literature	3 Credits
ENGL 1342	Middle Eastern Literature	3 Credits
ENGL 1345	Gender in Literature	3 Credits
ENGL 2310	Introduction to Creative Writing	3 Credits
HUMN 1300	Introduction to the Humanities	3 Credits
HUMN 1320	Holocaust and Genocide Studies	3 Credits
HUMN 1340	Middle Eastern Cultures	3 Credits
HUMN 2350	Film and American Culture	3 Credits
HUMN 2352	Holocaust Field Studies	1 Credit

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

6 - Humanities-Arts, Lit and Philosophy (Continued)

MUSC 1320	Music in World Culture	3 Credits
MUSC 1340	History of Rock and Roll	3 Credits
MUSC 1350	Experiencing Live Music	3 Credits
MUSC 1360	Class Voice	3 Credits
PHIL 1310	Introduction to Philosophy	3 Credits
PHIL 1320	Ethics	3 Credits
PHIL 1360	Comparative World Religions	3 Credits
SPAN 2320	Intermediate Spanish II	4 Credits
THTR 1310	Theatre Appreciation	3 Credits
THTR 1360	Acting for Everyone	3 Credits

7 - Human Diversity (Goal Area 7)

DVRS 1304	Diversity and Social Justice	3 Credits
DVRS 2301	Race and Ethnic Relations	3 Credits
ENGL 1340	Introduction to Multicultural Literature	3 Credits
ENGL 1341	Introduction to Women's Literature	3 Credits
ENGL 1345	Gender in Literature	3 Credits
GERO 1300	Introduction to Gerontology	3 Credits
HASL 1300	American Sign Language	3 Credits
PSYC 1310	Psychology of Women	3 Credits
WMST 1300	Introduction to Women's Studies	3 Credits

8 - Global Perspective (Goal Area 8)

ANTH 1300	Introduction to Cultural Anthropology	3 Credits
ANTH 2300	Anthropology of Science Fiction	3 Credits
ENGL 1321	Introduction to Modern Fiction	3 Credits
ENGL 1342	Middle Eastern Literature	3 Credits
GEOG 1300	World Regional Geography	3 Credits
HASL 1408	American Sign Language III	3 Credits
HASL 1412	American Sign Language IV	3 Credits
HIST 1320	World History to 1500	3 Credits
HIST 1330	World War II	3 Credits
HIST 1340	Contemporary World History	3 Credits
HUMN 1340	Middle Eastern Cultures	3 Credits
MUSC 1320	Music in World Culture	3 Credits
PHIL 1360	Comparative World Religions	3 Credits
SPAN 1310	Beginning Spanish I	4 Credits
SPAN 1315	Spanish for the Professions	3 Credits
SPAN 1320	Beginning Spanish II	4 Credits
SPAN 2310	Intermediate Spanish I	4 Credits
SPAN 2320	Intermediate Spanish II	4 Credits

9 - Ethical and Civic Responsibility (Goal Area 9)

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

10 - People and the Environment (Goal Area 10)

BLGY 1351	General Biology	4 Credits
CHEM1305	Chemistry for the Non-Scientist	4 Credits
ECON 1340	Environmental Economics	3 Credits
ENVR 1305	Environmental Science	4 Credits
ENVR 1310	Environmental Issues	3 Credits
ENVR 1315	Natural Resource Conservation	3 Credits
SOCI 2305	Environmental Sociology	3 Credits

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General Studies & Developmental Courses

General Studies Courses

BUSM 1207	Basic Keyboarding	1 Credit
BUSM 1267	Introduction to Business	2 Credits
BUSM 2275	Legal Environment of Business	3 Credits
CACE 1420	Foundations of Development	3 Credits
CPTR 1210	Introduction to Computers	3 Credits
EMSC 1420	AHA Heartsaver CPR and First Aid	1 Credit
ENGL 1100	Writing for the Workplace	3 Credits
FNCR 1200	Personal Money Management	3 Credits
GBEH 1100	Human Relations	3 Credits
GBUS 1320	Professional Development I	1 Credit
GBUS 1324	Professional Development II	1 Credit
GBUS 1328	Professional Development III	1 Credit
GTEC 1304	The Automobile in America	3 Credits
INTS 1155	Student Success Seminar	2 Credits
READ 1112	Study Strategies	3 Credits
SAMG 1211	Professional Sales Fundamentals	3 Credits
SAMG 2285	Entrepreneurship	3 Credits
TECH 1500	Applied Algebra	3 Credits
TECH 1530	Computer Applications	2 Credits
TECH 1550	Basic CADD	2 Credits
WELD 1502	Welding for Work and Leisure	2 Credits

Developmental Courses

EAP 0300	EAP College Writing I	4 Credits
EAP 0301	EAP College Writing II	4 Credits
EAP 0310	EAP Listening I	4 Credits
EAP 0320	EAP Listening II	4 Credits
EAP 0330	EAP College Reading I	4 Credits
EAP 0331	EAP College Reading II	4 Credits
ENGL 0300	Foundations for College Writing I	3 Credits
ENGL 0304	Foundations for College Writing II	3 Credits
ENGL 0355	Foundations for College Success	4 Credits
MATH 0405	Foundations for College Mathematics	2 Credits
MATH 0475	Principles of Intermediate Algebra	4 Credits
MATH 0485	Principles of Int. Algebra - Accelerated	3 Credits
MATH 0495	Foundations of Statistics	3 Credits
READ 0300	Reading and Vocabulary	3 Credits
READ 0304	Reading Strategies	3 Credits

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Course Descriptions
(alphabetical by course number)

ABCT 1502 - Collision Welding and Cutting
With the construction of today's vehicles, welding is an important part of auto body repair. This course covers basic welding, safety procedures, application for welding on steel and galvanized metals, introduction to metal arc welding, oxy-acetylene welding and cutting. Major emphasis is placed on MIG (Metal Inert Gas), and plasma cutting according to I-Car standards.
Student Learning Outcomes:
* Identify and perform safety procedures in welding
* Perform oxy-acetylene welding and cutting
* Perform MIG and TIG welding
* Perform plasma cutting
(3 C: 1 lect/pres, 2 lab, 0 other)

ABCT 1506 - Intro to Collision Repair
This course enables the student to learn the use of hand and power tools used in the daily operation of an auto body facility. Lab tasks will be performed in vehicles by removal of interior and exterior parts. Other tasks include reconditioning vehicles.
Student Learning Outcomes:
* Apply personal and shop safety practices according to I-CAR and NATEF standards.
* Perform removal of interior and exterior parts of a vehicle.
* Perform reconditioning procedures on a vehicle according to NATEF and I-CAR standards.
(4 C: 1 lect/pres, 3 lab, 0 other)

ABCT 1510 - Collision Repair Lab I
The student will apply basic procedures on production type vehicles, according to NATEF and I-CAR standards. This is a lab course in which students will apply the procedures learned in ABCT 1502 - Collision, Welding and Cutting; ABCT 1506 - Intro to Collision Repair, and ABCT 1514 - Basic Collision Repair.
Student Learning Outcomes:
All listed outcomes must be performed to acceptable levels of I-CAR and NATEF Standards.
* Perform metal roughing techniques
* Apply selected metal finishing processes based on industry repair standards.
* Perform plastic filling/resurfacing processes to restore panels/components.
* Perform corrosion repair
* Apply primer coat finish
* Apply shop safety and operations as outlined in the program requirements
Corequisite(s): ABCT1514
Prerequisite(s): ABCT1502, ABCT1506
(3 C: 0 lect/pres, 3 lab, 0 other)

ABCT 1514 - Basic Collision Repair
In order to develop the basic skills of auto body repair, students will learn the fundamentals of metal straightening, rust repair, and attachment of trim and hardware. Students will learn to repair damaged vehicles to the priming stage according to NATEF and I-CAR standards.
Student Learning Outcomes:
All listed outcomes will be completed according to I-CAR and NATEF Standards.
* Analyze types of auto body damage
* Identify appropriate repair procedures
* Straighten damaged sheet metal
* Plastic filler to restore surfaces
* Perform corrosion protection to metal
* Apply shop safety and operations as outlined in the program requirements
(4 C: 2 lect/pres, 2 lab, 0 other)

ABCT 1518 - Refinishing Lab I
This is a lab course in which students will apply procedures learned in ABCT 1522. Students in this course will be introduced to full vehicle repair. Damaged components will be analyzed, repaired, and restored to original visual appearance.
Student Learning Outcomes:
All listed outcomes must be performed to acceptable levels of I-CAR and NATEF Standards.
* Perform metal surface preparation on customer provided vehicles.
* Distinguish varied refinish processes based on materials/metals/plastics required.
* Restore vehicle components to prepare for refinishing.
* Identify and apply manufacturer required corrosion protection materials.
* Final prep all surfaces for paint application.
* Apply required base and finish coats to restore vehicle to original condition.
* Apply shop safety and operations as outlined in the program requirements
Corequisite(s): ABCT1522
(3 C: 0 lect/pres, 3 lab, 0 other)

ABCT 1522 - Refinishing
This course is a lecture/lab that will enable the student to develop the basic skills in refinishing. It will be an introduction to the application of paint products, the use of equipment, computer paint mixing, safety and environment.
Student Learning Outcomes:
All listed outcomes must be performed to acceptable levels of I-CAR and NATEF Standards.
* Identify appropriate refinishing processes
* Select tools and equipment to safely perform operations
* Apply refinishing safety practices
* Perform surface preparation
* Determine appropriate materials, select primer
* Perform spray gun techniques using selected materials/processes
* Apply paint according to NATEF/I-CAR standards
Prerequisite(s): ABCT1510
(4 C: 2 lect/pres, 2 lab, 0 other)

ABCT 1526 - Refinishing Lab II
The student will continue to develop skills in overall refinishing, spot repair, color match and blend, and reconditioning. Students will satisfactorily complete projects using knowledge and skills learned in previous refinishing courses, according to NATEF and I-CAR standards.
Student Learning Outcomes:
All listed outcomes must be performed to acceptable levels of I-CAR and NATEF Standards.
* Distinguish varied color matching and blending processes
* Apply spot refinishing techniques according to NATEF/I-CAR standards
* Complete panel refinishing procedures to complete reconditioning of vehicle
* Adopt shop safety and operations as outlined in the program requirements
Corequisite(s): ABCT1530
Prerequisite(s): ABCT1518
(3 C: 0 lect/pres, 3 lab, 0 other)

ABCT 1530 - Color Match and Blend
This course is a lecture/lab enabling a student to develop professional skills in spot repair, blending, tinting and panel refinishing. Practical application will be done on production projects according to NATEF/ I-CAR standards.
Student Learning Outcomes:
All listed outcomes must be performed to acceptable levels of I-CAR and NATEF Standards.

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* Perform color matching procedures
* Perform color tinting procedures
* Plan and implement spot repair processes
* Apply varied top coat materials to restore surface
* Complete interior and exterior vehicle preparation
* Adopt shop safety and operation as outlined in the program requirements
Prerequisite(s): ABCT1522
(3 C: 1 lect/pres, 2 lab, 0 other)

ABCT 1538 - Auto Restoration
This course will emphasize the repair of older vehicles not normally associated with collision repair. Topics will include: panel replacement, rust repair, body filler application, corrosion protection, and primer application.
Student Learning Outcomes:
* Examine factors determining repair vs. replacement
* Identify metal straightening methods
* Determine the extent of direct and indirect damage and develop a repair plan
* Identify welding and cutting procedures
* Perform welding and cutting procedures
* Identify and use filler products
* Identify and use primers
* Identify and use abrasives
* Discuss restoration levels
* Comply with personal and environmentally safe practices
* Perform metal straightening and panel replacement procedures
(2 C: 1 lect/pres, 1 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 2502 - Estimating
An estimate is a written guide to the repairs that will be performed on a vehicle. Instruction will include becoming familiar with the manuals, forms, and procedures used in writing estimates. Insurance procedures and customer relations will be examined.
Student Learning Outcomes:
* Interpret parts, diagrams and vehicle identification codes
* Calculate parts and labor prices, and materials cost
* Use collision estimating manuals to write estimates
* Interpret hand written and computer generated estimates
* Analyze damaged vehicles
* Discuss customer, insurance and shop owner issues
* Develop safe estimating practices
(2 C: 1 lect/pres, 1 lab, 0 other)

ABCT 2507 - Electrical Systems
Electrical components are often damaged as a result of a collision. In most cases the collision technician is responsible for completing the required repairs. The focus of this course will be diagnosing and repairing electrical malfunctions including SRS, power accessories, and lighting systems.
Student Learning Outcomes:
* Aim lamps using manual and computer aided equipment to meet MN DOT requirements
* Inspect and service interior and exterior vehicle wiring systems
* Use electrical test equipment to test voltage, resistance and amperage in an electrical circuit
* Demonstrate manufacturer's recommendations for splicing, soldering and connector replacement
* Test, clean, inspect and recharge batteries
* Comply with SRS safety and service requirements
* Demonstrate use of wire diagrams
(2 C: 1 lect/pres, 1 lab, 0 other)

ABCT 2510 - Damage Analysis and Measuring Systems
Vehicles are built to very close tolerances and standards. During the repair process these standards must be duplicated. Students will identify frame designs, use measuring equipment, and analyze damage to create repair plans that will be used to perform repairs.
Student Learning Outcomes:
All listed outcomes must be performed to acceptable levels of I-CAR and NATEF Standards.
* Visually and mechanically analyze frame and unibody damage to determine their repair ability.
* Prepare different types of vehicles for measuring and pulling.
* Make upperbody and underhood measurement.
* Use manual frame gauges and computer aided frame analysis equipment.
* Create a repair plan based on a complete analysis of damage and manufactures recommendations.
* Anchor and repair unibody and conventional frames.
* Comply with all safety and operations as outlined in the program requirements.
Corequisite(s): ABCT2518
Prerequisite(s): ABCT1506, ABCT1514, ABCT1510
(3 C: 1 lect/pres, 2 lab, 0 other)

ABCT 2514 - Plastic Repair
Plastics have become an integral part of automobile design and construction. Identification and the repair of these products has become a must for the collision technician. Topics include: plastic welding, SMC repair, adhesive repair, and plastic refinishing.
Student Learning Outcomes:
* Identify the types of plastic
* Identify and perform hot air and airless welding procedures
* Identify and perform adhesive repair procedures
* Identify and perform personal and environmentally safe work habits
* Determine feasibility of repair vs. replacement of plastic parts
* Identify and perform plastic parts refinishing procedures
* Repair SMC parts
(2 C: 1 lect/pres, 1 lab, 0 other)

ABCT 2518 - Collision Repair Lab II
This course will run concurrent with Damage Analysis and Measuring Systems. Students will use repair plans to perform repairs on collision damaged unibody and conventional frame vehicles.
Student Learning Outcomes:
All listed outcomes must be performed to acceptable levels of I-CAR and NATEF Standards.
* Prepare estimate/s of repairs.
* Organize repair procedure/process
* Complete structural, non-structural and refinishing procedures according to ASE/ I-CAR standards
* Select and utilize the appropriate tools, supplies and equipment.
* Manage the repair process according to flat-rate standards.
* Perform shop safety and operations as outlined in the program requirements.
(1-3 C: 0 lect/pres, 1-3 lab,)

ABCT 2522 - Structural Damage Repair
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.
Student Learning Outcomes:
All listed outcomes must be performed to acceptable levels of I-CAR and NATEF Standards.

* Identify and use I-CAR welding standards to replace weld-on panels.
* Locate and utilize manufactures or I-CAR repair recommendations.
* Access damage on structural and non structural panels and determine repair or replacement decisions to complete needed repairs.
* Perform shop safety and operations as outlined in the program requirements.
* Install stationary glass using manufacturers or I-CAR installation procedures.
* Replace seam sealers, foams, and corrosion protection materials.
Prerequisite(s): ABCT2510
(4 C: 1 lect/pres, 3 lab, 0 other)

ABCT 2527 - Collision Repair Lab III
This lab will run concurrent with ABCT 2522 Structural Repair. It will allow students the necessary time to perform structural and non-structural repairs.
Student Learning Outcomes:
All listed outcomes must be performed to acceptable levels of I-CAR and NATEF Standards.
* Prepare estimate/s of repairs.
* Organize repair procedure/process.
* Complete structural, non-structural and refinish process according to ASE/ICAR standards.
* Select and utilize the appropriate tools, supplies and equipment.
* Manage repair process according to flat-rate standards.
* Perform shop safety and operations as outlined in the program requirements
Prerequisite(s): ABCT2518
(4 C: 0 lect/pres, 4 lab, 0 other)

ABCT 2531 - Mechanical Systems
Suspension 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 these systems. Environmental concerns and other topics pertaining to mechanical repairs will be addressed.
Student Learning Outcomes:
* Create a system of inspecting, planning and performing suspension repairs and alignments on cars and light duty trucks
* Determine cooling systems components, manufacturer's service procedures and perform needed repairs
* Complete brake component inspection and repairs using service manual recommended procedures
* Identify, inspect, and make repairs to emissions systems
* Comply with all manufacturers procedures when servicing, inspecting and working around Supplemental Restraint Systems
* Comply with all safety and shop operations as outlined in the program requirements
(3 C: 1 lect/pres, 2 lab, 0 other)

ABCT 2534 - Collision Repair Lab IV
In the collision industry attention to detail, and use of time are highly prized attributes. With the aid of the instructor, students will choose projects that will enable them to hone these skills in preparation for entering the work force.
Student Learning Outcomes:
All listed outcomes must be performed to acceptable levels of I-CAR and NATEF Standards.
* 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
Prerequisite(s): ABCT2518
(4 C: 0 lect/pres, 4 lab, 0 other)

ABCT 2542 - Supervised Internship
Internships will help aid the student make an easier transition from school to work. Students will be placed in collision repair facilities to work side by side with journeymen technicians. Specific duties to be performed on the job will be arranged by the repair facility, instructor, and the student.
Student Learning Outcomes:
All listed outcomes must be performed to acceptable levels of I-CAR and NATEF Standards.
* 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
Prerequisite(s): ABCT2518
(1-6 C: 0 lect/pres, 0 lab, 1-6 other)

ABCT 2544 - New Technologies
This course will cover new technologies and trends in the Collision Repair industry. Students will gain knowledge about upcoming features and technologies that will affect them in the workforce. Students will accomplish Program-end Industry Evaluations.
Student Learning Outcomes:
* Identify and discuss new technologies in collision repair.
* Identify and discuss industry trends.
* Contrast new vehicle designs, materials, safety features, and alternate fuel systems
* Complete comprehensive industry standards evaluations.
Prerequisite(s): ABCT2510
(1 C: 1 lect/pres, 0 lab, 0 other)

ACCT 1215 - Accounting Principles I
This course is an introduction to the fundamental accounting concepts and principles used to analyze and record business transactions. Both the preparer and user perspective are emphasized. Students will explore accounting as an information system completing and analyzing various accounting projects and applying business ethics to accounting situations.
Student Learning Outcomes:
* Understand the role of accounting in business, including the types of business organization, business stakeholders, ethics in business and the overall profession of accounting
* Explain GAAP and its implications on business transactions
* Prepare and analyze the three basic financial statements understanding the interrelations among them
* Complete an accounting cycle project demonstrating an understanding of accrual accounting and the adjustment process
* Define inventory systems and apply perpetual inventory to accounting systems
* Compare the direct write-off and allowance methods to account for uncollectible accounts and their effect on the financial statements
* Describe plant assets, natural resources, and intangible assets and issues accounting for them. Categorize alternative depreciation methods
* Differentiate between current and long-term liabilities and explain how to account for contingent and estimated liabilities
* Understand the concept of the time value of money
* Understand the corporate form of organization, including the sources of equity, characteristics and classes of stock, effect of dividends
(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, stockholders equity, earnings, dividends, fair value accounting and retained earnings statement. Also included is the related statistical financial analysis.
Student Learning Outcomes
* Analyze internal controls for strengths and weaknesses.
* Prepare bank reconciliation statements and record the adjustments to 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.
* Summarize the types of cash flow activities reported in the statement of cash flows and prepare statement of cash flows.
* Prepare a report on a publicly traded corporation in the areas of basic analytical

procedures along with solvency and profitability analysis.
* Complete an accounting cycle for a business using a comprehensive accounting project.
* 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. Students will learn and demonstrate how to plan and control materials, labor, and overhead. Job Order Costing and Process Costing methods are covered. The course covers the daily, monthly, and annual financial and managerial accounting for a manufacturing entity. Students will practically apply knowledge to real world scenarios and learn to analyze costs related to the manufacturing process.
Student Learning Outcomes:
* Explain how a manufacturing company is financially and structurally organized
* Differentiate between Job Order and Process Costing methods
* Identify how accounting records and procedures are established to record, transfer, and summarize manufacturing costs
* Prepare a Statement of Cost of Goods Manufactured, Job Cost Sheets, Departmental Overhead Analysis Sheets, and Cost of Production Reports
* Determine where cost figures originated and identify the detailed procedures and records required to account for materials, labor, and overhead
* Establish internal control procedures for purchasing as well as for storing and issuing materials in order to safeguard the company's investment in inventory
* Understand and use the concept of "Departmentalization"
* Calculate and apply overhead using an overhead rate system
* Prepare Job Cost Sheets, Departmental Overhead Analysis Reports, and Cost of Production Reports
Prerequisite(s): ACCT1215
(4 C: 3 lect/pres, 1 lab, 0 other)

ACCT 1219 - Spreadsheets-Microsoft Excel
This course covers the most recent version of Microsoft Excel. Topics include document design and creation, format modification, and advanced formulas and functions.
Student Learning Outcomes:
* Use mathematical functions to perform calculations
* Use statistical functions to calculate average, count, minimum and maximum
* Use financial functions to calculate mortgage payment, present value and future value
* Use logical functions to evaluate performance
* Use formulas containing relative and absolute cell references
* Use lookup function in business environment to calculate discounts, commissions, and costs
* Use conditional formatting to highlight exception to norm
* Learn to manage documents, files and folders to organize spreadsheets
* Create various chart types (Pie, Bar, Column, Scatter, and Line), label elements using spreadsheet data and use attention getters to pin point outliers
* Use tools such as filters, hide column split screen, and freeze pane on large spreadsheet to manage data to produce information
* Consolidate data from multiple spreadsheet/workbooks to generate information
* Create updatable links between Excel and Word documents to produce error free communication with outside world
* Use Excel to forecast future and to do what if analysis
* Use Microsoft online help feature to solve unique real world situation and unexpected problems
* Create a simple Web page and hyperlink to Excel worksheets and other web sites on the World Wide Web
Prerequisite(s): CPTR1210
(2 C: 1 lect/pres, 1 lab, 0 other)

ACCT 1220 - Payroll Accounting
This course covers the various state and federal laws pertaining to the computation and payment of salaries and wages. Topics include preparation of employment records, payroll registers, employee earnings records, time cards, and state and federal reports.
Student Learning Outcomes:
* Have a working knowledge of state and federal payroll laws and regulations
* Complete a detailed payroll report for a simulated business
Corequisite(s): ACCT1215
(2 C: 1 lect/pres, 1 lab, 0 other)

ACCT 1225 - QuickBooks
This course is an introduction to computerized accounting software (QuickBooks) 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.
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, edit and remove accounts in the subsidiary and general ledgers.
* Record and edit payroll related transactions and create accurate paychecks for hourly and salaried employees.
* Create and modify the chart of accounts and inventory items.
* Record inventory receipts and make adjustments.
* Produce financial statements and business reports for management use.
* Export data from QuickBooks to a spreadsheet program for further analysis.
* Utilize QuickBooks software to record business related banking situations, create checks, deposit slips and reconcile all banking transactions.
* Analyze and evaluate computerized accounting records for errors and process to correct them.
* Setup a new company for a service or merchandising business in a computerized environment and complete its accounting cycle.
Prerequisite(s): ACCT1215
(3 C: 2 lect/pres, 1 lab, 0 other)

ACCT 2225 - Computerized Accounting Projects
Students will complete a series of projects in QuickBooks accounting software to apply learned accounting concepts. Each project is designed to increase students capacity to use the software to record, analyze, correct and report business transactions. A capstone project will include a previously completed manual practice set of accounting transactions in the QuickBooks software, demonstrating the advantages of computerized systems. A review for the QuickBooks certification exam is included in the course.
Student Learning Outcomes:
* Setup new retail and service business files in QuickBooks.
* Process monthly transactions and adjusting entries for a business.
* Generate management reports and review for accuracy.
* Setup and process quarterly payroll.
* Complete all quarter and year end payroll tax forms.
* Demonstrate competence in QuickBooks operations.
* Identify and correct errors in an accounting system.
* Prepare for QuickBooks certification.
Prerequisite(s): ACCT1216, ACCT1220, ACCT1225
(2 C: 1 lect/pres, 1 lab, 0 other)

ACCT 2226 - Intermediate Accounting I
Students will explore accounting as a process of measurement and communication of economic data with an emphasis on recording, classifying, measuring and reporting. Procedures for the recognition of revenue and long-term debt are also included.
Student Learning Outcomes:
* Identify and explain the basic steps in the accounting process including analyze transactions, record journal entries, complete year-end adjusting and closing entries
* Describe the specific elements of the balance sheet and prepare a balance sheet with assets and liabilities properly classified
* Describe the specific components of an income statement and explain how income is measured
* Outline the structure of and information reported in the three main categories of

the cash flow statement using both the direct and indirect method
* Explain the procedures for recording revenues and long-term debt
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:
* Select and maintain an inventory valuation method based on trade-offs among income tax effects, bookkeeping costs, and the impact on the financial statements.
* Evaluate and account for short-term and long-term debt obligations.
* Identify the elements of a corporation's stockholder's equity and properly categorize and prepare a statement of stockholders equity.
* Properly account for the acquisition, utilization and disposal of noncurrent operating assets by evaluating various characteristics of transactions.
* Summarize the various characteristics of investments in debt and equity securities and apply the proper accounting treatment when recording the purchase and maintenance of these investments.
* Evaluate the specific terms of a lease in order to properly classify and account for leases as an operating lease or a capital lease from both the lessees perspective and the lessor's perspective.
* Design and interpret a systematic financial ratio analysis recognizing the impact that different accounting methods can have on the financial ratios of otherwise identical companies.
* Interpret financial statement analysis for possible errors or irregularities.
* Illustrate ethical behavior when applying accounting principles and procedures.
Prerequisite(s): ACCT2226
(4 C: 3 lect/pres, 1 lab, 0 other)

ACCT 2229 - Managerial Accounting
Managerial accounting is the process of producing financial and operating information regarding the economic condition of the organization for users internal to the organization. The process is driven by the informational needs of individuals internal to the organization with an emphasis on cost systems, pricing decision, budgeting, planning and control. This course will build student's understanding in planning operations, controlling activities, and decision making using a wide variety of practical applications.
Student Learning Outcomes:
* Explain and illustrate the use of a standard manufacturing cost system for planning and control purposes
* Compute materials quantity and materials price variances and identify them as being favorable or unfavorable
* Learn and apply Activity Based Costing
* Prepare and analyze budgets using variance analysis
* Differentiate between fixed and flexible budgets
* Understand the concepts of Absorption Costing and Direct Costing
* Analyze accounting data using Cost-Volume-Profit (CVP) analysis and CVP graphing
* Calculate and understand the uses of Break Even Point (BEP) and changes in BEP
* Prepare and understand Differential Analysis Reports to meet various financial objectives
* Prepare and analyze capital investment decisions
* Summarize the types of cash flow activities reported in the statement of cash flows
* Prepare the Statement of Cash Flows
* Apply Managerial Accounting concepts by analyzing business scenarios
Prerequisite(s): ACCT1215
(4 C: 3 lect/pres, 1 lab, 0 other)

ACCT 2230 - Income Tax I
This course focuses on the 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. Using RIA Checkpoint, students will research tax issues, and prepare their findings in a professional manner. The lab component of the class will focus on preparation and filing of form 1040 and related schedules.
Student Learning Outcomes:
* Understand and discuss tax related terminology in a professional manner.
* Interpret Internal Revenue codes sections as they apply to the individual income taxes.
* Identify differences between individual income taxes and other types of taxes, and apply this knowledge to preparation of the correct tax returns.
* Prepare form 1040 and accompanying schedules.
* Apply the knowledge gained of the Internal Revenue Code in a practical manner to tax planning and preparation.
* Relate federal individual income taxes to other business and individual financial matters.
* Research detailed tax questions using RIA Online Tax Research, and present detailed analysis of findings.
* Learn and apply ethical tax practices for tax planning and 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 statues, and how to apply those statutes in preparing individual Minnesota income tax returns. The course also offers students the opportunity to work with the Volunteer Income Tax Assistance program.
Student Learning Outcomes:
* Apply knowledge and understanding of the federal and state individual income tax laws by preparing individual income tax returns using a computerized income tax preparation program.
* Interpret and apply tax law to partnerships and utilize that knowledge to prepare partnership tax returns.
* Analyze the tax ramifications of partnership formation and dissolution.
* Interpret and apply corporation tax laws and utilize that knowledge to prepare corporation tax returns.
* Analyze tax scenarios and apply tax planning concepts to ensure the appropriate tax advice is given to clients.
* Identify the differences between federal and state tax laws and how these differences affect tax planning.
* Interpret and apply state tax deductions, credits, additions, and subtractions and prepare state income tax returns.
Prerequisite(s): ACCT2230
(2 C: 2 lect/pres, 0 lab, 0 other)

ACCT 2234 - Auditing
This course is designed to provide students with an understanding of audit objectives and standards. An audit is an examination of financial statements to determine accuracy and to add credibility to the financial statements. 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:
* Illustrate an understanding of the public accounting profession and the ethical and legal responsibilities of a public accountant.
* Analyze and explain the process involved in evaluating and selecting audit clients.
* Understand and apply the generally accepted auditing standards that are required to perform a successful audit.
* Demonstrate an understanding of the various audit reports that may be filed at the completion of the audit, and prepare audit reports based on the audit findings.
* Evaluate, design, and 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
The course serves as a capstone course covering 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 an understanding of financial accounting and 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 and explain the rules of federal taxation
* Prepare to successfully complete the comprehensive examination for accreditation in accountancy
(2 C: 2 lect/pres, 0 lab, 0 other)

ACCT 2236 - Government and Non-Profit Accounting
A study and application of fund accounting principles and procedures that apply to governmental entities and not-for-profit organizations with an emphasis on the application of recording and reporting economic information for these organizations. Students will complete both a nonprofit project and a governmental accounting project along with various classroom group and individual assignments.
Student Learning Outcomes:
* Understand the concepts of nonprofit accounting and resource flow versus profit based financial statements
* Identify restricted, temporarily restricted and unrestricted contributions and net assets
* Describe the purpose of the different governmental accounting funds
* Record governmental transactions for appropriations, encumbrances, expenditures, estimated revenues and actual revenues
* Prepare basic governmental and nonprofit financial statements
Prerequisite(s): ACCT1215
(2 C: 1 lect/pres, 1 lab, 0 other)

ADMS 1203 - Intermediate Microsoft Applications
This course will introduce the intermediate features of Microsoft Office. Students will build on their foundation of basic skills learned in earlier courses to develop strategies for determining best application use. This course will teach students steps to effectively and efficiently use Microsoft software for a variety of business needs. Students will increase their keying speed to 50+ GWAM.
Student Learning Outcomes:
* Prepare letters, tables, memos, and reports in acceptable format using the Microsoft Office Suite.
* Apply appropriate formatting features when creating documents.
* Employ practices for managing and filtering postal mail and email.
* Schedule appointments, request meetings, and filter incoming messages.
* Develop charts to meet audience request.
* Prepare reports containing bulleted and numbered lists, footnotes and endnotes, and columnar formatting using word processing software.
* Employ features to automatically update chart and content from the internet.
* Adopt practice of creating, sorting, and querying tables.
* Demonstrate knowledge and understanding of form and report creation.
* Use macros, switchboards, Pivot Tables, and Pivot Charts to produce easily accessible and retrievable reports.
* Employ graphics and word art features to create professional newsletters.
* Create data sources to set up mail merge.
* Demonstrate mail merging techniques.
* Build keyboard speed and accuracy techniques to 50+ gwam with 95% accuracy.
* Learn proofreading, editing and revising skills.
Prerequisite(s): CPTR1210
(3 C: 2 lect/pres, 1 lab, 0 other)

ADMS 1204 - Computer Applications in Business II
The Advanced Microsoft Office course will be a capstone experience and will synthesize additional features of Microsoft Office. Students will leverage integration features of Microsoft Office applications to solve office needs and requirements. They will apply their advanced skills of Microsoft Office in real-world scenarios and case studies to develop and refine problem-solving and communication competencies vital in today's workplace.
Student Learning Outcomes:
* Devise advanced Excel formulas for creating and maintain significant, easy to digest, data for diverse audiences.
* Construct financial and logical functions in Excel to calculate office expenses, costs, and earnings.
* Integrate internet research into easily digested Excel worksheets, charts, and graphs to aid in audience understanding.
* Combine Excel functions to link to outside sources and calculate presentation data.
* Formulate advanced Access functions to create and maintain significant, easy to digest, data.
* Formulate analysis techniques to differentiate and assign data in Access to create specialized reports to aid in audience understanding.
* Synthesize and link data imported from external sources into Access documents to create and maintain continual updates.
* Integrate data from Word, Excel, Access, and PowerPoint in case studies to prepare students for real world scenarios.
* Refine proofreading, editing, and revising techniques
* Improve communication skills.
* Prioritize workload to accomplice goals and meet deadlines.
* Develop plans that utilize office management skills to produce quality solutions.
Prerequisite(s): ADMS1203
(3 C: 2 lect/pres, 1 lab, 0 other)

ADMS 1206 - Keyboard Speedbuilding
This course is designed for students to improve their keying speed and accuracy to industry standards through personal goal setting and intensive keying work.
Student Learning Outcomes:
* Improve keying speed and accuracy
* Build keying confidence and skills by further developing posture, touch, and rhythm techniques
* Create quality keying in five minutes with 0-2 errors
(1 C: 0 lect/pres, 1 lab, 0 other)

ADMS 1207 - Administrative Office Procedures
This course is designed to develop effective work techniques and methodologies in the office environment. Students will be introduced to the rules, procedures, and processes that will develop their skills as an office professional. Students will also learn basic filing and calculator skills. Competency in basic filing, A.R.M.A. rules, alphabetic, numeric, and geographic systems, speed and accuracy using the touch system, and computerized office systems will be emphasized. This course will introduce students to skills and qualities necessary for administrative professionals.
Student Learning Outcomes:
* Identify the roles and responsibilities of the administrative professional.
* Learn and develop skills and qualities necessary for administrative professionals.
* Develop competency in filing systems, file management, office organization, mail, and related support software systems.
* Utilize technology to support the role of the administrative professional.
* Learn techniques and strategies to provide quality service to internal and external office customers.
* Practice effective techniques used to manage time, workload, scheduling and office communications.
* Discuss the importance of ethical behavior in the workplace.
* Apply A.R.M.A filing rules to set up and manage correspondence folders.
* Learn to file by alphabetic, numeric, and geographic systems for easy retrieval.
* Understand administrative duties for meetings, conferences, and travel arrangements.
Corequisite(s): ADMS1202
(3 C: 2 lect/pres, 1 lab, 0 other)

ADMS 1208 - Administrative Support Applications
This office procedures course uses hands-on projects that represent the complex day to day skills and activities necessary to teach students how to successfully

manage in an office environment. A focus on human relations and communication skills; effective planning, organizing, prioritization and evaluative skills; and system improvement allows students to develop valuable, real life skills demanded in the workplace. A variety of other office administrative tasks involving the use of advanced word processing, database and spreadsheets functions will be performed.
Student Learning Outcomes:
* Create, edit, and disburse professional documents utilizing a variety of software.
* Utilize available technologies to support communication in the workplace.
* Create and coordinate travel, event, and office scheduling.
* Create template documents, databases, and spreadsheets for standard office communications.
* Develop researching and reporting skills by using reference materials and the Internet.
* Exercise time management skills to prioritize and manage tasks in a work environment.
* Provide customer service and support to internal and external customers.
* Establish priorities and intents of projects, decisions and actions to be taken, including identification of potential opportunities and solutions.
* Develop administrative procedures to run the office efficiently including the evaluation of existing systems, processes and procedures and suggestions and ideas for improvement and implementation.
* Generate reports, materials and key correspondence in response to supervisor and customer needs and requests for information.
* Develop and practice effective human relations and communication skills.
* Learn and discuss soft skills necessary to the office environment.
* Apply proof-reading and editing skills to refine office documents.
Prerequisite(s): ADMS1202
(3 C: 2 lect/pres, 1 lab, 0 other)

ADMS 1210 - AAS Practicum
This course is completed in preparation to ADMS 2210 - Internship. The student will learn, understand, and gain experience in a variety of Administrative Support. Students will learn expectations of interns in various settings and will confirm that opportunities in their program match their career goals.
Student Learning Outcomes:
* Gain experiences in differing areas of Administrative Support through short internships, speakers, research, and presentations
* Understand differences between the Administrative Support divisions of general, legal, and medical
* Gain experience and reflect on internship experience
* Grow and develop as a pre-professional persona
* Learn office expectations in various settings
* Prepare for full AAS internships by discussing goals and roles
* Ensure that current academic program aligns with student goals
(2 C: 1 lect/pres, 1 lab, 0 other)

ADMS 1215 - Bookkeeping for Non-Accountants
This course focuses on introducing students to the language of business finance for managers and assistants. Both the how and why of financial practices are blended to provide students with the foundation to manage a business' finances. Students will also be given instruction relating to and have the opportunity to work with online business finance tools.
Student Learning Outcomes:
* Define basic bookkeeping terms.
* Demonstrate bookkeeping processes and basic equations.
* Enter debits and credits.
* Prepare journal entries.
* Create ledgers and vendor/customer accounts.
* Apply computerized bookkeeping functions.
Prerequisite(s): BUSM1260
(2 C: 2 lect/pres, 0 lab, 0 other)

ADMS 2211 - Administrative Support AAS Internship
This course emphasizes interaction between the student and internship site with emphasis on putting what has been learned in the classroom into practice. The internship program will be available to ADMS students who have demonstrated readiness and willingness to learn in an on-the-job situation. Students will learn from hands-on training and business examples to gain general knowledge of day-to-day office procedures. This is a capstone course and should be completed during the student's final year. Students must have a cumulative GPA of 2.5 or greater.
Student Learning Outcomes:
* Willingly accept responsibility for administrative support job functions and personal behavior while at the internship site to help prepare students for future career and professional growth
* Consistently apply policies and procedures in compliance with regulations of the facility
* Promote and demonstrate ethical standards of practice
* Maintain the accuracy and completeness of internship site's records
* Work on quality improvement projects with minimal supervision
* Work with a variety of customers - internal and external - to prepare for customer service at future career
* Work within the team environment while at the internship site to develop comfort in workplace teams and possible confrontations
* Prioritize job functions and activities with minimal supervision
* Contribute to work policies and procedures in relation to job function while at internship site
* Consistently project good company image while assisting customers via telephone
* Perform most job functions with little or no supervision
Prerequisite(s): ADMS2240
(3 C: 0 lect/pres, 0 lab, 3 other)

ADMS 2214 - Digital Publications
Students will develop digital communication skills to support work in a professional office environment. These digital communications will support employer needs and enhance internal and external business communications with a variety of stakeholders. This course provides comprehensive coverage software, delivery method, tools, techniques, and methodologies that develop and enhance the skills necessary to effectively and efficiently work in an office environment.
Student Learning Outcomes:
* Format and present information in a professional manner in a variety of formats
* Create digital documents to meet a variety of business needs using techniques and tools that meet audience requirements
* Demonstrate creative design techniques in print and electronic delivery
* Edit content in a variety of publications and business communications for grammar, sentence structure, spelling, and clarity
* Create flyers, brochures, newsletters, posters and other publications using a variety of tools and techniques
* Create, view, edit different types of digital communications
* Create, maintain, update, and redesign web pages using several different applications
Prerequisite(s): CPTR1210
(3 C: 2 lect/pres, 1 lab, 0 other)

ADMS 2240 - Administrative Office Management and Supervision
This course introduces current management principles, concepts, and organizational trends, acknowledging that it is everyone's job to manage office information systems, from the top executive to the receptionist. This course will provide strong, management-based background using a humanistic approach for managing and supervising staff in an office environment. This course will also include managing human resources in the office, working with groups and teams, managing essential administrative services, and managing workplace systems and technology. This course also introduces students to operating their own Virtual Assistant business.
Student Learning Outcomes
* Design, implement, and maintain relevant organizational activities that are designed to maximize individual and unit productivity.
* Practice management strategies to provide effective management of the organization's information.
* Develop and implement effective work processes and procedures to help employees maintain a high level of work efficacy.
* Provide a satisfactory physical and mental working environment for the organization's employees to ensure employee retention and satisfaction.
* Define duties and responsibilities of employees assigned within the administrative office management functional area to help employees understand the role in

organization.
* Develop satisfactory lines of communication among employees within the administrative office management functional area and between the employees in other areas within the organization to ensure questions and concerns are answered quickly and correctly.
* Establish methods for effective supervision of office personnel to maintain a successful and productive workplace.
* Recommend the availability, efficiency, and proper use of specialized office equipment to ensure equipment meets employee and organization needs.
* Learn duties and business concepts of the Virtual Assistant profession to provide students another career opportunity.
Prerequisite(s): ADMS1202, ADMS1208, CPTR1210
(3 C: 3 lect/pres, 0 lab, 0 other)

ADVR 1200 - Introduction to Advertising
Students will study the history of advertising, its social and legal impact as well as other aspects of the advertising industry. Sales Promotion will also be studied as an important part of the advertising and marketing industry.
Student Learning Outcomes:
* Understand the history of the marketing process locally and globally
* Develop an understanding of the overall marketing process
* Develop an understanding of advertising's economic and societal impact
* Understand different components found within the Advertising industry
* Differentiate between fair use and the need for permission within the Advertising industry
(4 C: 4 lect/pres, 0 lab, 0 other)

ADVR 1211 - Computer Design and Layout
This course introduces students to the concept and process of graphic design. Students learn the fundamental principles of page layout working with computers in bitmap, vector graphics, and page layout software. Using current industry standard software, students will learn essential design concepts and techniques used in desktop publishing. Students will be required to produce various types of design pieces using page layout software.
Student Learning Outcomes:
* Recognize design characteristics and determine their strengths and weaknesses to include the proper use of fonts, consistent alignment, and color techniques to enhance print layouts.
* Apply composition and layout design techniques to create various layout styles.
* Practice the creative integration of type, text and images into formats unique to print media.
* Differentiate among bitmap and vector graphics, and distinguish between strengths and appropriate uses.
* Proficiently design and layout a variety of computerized print documents.
* Import and create text with full control over textual styling, formatting and copy fitting.
* Create and develop proficient typography and color printing techniques.
* Research, brainstorm and sketch various layout concepts to create final layouts as part of the creative process.
(3 C: 2 lect/pres, 1 lab, 0 other)

ADVR 1216 - Drawing with the Computer
This course will introduce students to Adobe Illustrator, the industry-standard illustration program for creating vector-based print, multimedia and web graphics. Students will learn design theory and image creation. Students construct illustrations and prepare them for export to graphics software, to the Web, and for printing. This course will emphasize proficiency in Adobe Illustrator and understanding the role of object-oriented tools in the realm of design. Students gain the skills necessary to create vector graphics for print and web.
Student Learning Outcomes:
* Create professional level vector-based drawings
* Proficiently use drawing software and tools to complete Internet or print projects
* Compose typography with images and vector objects using the software application
* Differentiate among bitmap, vector and layout software programs and images
* Research, brainstorm and sketch various layout concepts to create final layouts as part of the creative process
* Apply basic principles of design, color and perspective to drawn objects using the appropriate software and tools
* Practice the creative integration of combining type, text, images and objects into formats unique to print and electronic media
* Develop project management and organizational skills to meet project needs and deadlines
(4 C: 3 lect/pres, 1 lab, 0 other)

ADVR 1221 - Computer Imaging and Editing
Students will learn the most commonly used commands and techniques for obtaining consistent, predictable, high quality images using a leading image editing software application. 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. Students will learn how to use vector paths for a variety of purposes, including masking and clipping paths. In addition, students will learn basic scanning techniques and how to create and save images in formats for press, print and Web use.
Student Learning Outcomes:
* Differentiate between color modes and use of raster versus vector graphics
* Identify and navigate the elements of the Photoshop environment
* Select appropriate resolutions and sizes for different images and output types
* Examine the use of the software's selection tools to properly edit and extract images pieces and sections
* Create and manipulate multiple layers to create composite images
* Apply blending and shading effects to create realistic composites
* Manipulate image colors using the various palettes and use Photoshop to create artwork or retouch images for print and Web images
* Create and format text within an image and apply layer styles and filters to create special effects
* Save and prepare images in file formats for use with other applications and the Web
* Research, brainstorm and sketch various layout concepts to create final layouts as part of the creative process
(3 C: 2 lect/pres, 1 lab, 0 other)

ADVR 1230 - Copywriting
Students will study copywriting techniques, copy research, creative strategies and objectives. These principles are applied to a variety of media including print, direct mail, television and radio, which will then be developed into an advertising campaign. Students will learn how to discover the features and benefits of any product offering. Additional focus on methods for clearly defining the message and techniques for creating effective written pieces will be explored.
Student Learning Outcomes:
* Describe the history of copywriting locally and globally
* Discuss the roles and responsibilities of the copywriter
* Explain the unique copywriter/artist relationship
* Discuss the importance of accurate, clear, informative copy
* Identify features and benefits of any product offering
* Compose attention-getting headlines and benefit-selling body copy that sells
* Apply copywriting skills and techniques to a variety of messages for specific media
* Develop, research, write, design and present an advertising campaign
* Differentiate between fair use of existing materials and the need for permission
(4 C: 4 lect/pres, 0 lab, 0 other)

ADVR 1244 - Multimedia for Web Design
In this course students will analyze and implement the process of creating and designing rich media for the web using Adobe Flash. Students will incorporate a variety of multimedia components to create and produce banner ad design. Also students will become familiar with the use of Flash in multimedia design such as video production and electronic brochures. Conceptualization, storyboarding and the production process will be covered to prepare students.
In addition students will learn new approaches to animation on the web with the use of technologies such as CSS3, HTML5 and Javascript. Students will develop an understanding of current rich media design/production processes.
Student Learning Outcomes:
* Use the multimedia application environment to explore drawing, typography and multimedia editing and integration.
* Effectively use layers and library panels to organize and improve workflow.
* Create simple and complex animations using common animation techniques,

such as motion tweening, shape tweening, and Actionscript.
* Use Actionscript to add advanced interactivity to multimedia projects.
* Design and create banner ads, electronic brochures and video clips.
* Interpret new approaches to create animation on the web.
* Create background animations for websites using CSS animation.
* Design animated and responsive navigation of web.
* Demonstrate how to integrate projects with various web and multimedia techniques.
* Present ideas professionally using visual, oral and presentation skills.
(4 C: 3 lect/pres, 1 lab, 0 other)

ADVR 1255 - Fundamentals of Design
This course introduces students to graphic design as a form of visual communication through the study of the elements and principles of design. Students will take a step-by-step approach to learn design basics, drawing skills, and color theory. Hands-on projects will be created using a variety of mediums. A special focus is placed on building students design skills and knowledge.
Student Learning Outcomes:
* Address basic problems in advertising graphic design.
* Demonstrate proficiency in the use of design software, tools and technology.
* Explain the importance of drawing to the visual creative process.
* Apply color use and theory as it pertains to advertising design.
* Utilize creativity and experimentation in design using the correct design steps.
* Identify and incorporate the elements and principles of design.
* Demonstrate ability to capture the attention of the target audience using design techniques.
* Describe how the concept of visual unity within a design is used to strengthen visual communication.
* Recognize the importance of craft to the final execution of design projects.
(3 C: 2 lect/pres, 1 lab, 0 other)

ADVR 1264 - Public Relations
Students will learn to identify the public relations and publicity functions often assigned to advertising personnel and apply these procedures and practices to business and community needs. Methods of crisis management and dealing with the media will be identified. Emphasis is placed on the development of persuasive, professional public relations writing skills and development of a comprehensive public relations campaign, which will be implemented within a team environment.
Student Learning Outcomes:
* Define and appropriately use public relations terminology.
* Create public relations tools such as news releases, fact sheets and newsletters.
* Describe the impact of public relations on economic and societal environments.
* Develop, research, write, design, produce and present a public relations campaign.
* Identify other forms of public relations and their uses.
* Recognize the role of the media in public relations and implement media relations strategies.
* Discuss the importance of ethical decision-making and social responsibility in public relations.
* Identify major influences that affect both organizational behaviors and their publics behavior.
* Strengthen and expand skills necessary for engaging and presenting in a group dynamic. (3 C: 2 lect/pres, 1 lab, 0 other)

ADVR 1265 - Visual Design
This course expands graphic design knowledge and skills, offering students the opportunity to create more 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 elements and 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.
* Explore the discipline of advertising design.
* Utilize appropriate typography solutions for a variety of applications and situations.
* Create and produce advertising design projects such as posters, logos, brochures and print ads.
* Solve creative problems using research, conceptualizing, design and final comprehensives.
* Evaluate and discuss individual designs and the designs of others.
* Present ideas professionally using visual, oral and presentation skills.
(3 C: 2 lect/pres, 1 lab, 0 other)

ADVR 1270 - Media Research and Planning
Students will be presented with basic media research principles as they relate to today's advertising industry and will practice advertising research methods. Students will also construct a "real life" media plan with the assistance of professional industry contacts.
Student Learning Outcomes:
* Understand the history of the media research and the planning process
* Discuss the role and responsibilities of the media researcher
* Design and create an actual media plan replicating industry standards
* Understand different types of media found within the Advertising Industry
* Develop an understanding of how different medias are purchased and why
(3 C: 2 lect/pres, 1 lab, 0 other)

ADVR 2206 - Ad-Ventures
Students will be exposed to advertising avenues critical to creating strong advertising and design. Problem solving skills will be used as students learn to trust their creative and artistic instincts and develop a visual vocabulary of their own using a variety of techniques and materials. The main focus of the course is on experimentation, exploring creativity and brainstorming. Advertising trends are also identified and discussed, and time management skills are developed.
Student Learning Outcomes:
* Create unique concepts and solutions to advertising problems
* Explain the importance of creativity to advertising and design
* Develop strategies for creative thinking beyond conventional boundaries for professional designers
* Demonstrate ability to brainstorm and problem solve individually and in group settings
* Develop, research, design, produce and present a creative advertising campaign
* Identify current and future advertising trends
* Exhibit proficient organizational and time management skills
(2 C: 2 lect/pres, 0 lab, 0 other)

ADVR 2210 - Introduction to Photography
This course will cover the fundamentals of photography to include the use and functions of a 35 mm film camera and digital camera. Students will learn light metering, exposure controls and modes, depth of field, the purpose and creative use of various lenses, filters and flash. Students will learn and apply photographic design, with increased perceptual awareness to create works of film and digital imagery. Studio lighting and techniques are covered with an emphasis on creative product shots for advertising purposes.
Student Learning Outcomes:
* Identify and operate film and digital cameras in various formats and exposure modes
* Create images that demonstrate proficiency in using a variety of photographic techniques and lighting methods
* Demonstrate an ability to use features of camera features including ISO settings, white balance, light metering, modes, exposure compensation values, shutter priority, aperture priority and flash
* Respond critically to photographic images to demonstrate an understanding of photographic composition and design terminology as related to the field of photography
* Critically assess the influence of photographic images on society and related ethnic issues
* Incorporate the use of editing tools and composites to an individual or a series of shots
* Execute product shoots in the studio using creative lighting techniques
* Examine the photographic industry and identify career opportunities
(3 C: 1 lect/pres, 2 lab, 0 other)

ADVR 2240 - The Northway Group
This course is designed to challenge the serious Advertising Communications and Design student with a purposeful, specialized occupational experience in the advertising field through participation in "The Northway Group".
Each Agency project is an individualized student experience with a sponsoring nonprofit business, organization, or professional and their instructor. Each student is assigned roles in agency projects based upon their skill set and experience. Students will then apply their knowledge of advertising, writing, design, research, photography, computer software and production techniques to complete a series of projects that will closely simulate agency work experience.
Student Learning Outcomes:
* Research potential nonprofit clients for advertising related needs
* Coordinate and implement all agency functions (i.e. arrange meetings, determine deadlines, oversee production, update business contact and instructor)
* Develop time management, critical thinking, problem solving and written communication skills
* Work with clients to help them identify their current problems and opportunities
* Develop skills associated with presentation of agency material to clients for approval
* Create a professional portfolio of client projects
(2 C: 0 lect/pres, 2 lab, 0 other)

ADVR 2245 - Fundamentals of Dynamic Websites
Many database-driven websites, web applications and content management systems are designed and developed in PHP. Students in this course will build foundational PHP programming skills to create and modify PHP-based web applications that integrate with other web technologies. These skills will enable students to write powerful queries that perform complicated searches and sorts on data. During the course, students will develop and construct a complete content management system, to include creation of a complete website capable of dynamically displaying data from a MySQL database.
Student Learning Outcomes:
* Build professional-quality, database-driven websites using open source software, PHP and MySQL.
* Develop interactive websites with authentication and security by integrating PHP with HTML and CSS.
* Apply basic and advanced object-oriented programming techniques, use libraries and frameworks, develop advanced database connectivity techniques, and integrate PHP with other web technologies to build secure e-commerce applications.
* Design, create and edit database tables
* Construct a MySQL database.
* Learn LAMP server fundamental and setup a LAMP server to host a PHP based website.
* Build a knowledge foundation in Structured Query Language (SQL) to properly retrieve and edit information stored on a database.
* Create an interactive website that can post and retrieve information.
* Present ideas professionally using visual, oral and written communication skills.
(3 C: 2 lect/pres, 1 lab, 0 other)

ADVR 2248 - Website Content Management Systems
This course is designed to instruct students in all aspects of dynamic website creation and management using a Content Management System (CMS). This will include designing, installation, management, and maintenance of websites based on a CMS. This course guides students in developing necessary skills to complete a finished CMS based blog/website while learning how to make decisions to meet client CMS needs.
Student Learning Outcomes:
* Learn foundational components of a Content Management System including functional knowledge and pros and cons of using a CMS.
* Create a CMS based blog and website.
* Manage text, image and page content through a backend interface.
* Apply information architecture techniques to aid in content development and management.
* Design and implement custom themes.
* Select appropriate plugins and components to add required functionality.
* Troubleshoot and publish a complete website.
* Maintain and secure CMS based websites.
* Install, migrate and update CMSs.
Prerequisite(s): ADWD1245
(3 C: 2 lect/pres, 1 lab, 0 other)

ADVR 2250 - Retail Advertising
Students will learn the fundamentals of national and local retail operations with emphasis on promotion and advertising. Store operations, customer service, planning, budgeting, and legal and ethical issues will be discussed. The promotional mix will be identified and illustrated using current retail materials, and trends in the future of retail advertising will be evaluated. Students will study effective media use and produce retail advertising materials for a variety of media.
Student Learning Outcomes:
* Define the history of the retailing process locally and globally
* Describe the overall retailing process and factors that affect retail advertising decisions
* Recognize the impact of retailing on economic and societal environments
* Describe the future of retailing in the 21st Century including trends, activities, and target audiences
* Create and produce retail advertising materials such as tabloids and newspaper advertising
* Evaluate legal and ethical issues as they relate to retailing
* Identify Mass Merchandisers and their advertising strategies
* Discuss retail customer relationship management
* Identify and incorporate the promotional mix in retail advertising materials
* Differentiate between fair use of existing materials and the need for permission
(3 C: 2 lect/pres, 1 lab, 0 other)

ADVR 2255 - Internship
Students gain "real-life" internship experience with an industry related company. Instructor supervision and critique is a critical element of the internship experience. The learned principles are then applied to various areas studied of the Advertising industry for future employment. This is an excellent way to "Beef Up" your resume and polish your skills!
This is a variable credit course, with credits 1-6.
Student Learning Outcomes:
* Identify the types of customers an Advertising Agency performs services for
* Identify the procedures for documenting services performed for customers
* Understand the daily workings of a commercial Advertising Agency
* Demonstrate dependability
* Create successful working relationships
(1-6 C: 0 lect/pres, 0 lab, 1-6 other)

ADVR 2260 - Advertising Campaign Development
Students will study three types of advertising objectives: selling, behavioral effects and communications. Students will examine benefits and problem solutions as related to an advertising campaign. Also, there are challenges to create: art, copy, music and strategy for a complete, integrated advertising campaign.
Student Learning Outcomes:
* Understand the mission and function of an advertising agency
* Introduction to the idea of brands
* Understand consumers and their relationships to brands
* Elements of an effective campaign
* Issues in campaign management
* Develop a PlansBook for the assigned advertising campaign
Prerequisite(s): ADVR1200, ADVR1270, ADVR1211
(4 C: 3 lect/pres, 1 lab, 0 other)

ADVR 2270 - Advertising Campaign Management Seminar
Selected students will participate in the organization of a working team specifically for the purpose of competing in the American Federation's National Student Advertising Campaign, (NSAC). Students will be presented with a marketing challenge developed for this effort in conjunction with a major corporation. (Examples include: Toyota USA, The New York Times, etc.) Students will research all aspects of the challenge and its relevant markets, audiences, time, etc. The team will then resynthesize, evaluate and develop a comprehensive marketing plan, including all tactical elements used in said plan - advertising, media, sales promotion, public relations support, etc. In addition, students will develop, write, design and produce a comprehensive campaign plans book, along with a

professional multi-media campaign presentation, which will be debuted at the upper Midwest regional competition of the NSAC. This is a focused and intense learning experience that leverages all theoretical classroom learning as students become immersed in the complexities of a real-world marketing challenge.
Student Learning Outcomes:
* Analyze and effectively respond to specific market challenges, while performing within the parameters of stringent competition guidelines
* Develop a comprehensive research report used to establish a balanced, informed perspective on the relevant target market(s), competition, business trends, economic trends, etc.
* Understand and apply the creative and management processes used to develop effective campaigns
* Create the elements of an effective advertising campaign for AdFed competition, including the development and execution of all strategies required in the development of that campaign
* Understand the mission and function of an advertising agency resulting in the ability to successfully perform as a professional in this or similar corporate setting
* Think critically and evaluate ad campaign materials/team performance
* Develop and apply business skills used to manage people and projects like budget management and project development and presenting
Prerequisite(s): ADVR1200, ADVR1230, ADVR1261, ADVR1270
(3 C: 2 lect/pres, 1 lab, 0 other)

ADVR 2281 - Broadcast
Students will study commercial construction as it relates to the radio and television broadcast industry. Lessons will be covered using the Official Finalcut Pro Training Manual. They will also receive technical instruction in the Finalcut Pro multimedia software and create radio and television commercials suitable for portfolio presentation.
Student Learning Outcomes:
* Research the history of the television and radio production process in the US
* Gain advanced knowledge in the areas of broadcast research and design
* Develop an understanding of the commercial creation/production process
* Produce radio and television commercials indicative of the advertising industry
* Differentiate between fair use and the need for permission in the media industry
Prerequisite(s): ADVR1200, ADVR1221, ADVR1230
(4 C: 2 lect/pres, 2 lab, 0 other)

ADVR 2290 - Portfolio Construction and Presentation
This course is designed to challenge the fourth semester, second year student with a purposeful, specialized occupational experience in the advertising field. Each student project is an individualized experience with a training plan in conjunction with the sponsoring business professionals/agency and their instructor. Students will integrate knowledge of advertising writing, design, research, photography and production techniques coordinated with their industry professionals and instructor to complete a series of projects that will closely simulate actual work experience.
Student Learning Outcomes:
* Knowledge of purpose and content of a professional advertising portfolio
* Ability to critically select students creative work to successfully meet employers entry level job requirements
* In depth knowledge of advertising industry job categories and company organizational structure
* Development of interview skills using advertising portfolio, resume, internet and phone communications
* Successfully complete graded practice interviews with advertising industry managers
(3 C: 3 lect/pres, 0 lab, 0 other)

ADVR 2295 - Multimedia/Director
Students will study the process of creating and designing professional quality multimedia presentation using the Macromedia Director Software. Lingo and Basic Lessons will be covered using the Official Macromedia Director Training Manual, Conceptualization, storyboarding and the production process will be covered through a lecture/lab format using G4 Macintosh Computers. Successful completion will result in creating a professional, interactive, Macromedia Director project exemplary of industry standards.
Student Learning Outcomes:
* Document the history of the interactive video production process
* Research the current commercial creation and production processes
* Create a ten minute interactive presentation complete with a matching web page design
* Compile the different components found within the multimedia industry
* Differentiate between fair use and the need for permission
Prerequisite(s): ADVR1211, ADVR1221
(4 C: 2 lect/pres, 2 lab, 0 other)

ADWD 1205 - Foundations of Web Technologies
This course is designed to expose students to the history and evolution of the Web, the basics of information architecture, and new developments that are changing the technology landscape. We will discuss how emerging web technologies impact society and the future of the field. Students will also benefit from opportunities to explore and investigate the features and functionality of emerging web technologies. Upon completion of the course, students will have a solid foundation in and understanding of web technologies on which to build their skills.
Student Learning Outcomes:
* Demonstrate knowledge of how the Internet and the World Wide Web continues to influence new technologies.
* Understand and discuss information architecture as it applies to web design and development.
* Analyze, categorize, and present information into a coherent website structure.
* Identify and describe emerging technologies in the Web industry sector.
* Explore and present an investigation into the impact emerging technologies have on society, the job market, and future developments.
(2 C: 2 lect/pres, 0 lab, 0 other)

ADWD 1235 - Web Design Fundamentals
This course 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 popular 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, balance and typography to web design.
* Learn and conduct research and planning strategies to make correct design decisions.
* Compare and contrast the differences and appropriate use of design for print and web.
* Organize graphic and HTML files for ease of use.
* Design websites in a team environment.
* Understand and utilize the grid system and apply it to templates for quicker website generation.
* Create multiple types of interactive menu systems.
* Create a finished website that properly uses HTML5 and CSS3.
* Properly optimize images and graphics for the web and mobile use.
* Understand Responsive Web Design and how it applies to modern browsers and multiple user platforms.
(3 C: 2 lect/pres, 1 lab, 0 other)

ADWD 1245 - Advanced Website Design and Development
This course is designed to instruct students in combining visual layout tools with text based (HTML5 and CSS3) markup for the creation, management and maintenance of websites. By developing necessary skills in web design and development, students will produce a finished, publishable website. Emphasis is placed on creating valid and semantic markup combined with CSS3 to separate content from presentation. Using concepts that incorporate Responsive Web Design (RWD), User Experience Design (UX) and Mobile Web Design, students will create modern websites and learn how these concepts relate to client based outcomes.
Student Learning Outcomes:
* Write effective, valid, standards compliant HTML5 and CSS3 markup.
* Learn the development process and how to properly separate content from presentation.
* Research how user interface affects user experience.
* Create multiple types of interactive menu systems.

* Create a finished website that properly uses HTML5 and CSS3.
* Incorporate Responsive Web Design to facilitate multiple content delivery platforms.
* Create content designed for mobile devices.
* Use basic Javascript in webpages for simple functions.
* Use File Transfer Protocol (FTP) to move web content to a server environment.
* Create and validate web forms
* Troubleshoot website issues using multiple tool sets.
Prerequisite(s): ADWD1235
(4 C: 3 lect/pres, 1 lab, 0 other)

ADWD 2235 - Scripting for Interactive Websites
This course introduces students to JavaScript, a client-side scripting language and jQuery, a JavaScript library that can simplify the scripting process. Upon completion of this course, students will be able to use JavaScript and include jQuery plug-ins to create interactive web pages that work across browsers, are capable of verifying and validating form information, and include complex animation effects such as slideshows and light boxes. JavaScript also plays an important role in enhancing the user experience and also in the development of adaptive and responsive websites that can be used across devices.
Student Learning Outcomes:
* Explain the difference between JavaScript and jQuery and understand appropriate uses of each.
* Demonstrate understanding of the role of UI/UX when designing dynamic websites.
* Describe the code structure and syntax of JavaScript and jQuery.
* Write event handlers using JavaScript that function across browsers and devices.
* Build websites that include JavaScript interaction and validation techniques with forms and other HTML elements.
* Create web pages using jQuery plug-ins that include custom animations with specialized properties and options.
* Demonstrate ability to use JavaScript in troubleshooting and debugging existing code.
(3 C: 2 lect/pres, 1 lab, 0 other)

ADWD 2260 - Design and Development for the Mobile Web
Smartphones act as a digital multi-tool; they are our source of news and entertainment, they provide tools for navigation, they are our camera, and our method for staying-in-touch with and communicating with others in our society. In this course, students will be introduced to the various mobile platforms, user expectations, and the constraints facing mobile application designers and developers. Mobile application development comes with its own set of constraints and interface consideration for designers. Students will be introduced to the iOS development environment and will learn the basics of the programming language used to build and test applications.
Student Learning Outcomes:
* Define mobile computing and the types of mobile devices.
* Demonstrate understanding of user interface and user experience when designing mobile applications.
* Create information architecture appropriate to a mobile application.
* Exhibit the ability to navigate the iOS Software Development Kit (SDK).
* Demonstrate knowledge of object-oriented programming techniques, libraries, and frameworks.
* Design and develop native apps that run on iOS devices.
Prerequisite(s): ADWD1245
(3 C: 2 lect/pres, 1 lab, 0 other)

ADWD 2265 - Emerging Web Technologies
The field of Web design and development is broad and continues to grow at a rapid pace. In this course students will be exposed to a number of advanced topics as to better prepare them for a career in Web design and development. The content of this course is designed to adapt and adjust to the fluctuations and advances in the field. The course will touch on a number of topics such as user experience, e-commerce, email, and analytics that will build on the skills students have acquired throughout the program.
Student Learning Outcomes:
* Understand, analyze, and discuss design requirements and constraints related to building e-commerce websites.
* Conduct user experience testing and make recommendations for changes to websites.
* Display knowledge of the ethical and legal issues regarding the curating of lists and sending of mass emails.
* Design and develop emails using HTML and CSS.
* Set up, monitor, and analyze web analytics.
* Understand and explain web analytics results and determine an appropriate course of action based on the data.
* Demonstrate ability to create effective search engine optimization and search engine marketing.
* Research and share knowledge about trends in web design and development and related technologies.
Prerequisite(s): ADWD1245
(2 C: 2 lect/pres, 0 lab, 0 other)

ADWD 2272 - Web Design Project
This course is designed to challenge the web design student during their final semester with a specialized web design experience that exemplifies industry standards. Each web design project is an individualized experience with a client and their instructor. All areas of project management will be implemented, including determining deadlines, design, production and presentation. Students will develop a finished web site for a local (fictitious or real) company and learn to communicate ideas professionally to the client using visual, oral and written presentation skills.
Student Learning Outcomes:
* Research potential business clients and move through the selection process of a project.
* Demonstrate and execute organizational, time management and project management skills.
* Gather information and define a project scope with a client that includes project milestones and expectations.
* Design site architecture and user interface that is appropriate for client needs.
* Demonstrate responsive design techniques along with UI/UX design principals.
* Anticipate and adapt to project and client needs.
* Launch, test, and debug a website.
* Design and develop a finished web design product to meet client needs.
* Professionally communicate with a client in visual, oral, and written form.
(3 C: 2 lect/pres, 1 lab, 0 other)

ADWD 2275 - Social Media Marketing
The Social Media Marketing class will focus on the conceptual foundation and practical approach to developing a successful social media marketing plan. The course will utilize proven, social media planning model to develop a realistic, cutting edge social media marketing plan. Students learn how to select the optimal social media platforms for reaching an organization's specific marketing goals. The class also covers specific rules of engagement and social media ethics for operating on the social web.
Student Learning Outcomes:
* Introduce terminology, methodology, and theory to enable students to communicate in a common social media language.
* Analyze social media technologies to appropriately apply them in a variety of settings.
* Explain how social media tools are utilized to achieve Integrated Marketing Communication (IMC) goals.
* Examine the strengths and weaknesses of various social media tools.
* Learn the elements of a social media marketing plan and its integration with IMC.
* Understand the myths of a social media marketing plan to ensure IMC success.
* Create a social media marketing plan.
* Conduct research using social media for use in the creation, implementation and continuous improvement of a social media plan.
* Set social media goals and analyze their effectiveness within the social media marketing plan.
* Use a variety of online social media tools while drawing upon theoretical frameworks to systematically complete course assignments.
(4 C: 4 lect/pres, 0 lab, 0 other)

ANTH 1300 - Introduction to Cultural Anthropology
Meets MN Transfer Curriculum Goal Area 5 and 8. 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ANTH 2300 - Anthropology of Science Fiction
Meets MN Transfer Goal Areas 5 and 8 - History and the Social and Behavioral Sciences and Global Perspective. Basic concepts of anthropology will be used to interpret the imaginary worlds of science fiction. Fictional cultures will be examined to see how features of human biology, language, social organization, technology, etc. are patterned after or different from known human cultures. Anthropology and science fiction will then provide a framework for students to deepen their understanding of themselves, our contemporary culture and current world issues.
Student Learning Outcomes:
* Understand the historical and cultural context to Anthropology as a discipline
* Understand the historical and cultural context of Science Fiction as a genre and its use as cultural commentary
* Apply anthropological concepts, theories and methods to analyze science fiction "cultures"
* Understand and be able to explain how the various aspects of a culture are integrated
* Draw parallels between science fiction and current world issues
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer 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): 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 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): ARCH1502, 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 1534 - Residential Design and Presentation
Students will learn different architectural history of house styles, remodeling design, pencil and colored rending and to help build on good principles of design. Student will also learn oral and written communication to help them present their projects.
Student Learning Outcomes:
* Examine and identify the exterior design elements of housing styles
* Examine ways to change the style of a home during a remodeling project
* Examine the elements of various kinds of presentation drawings
* Prepare enhanced front elevations, perspectives, and 3D floor plans
* Prepare and deliver an oral presentation
Prerequisite(s): ARCH1522
(2 C: 2 lect/pres, 0 lab, 0 other)

ARCH 2502 - Kitchen and Bath Remodeling and Design
Students will study design principles, construction methods, and products that are involved in the kitchen and bath business. Basic graphic presentation techniques will assist the student in entering careers as kitchen and bath design/sales specialists. Students will produce a remodeled plan for an actual kitchen of their choice. Skills in product selection, ordering, project pricing, customer relations, and contracts will also be developed.
Student Learning Outcomes:
* Develop an understanding of cabinet manufacturing, distribution, and sales
* Demonstrate good kitchen planning principles in development of project
* Select wood species, finish color, door style, counter top material and pull hardware for kitchen project
* Draw 2-D and 3-D plans for a remodeled kitchen

* Develop specification and contract form for remodeled kitchen
* Demonstrate good bathroom planning in development of remodeled bathroom
Prerequisite(s): ARCH1503
(2 C: 1 lect/pres, 1 lab, 0 other)

ARCH 2504 - Introduction to Google SketchUp
To meet the demands of industry and education for a fast, accurate, and inexpensive software to create 3D objects Google has created "Google SketchUp". Developed for the conceptual stages of design, this program is powerful and easy to learn. In short, it is designed to simplify and streamline the 3D design process. SketchUp is used by many designers to quickly create three dimensional concepts and colorful renditions.
In this introduction to SketchUp students will master basic skills by creating a 3D building complete with doors, windows, stairs and interior components. While SketchUp is suited to any type of 3D modeling, the emphasis in this course will be on construction and architectural applications.
Student Learning Outcomes:
* Use SketchUp to model basic architectural projects
* Create architectural shapes and objects using the three-dimensional tools provided by the program
* Select and produce various viewing styles and understand how they affect the communication between client and designer
* Utilize preferences, layers, components, materials and other tools to organize data within each project
* Print out drawings using various output options provided by the program
* Demonstrate an understanding of how SketchUp can import and export files to and from other applications, such as Google Earth and AutoCAD
(1 C: 0 lect/pres, 1 lab, 0 other)

ARCH 2506 - Architectural Design Studio I
This course is an introduction to light commercial drafting procedures. Students will develop working drawings for a small commercial building utilizing pole frame, slab on grade construction. Details will also be developed for a commercial building utilizing masonry wall systems. Emphasis is placed on drawing details that meet ADA requirements. Other topics include hand sketching, shop drawings, commercial detailing, and sectioning principles.
Student Learning Outcomes:
* Determine and list preliminary design solutions for a small convenience store
* Draw working drawings for a convenience store utilizing pole frame construction
* Determine and list preliminary design solutions for a small strip mall project
* Draw working drawings for a strip mall project utilizing masonry construction
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 spilt-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
Corequisite(s): ARCH2522, ARCH2530
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): ARCH2510, ARCH2506
(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, prestressed 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:
A student successfully completing this course will:
* 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 WWPA 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): ARCH1530
(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 Goal Area 6 - Humanities/Fine Art. This course is an introduction to the basic concepts of the visual arts. Students will be introduced to the processes, principles, and purposes of visual art in historical context and will explore the effect of art on our lives. Students will learn the language of the visual arts, will learn about the media of the visual arts, and will learn to evaluate artists work. Additionally, students will understand interpretations of and context for artworks throughout the continuum of art history. 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.
* Demonstrate an understanding that artworks are expressions of values within a historical and social context.
* Demonstrate the ability to respond critically to works of visual art.
* Articulate informed responses to works of visual arts throughout the continuum of art history.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ART 1310 - 2D Design
Meets MN Transfer Curriculum Goal Area 6 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(4 C: 3 lect/pres, 1 lab, 0 other)

ART 1321 - Drawing I
Meets MN Transfer Goal Area 6 - Humanities/Fine Art. This course introduces students to the basic elements drawing. Students will experiment with a variety of techniques, styles and media, while developing perceptual awareness, eye/hand coordination, and an increased appreciation of art.
Student Learning Outcomes:
* Develop skills and proficiencies necessary to those working with drawing media
* Examine technical, aesthetic, and design issues inherent in drawing
* Engage in the creative process
* 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.
* Formulate ideas and develop strategies to give them formal expression using drawing
* Employ drawing as a means of personal expression
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(4 C: 3 lect/pres, 1 lab, 0 other)

ART 1330 - Painting I
Meets MN Transfer Goal Area 6 - Humanities/Fine Art. This course, designed for students with all levels of experience, explores important concepts in painting. Students will be introduced to the technical, conceptual, and aesthetic aspects of opaque painting using acrylic and/or oil paints. Most of the emphasis in this course will be on painting, lectures and critiques allowing for investigation in a historical and contemporary context. This course offers an exploration of both traditional and contemporary painting methods.
Student Learning Outcomes:
The student will:
* Demonstrate the ability to respond critically to works of visual arts.
* Demonstrate proficiency in the use of opaque painting media.
* Demonstrate knowledge and use of diverse painting methods.
* Demonstrate an awareness of composition, value, color, mark-making, and texture.
* Develop ones own personal aesthetic.
* Understand painting as it relates to both art-historical and contemporary conversations.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(4 C: 3 lect/pres, 1 lab, 0 other)

ART 1340 - Digital Photography
Meets MN Transfer Curriculum Goal Area 6 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.
* Articulate a personal, critical response to technical and aesthetic concerns when viewing photographs.
* Form and articulate a timeline that includes significant milestones in photogra-

phy and key photographers and photographs which illustrate these periods.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer 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. This course presents astronomy in a cosmic context. The course starts with an overview of the evolving universe that is used during the entire course to develop an integrated understanding of astronomy and an appreciation for science. This course emphasizes key physical concepts that enable students to understand how science can explain the phenomena they see in their daily lives and how these are connected to the processes that govern the cosmos. Topics include our emerging understanding of galaxy evolution, starbursts, quasars, intergalactic clouds and dark matter. In addition, we compare each of the planets to develop a deeper understanding of our solar system, our own world, our relationship to the cosmos and the prospects for life elsewhere in the universe.
Student Learning Outcomes:
* Describe the physical processes that affect, create, and destroy objects in the universe
* Explain the evolution of the currently known astronomical objects and phenomena in the universe
* Explain astronomical events in the sky in terms of astronomical processes
* Explain the similarities and differences between the planets in our solar system, the origin of the planets, and how the planets relate to the cosmos
* Describe how scientists develop theories, collect and analyze data and arrive at scientific conclusions
* Evaluate societal issues from a natural science perspective, ask questions about the evidence presented, and make informed judgments
* Demonstrate and apply critical thinking skills to analyze a variety of 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ASTR 1301 - Astronomy Lab
Meets MN Transfer Goal 3 - Natural Sciences. Learn about constellations, stars, telescopes, instruments and measurements astronomers make to determine the distances to the stars and more. 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. This laboratory course will focus on gaining an understanding of the instruments, observations, measurements, and calculations used by astronomers to determine the properties of celestial objects (planets, stars, clusters, nebulae, galaxies), and the distances to these celestial objects. In this course, you will gain "hands on" experience making real observations (naked eye, binocular, and telescope) and measurements. You will analyze the data from your measurements and observations and draw scientific conclusions from your analysis.
Student Learning Outcomes:
* Identify major constellations and stars and know how to locate celestial objects
* Describe basic scientific theories used in astronomy
* Describe how scientists determine the properties of celestial objects such as planets, stars, clusters, nebula, and galaxies
* Describe how scientists determine the distances to celestial objects
* Describe how scientists develop theories, collect and analyze data and arrive at scientific conclusions
* Perform measurements of the properties of celestial objects
* Document and discuss experimental results
* Gather data from other sources
* Analyze data and draw conclusions from this analysis
* Use the scientific method to state hypotheses and then test those hypotheses experimentally
* Demonstrate and apply critical thinking skills to analyze a variety of astronomical 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
(1 C: 0 lect/pres, 1 lab, 0 other)

AUTO 1508 - Automotive Wheel Alignment
Students in this course will study and apply specific geometric angles and their terms as used in four-wheel alignment. Students will become familiar with the latest technologies and equipment used to measure and correct these angles. Steering and suspension system nomenclature and theory of operation will also be discussed, as well as the diagnosis of abnormal tire wear, undesirable handling characteristics, noises, sags and other steering and suspension problems. The focus of this course is understanding and correcting alignment angles, theory and operation of suspension and steering systems and maintenance/repair of suspension and steering systems.
Student Learning Outcomes:
* Identify and perform safety procedures relating to the automotive repair industry
* Become proficient with the latest technologies and equipment used to measure and correct wheel alignment angles
* Diagnose and repair abnormal tire wear, undesirable handling characteristics, noises, sags and other steering and suspension problems using processes, tools and equipment consistent with our industry while working at the performance level of an entry level technician
* 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 our industry while working at the performance level of entry level technicians
* Develop pollution preventive procedures involving lubricants, parts and components of steering and suspension systems and storage, disposal or recycling of tires
Prerequisite(s): TRAN1502
(4 C: 1 lect/pres, 3 lab, 0 other)

AUTO 1509 - A6: Automotive Electrical/Electronic Systems
In this course the student will learn the basics of electricity and electronics. The student will study the sources of electricity, circuits, magnetism, resistance, voltage and amperage. Students will learn about diodes, transistors and solid-state devices. Lab work will give the students hands on experience with digital meters, power supplies and oscilloscopes.
This course also covers the operation, service techniques and diagnosis of most types of body electrical components. The student will learn about starter and alternator testing and replacement. The lab work will develop skills in repairing today's high tech accessories.
Student Learning Outcomes:
* Examine electrical theory
* Work safely with electricity
* Relate electricity to the vehicle electrical systems
* Use electrical test equipment
* Develop diagnostic trouble finding skills
* Develop understanding of the operation of vehicle electrical components and testing procedures
* Examine vehicle body electrical systems and identify problem area
* Test and record circuit conditions
* Identify failing component
(4 C: 2 lect/pres, 2 lab, 0 other)

AUTO 1510 - Chassis Electrical
This course covers the operation, service techniques and diagnosis of most types of body electrical components. The student will learn about starter and alternator testing and replacement. The lab work will develop skills in repairing today's high tech accessories.
Student Learning Outcomes:
* Examine vehicle body electrical systems and identify problem area
* Test and record circuit conditions
* Identify failing component

* Remove and replace failed component
* Test and repair starting and charging system
* Repair and diagnose circuit problems
* Install electrical accessories
* Perform tests using a multimeter or specialized testers
Prerequisite(s): TRAN1504 or Appropriate Accuplacer Score.
(4 C: 2 lect/pres, 2 lab, 0 other)

AUTO 1512 - Engine Repair Theory
This introductory course covers the principle operation and diagnostic procedures of internal combustion engine mechanical components, including construction, 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 have real world shop experience by writing electronically formatted repair orders, verifying customer concerns, diagnosing the failure/cause, and understanding how to perform the correction.
Student Learning Outcomes:
* Examine the procedures on how to remove and install an engine in front or rear wheel drive vehicles.
* Identify engine components, construction and application
* Know to assemble an engine including the importance of cleaning gasket material from mating surfaces using correct tools and techniques.
* Identify abnormal wear, by inspecting and measuring parts; determine the cause and what the preventive action could have been.
* Interpret customer concerns and verify complaint to determine probable diagnoses of failures.
* Complete a detailed estimate of failed components, gaskets and fluids needed to complete a repair.
* Develop a plan of action to remove, repair, or replace worn engine components.
* Know the importance of following manufacturer installation, torque and sequence specifications on bolts and fasteners, and where to find those specifications.
* Know the importance of confirming the repair was done correctly and the customers concern was corrected by the repair.
(2 C: 2 lect/pres, 0 lab, 0 other)

AUTO 1514 - Engine Repair Lab
This course gives the 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 have real world shop experience 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 install an engine from vehicle with front or rear wheel drive while following manufactures steps and procedures.
* Disassemble and reassemble an engine including removing and cleaning gasket material from mating surfaces using correct tools and techniques.
* Identify, measure, and inspect engine parts for wear to determine the cause of a failure, what the correction will be, and what the preventive action could have been.
* Verify, diagnose, and repair engine failures using multiple tools and methods.
* Prepare a detailed list and estimate of failed components, gaskets, and fluids needed to complete the repair.
* Develop a plan of action and remove, repair, or replace worn engine components while following the manufacturers instructions and torque specifications.
* Confirm a repair was done correctly and the customers concerns were corrected by the repair.
(4 C: 0 lect/pres, 4 lab, 0 other)

AUTO 1516 - Brakes
The students will learn the use of brake hydraulic systems. Students will repair disc, drum brakes and power assist units. The operation and repair of antilock brake systems will also be taught.
Student Learning Outcomes:
* Use asbestos collection equipment
* Perform brake inspections and determine condition of brake friction material
* Inspect the condition of brake hoses and lines
* Perform brake service as needed to restore brake system to proper operation
* Diagnose brake problems related to noise or improper function of components
* Test, diagnose and repair anti-lock brake systems
Prerequisite(s): TRAN1502
(4 C: 1 lect/pres, 3 lab, 0 other)

AUTO 1522 - A8 Engine Performance
Students will develop skills in basic engine performance on gasoline four stroke engines. Lab work consists of typical service, repair and diagnosis procedures on ignition, fuel, emissions and related electrical systems on late model vehicles. Students should be able to describe system operation and perform engine performance and fuel system service in accordance with manufacturer's procedures.
Student Learning Outcomes:
* Interpret customer/vehicle complaint on late model vehicles
* Identify maintenance requirements and various inspection procedures on late model vehicles
* Demonstrate job entry skill development when performing basic diagnosis of engine systems
* Use 4/5 exhaust gas analyzer
* Perform a computerized engine test analysis
* Conform to federal OSHA and state MPCA rules as it relates to vehicle service procedures
* Be aware of ethical practices as it relates to engine performance service procedures
* Exhibit technician/mechanic professionalism
(4 C: 2 lect/pres, 2 lab, 0 other)

AUTO 1523 - Advanced Chassis Electrical
Students will develop a fundamental understanding of vehicle electronic control units controlling Anti-locking brake, supplemental restraint, and tire pressure monitoring systems. Lab work consists of using scan tools for service, repair and diagnosis on these electronic/mechanical systems on late model vehicles. Students should be able to describe system operation and perform service in accordance with manufacturer's procedures.
Student Learning Outcomes:
* Perform inspection procedures on ABS and SIR systems
* Perform inspection procedures on TPM systems
* Use generic and factory scanners
* Perform basic computer scan diagnosis
* Analyze ABS and body diagnostic trouble codes
* Demonstrate ethical practices as it relates to electrical service procedures
* Exhibit technician/mechanic professionalism
Prerequisite(s): TRAN1504, TRAN1516
(2 C: 1 lect/pres, 1 lab, 0 other)

AUTO 2502 - Engine Ignition and Emission Systems
Students will develop skills in basic engine performance on gasoline four stroke engines. Lab work consists of typical service, repair and diagnosis procedures on ignition, fuel, emissions and related electrical systems on late model vehicles. Students should be able to describe system operation and perform engine performance service in accordance with manufacturer's procedures.
Student Learning Outcomes:
* Identify maintenance requirements and various inspection procedures on late model vehicles
* Demonstrate job entry skills development when performing basic diagnosis of engine systems
* Use 4/5 exhaust gas analyzer
* Perform a computerized engine test analysis
* Conform to federal OSHA and state MPCA rules as it relates to vehicle service procedures
* Be aware of ethical practices as it relates to engine performance service procedures
* Exhibit technician/mechanic professionalism

Prerequisite(s): TRAN1502, TRAN1504, TRAN1516
(4 C: 2 lect/pres, 2 lab, 0 other)

AUTO 2505 - Engine Fuel and Emission Systems
Students will develop skills servicing fuel systems and computer control systems. Lab work consists of typical service, repair and diagnosis procedures on fuel and computer systems on late model vehicles. Students should be able to describe system operation and perform fuel system service in accordance with manufacturers procedures. Students will learn to describe computer and sensor operation and perform computer system service in accordance with manufacturers procedures. Students will also need to accurately document repairs 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 and interpret scan data.
* Demonstrate ethical practices as it relates to engine performance service procedures.
* Show technician/mechanic professionalism.
* Perform inspection and repair procedures on fuel systems.
* Perform inspection and repair procedures of engine control sensors.
* Demonstrate understanding of EVAP systems
* Perform inspection and repair of EVAP systems using proper tools.
* Perform inspection and repair of PCV systems.
* Demonstrate understanding of AIR systems.
* Perform inspection and repair of EGR systems.
* Document repairs on repair orders
Prerequisite(s): TRAN1502, TRAN1504, TRAN1516
(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 study the theory of torque multiplication and division, applying it to all automotive and light truck applications. Operation 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): TRAN1504, AUTO1509, TRAN1502 or AUTO1510, TRAN1502, TRAN1504
(7 C: 2 lect/pres, 5 lab, 0 other)

AUTO 2511 - 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 some driveability problems. In this course students will study and apply the operation, repair, diagnosis and overhaul of automatic transmissions and transaxles. Students will be exposed to the latest tools required to repair or overhaul them 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 repairing leaks and minor malfunctions including related cooler and electrical circuits using processes, tools and equipment consistent with our industry.
* Access and synthesize information using pressure gauges, DVOM and scan tools, air tests, road tests and reference material to accurately diagnose transmission/transaxle failures or problems.
* Remove, rebuild and replace an automatic transmission and transaxle.
* Practice pollution prevention procedures involving storage, disposal or recycling of fluids and parts.
Prerequisite(s): AUTO2506
(3 C: 1 lect/pres, 2 lab, 0 other)

AUTO 2512 - Driveline Repair
This lab course offers the opportunity for students to advance further in the techniques and procedures of diagnosing and repairing driveline failures including automatic transmission and transaxle overhaul.
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 repairing leaks and minor malfunctions including related cooler and electrical circuits using processes, tools and equipment consistent with our industry.
* Access and synthesize information using pressure gauges, DVOM and scan tools, air tests, road tests and reference material to accurately diagnose transmission/transaxle failures or problems.
* Remove, rebuild and replace an automatic transmission and transaxle.
* 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.
Corequisite(s): AUTO2511
Prerequisite(s): AUTO2506, AUTO1510, TRAN1502
(3 C: 0 lect/pres, 3 lab, 0 other)

AUTO 2516 - Advanced Air Conditioning
This course covers the operation, testing, and repair of manual and automatic A/C systems.
Student Learning Outcomes:
* Diagnose AC performance problems in manual or automatic systems
* Recover, recharge and recycle R12 or R134 refrigerants within EPA regulations
* Diagnose and repair vacuum control problems
* Diagnose and repair electronic problems
* Replace defective components
Corequisite(s): TRAN2514
(2 C: 0 lect/pres, 2 lab, 0 other)

AUTO 2520 - Engine Driveability
Students will learn the basic systems approach to diagnosing engine performance problems. Lab work consists of using oscilloscopes, lab scopes, DVOM meters

and scan tool usage when repairing engine performance problems on today's vehicles. Students should be able to perform engine performance service in accordance with manufacturer's procedures.
Student Learning Outcomes:
* Interpret customer/vehicle complaint on late model vehicles
* Demonstrate job entry skills development when performing basic vehicle diagnosis
* Use 4/5 exhaust gas analyzer
* Perform a computerized scan analysis
* Use the systems approach to diagnosis
* Be aware of ethical practices as it relates to engine performance service procedures
* Exhibit automotive technician professionalism
Prerequisite(s): AUTO2502, AUTO2505
(3 C: 1 lect/pres, 2 lab, 0 other)

AUTO 2523 - Advanced Electronic Systems
Students will develop a fundamental understanding of vehicle automatic shift transmissions, automatic air conditioning, Data line, and anti-thief systems. Lab work consists of using scan tools for service, repair and diagnosis on these electronic/mechanical systems on late model vehicles. Students will learn to describe system operation and perform service in accordance with manufacturers procedures.
Student Learning Outcomes:
* Perform inspection procedures on Automatic transmission and Automatic A/C systems.
* Perform inspection procedures for data line communication systems.
* Demonstrate use of generic and factory scanners
* Perform basic computer scan diagnosis.
* Analyze transmission and body diagnostic trouble codes.
* Demonstrate ethical practices as it relates to engine performance service procedures.
* Exhibit technician/mechanic professionalism.
* Understand vehicle anti-theft systems.
Prerequisite(s): TRAN1504, TRAN1516 (2 C: 1 lect/pres, 1 lab, 0 other)

AUTO 2538 - Supervised Internship
Students will work in a sponsoring automotive service facility. The work will be full 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 4 credits. Course goals vary with the number of credits.
Student Learning Outcomes:
* Identify maintenance requirements and various inspection procedures on late model vehicles.
* Demonstrate job entry skill development when performing basic service.
* Conform to federal OSHA and state MPCA rules as it relates to vehicle service procedures.
* Be aware of ethical practices as it relates to service procedures.
* Exhibit technician/mechanic professionalism.
(1-4 C: 0 lect/pres, 0 lab, 1-4 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, and to help prepare the student for taking the ASE (A-9) Light Duty Diesel certification test.
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 and apply the differences between diesel fuels (#1, #2, and biodiesel)
Prerequisite(s): AUTO2502, AUTO1512 or AUTO1512, AUTO1522
(2 C: 1 lect/pres, 1 lab, 0 other)

BLGY 1320 - Human Biology
Meets MN Transfer Goal 3 - Natural Sciences. This course will cover the organization and general function of the human body. Areas of study include human organization, support and movement, integration and coordination, maintenance of the body, body defenses, reproduction, and development. Investigative activities will include dissections of organisms with comparative human anatomy, simulated dissections, simulations, and case studies. Students will also make observations and analyze data relation to body functions.
Student Learning Outcomes:
* Identify important anatomical structures associated with the human body using dissections of organisms with comparative human anatomy, simulations, models, and images
* Demonstrate an understanding of the basic physiological mechanisms associated with the human body and relate these processes to the maintenance of homeostasis
* Discuss important disease conditions of the human body systems
* List steps to be taken for the care of the human body and the prevention of disease
* Interpret and analyze data relating to human body function
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(4 C: 4 lect/pres, 0 lab, 0 other)

BLGY 1325 - Nutrition
Meets MN Transfer Curriculum Goal Area 3 - Students should take this course to learn about nutritional requirements, how humans digest, absorb and metabolize nutrients and to improve their understanding of nutritional excess and malnutrition. Nutrition is a 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. This course studies the chemistry and physiology involved in nutrition. Students will not only learn what and how much to eat, they will learn the science behind our 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:
* Identify the composition and chemical nature of macro and micro nutrients utilized in the human body.
* Compare the digestion, absorption, transport and metabolism of the different macro nutrients in the body.
* Use diet recording and analysis tools to record and assess personal diet and the diets of others including those with specific nutritional needs.
* Identify deficiencies and excesses in a dietary analysis.
* Relate the results of the analysis to a patient's health.
* Prepare age-dependent sample diets.
* Evaluate nutrition sources for accuracy and bias.
* Plan the components of daily living including appropriate activity level, energy and nutrient intake related to holistic health.
* Relate the impact of nutrition and activity to the process of disease prevention.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

BLGY 1351 - General Biology
Meets MN Transfer Curriculum Goal Areas 3 and 10 - 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.
* 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(4 C: 2 lect/pres, 2 lab, 0 other)

BLGY 2310 - Human Anatomy/Physiology I
Meets MN Transfer Curriculum Goal Area 3 - Human anatomy and physiology is the study of the structure and function of the human body in health and disease. Beginning from a solid base of general biological knowledge students will study the integumentary, skeletal, muscular, and nervous systems. In addition to these basic areas of study, histology is 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:
* Explain the function of each organ system.
* 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 blood calcium regulation and muscular excitation/contraction.
* Explain the function of each type of neuron and glial cell.
* Compare the neural pathways of each sense.
* Compare the receptors of each of the senses.
* Classify as excitatory or inhibitory the innervation of the autonomic nervous system to each organ/tissue.
* Relate clinical findings (signs and symptoms) to anatomical and physiological concepts covered in class.
* Recognize the effect of aging on the systems covered in class.
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 - 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 - Microbiology is the study of microscopic organisms including bacteria, fungi, protozoa, algae, helminthes, and viruses. This course is beneficial to all students, and essential for health science majors due to the ubiquitous nature of microorganisms and the impacts they have on everyday life. Students will be exposed to core microbiology concepts including how to effectively identify, control, and safely work with microorganisms in both a lecture and laboratory setting. 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.
* Identify microbial structures and functions.
* Demonstrate microbiology laboratory techniques through safe handling, cultivation, and identification of microorganisms.
* Summarize microbial genetics including variations and manipulations of microbial genomes.
* Discuss the importance of microorganisms to humans and our environment.
* Explain the metabolic and nutritional diversity found 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.
Prerequisite(s): BLGY1351
(4 C: 2 lect/pres, 2 lab, 0 other)

BMET 2400 - Biomedical Instrumentation
This course provides continued study in the theory of operation of medical test equipment. In addition, the theory of circuit analysis, calibration procedures, troubleshooting techniques, and safety precautions. 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 clinical instrumentation meets manufacturers' specifications.
Student Learning Outcomes:
* Analyze how biomedical transducers convert measured quantities into electrical signals
* Assess common battery types and management in medical settings
* Inspect fiber optic devices as used in a hospital
* Draw diagram of anesthesia and defibrillator units
* Inspect and perform maintenance on dialysis units and discuss their use in hemodialysis
* Demonstrate the origin, sensing and amplification of biopotentials
* Inspect, calibrate and repair basic radiology and x-ray systems
* Perform preventive maintenance checks on various types of medical instruments
* Inspect centrifuges
* Discuss blood flow in the human body and the use of various pressure and pump meters
* Document safety processes with respect to medical instruments
* Troubleshoot and repair microscopes
Prerequisite(s): ETEC1531
(4 C: 1 lect/pres, 3 lab, 0 other)

BMET 2410 - 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 approximately 4-8 hours per week off campus in a technical capacity 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 the hospital.
* Identify equipment operations for each department of the hospital.
* Summarize the organization, policies and procedures of a Biomedical Equipment Technology Department.

* Calibrate medical equipment accurately.
* Work with hospital staff in a respectful and collaborative manner.
* Troubleshoot equipment problems effectively.
* Respond accordingly to instructions and concerns of superiors, co-workers and other hospital staff.
* Adhere to applicable safety procedures.
* Repair medical equipment properly
Prerequisite(s): BMET2400
(2 C: 0 lect/pres, 0 lab, 2 other)

BMET 2420 - Biomedical Technology
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. Course work covers biomedical asset control, equipment tracking and control, and predictive maintenance on all equipment. Students will also learn the relationships between equipment and patient care. Students will work with a diversity of equipment and nursing staff, and ensure equipment is available, calibrated and ready to help save lives.
Student Learning Outcomes:
* Track and record all biomedical assets and maintain asset tags on equipment.
* Document predictive/preventive maintenance and other repairs in a work order system.
* Create from scratch proper PM procedures on equipment.
* Test equipment to pass NFPA electrical safety procedures.
* Work side by side with a diverse staff in the hospital/clinic environment.
* Follow patient privacy and confidentiality policies.
* Perform preventive maintenance on a variety of medical equipment.
* Understand NFPA99 electrical codes and explain how they are used in a hospital/clinic environment
* Demonstrate sterilization and isolation procedures in an operating room.
* Overhaul mechanical components of biomedical equipment.
* Perform proper scrubbing procedures, and dress to enter surgical areas.
* Identify and apply appropriate safety procedures.
Prerequisite(s): ETEC1507, ETEC1521
(4 C: 2 lect/pres, 2 lab, 0 other)

BUSM 1207 - Basic Keyboarding
Students will build accuracy and speed using the alpha, numeric, symbol, and service keys on the keyboard. Emphasis will be placed on the development of basic keyboarding techniques.
Student Learning Outcomes:
* Operate by touch the letter, number and symbol keys
* Demonstrate proper typing technique
* Type 35 words a minute on a 2-minute timing with no more than 5 errors
* Use the correct spacing with punctuation
(1 C: 0 lect/pres, 1 lab, 0 other)

BUSM 1212 - Customer Relationship Management
The course presents a practical approach to understanding, implementing and practicing the principles of customer service within different types of organizations. Students will examine service strategies in different organizations and businesses; learn about different supporting tools and techniques to provide quality service; and analyze customer information to identify opportunities for service improvement.
Student Learning Outcomes:
* Learn customer service terminology and processes
* Identify the roles and relationships within different customer service environments
* Examine the principles and practices of internal and external service
* Examine the stages of customer service development during the service process and the communication opportunities available
* Discuss the need and strategies for continuous improvement in services and its benefit to an organization
* Learn processes and techniques for communicating with a variety of customers, situations and circumstances, and practice appropriate responses
* Gain an understanding of how and when to use different communication technologies when working with internal and external customers
* Examine and utilize tools and technologies used for customer service improvement
* Analyze customer data to identify service gaps and present possible solutions
* Demonstrate customer services in a variety of environments including e-mail, telephone, live chat, face-to-face, Internet, etc.
(3 C: 3 lect/pres, 0 lab, 0 other)

BUSM 1217 - Business Communications
This course focuses on giving students the ability to communicate effectively through written, oral and interpersonal channels. It allows students to practice using appropriate channels of workplace communication. This course covers creating, writing, presenting, and editing a variety of business communications. Students will continue to develop grammar, punctuation, spelling, vocabulary, and speaking skills.
Student Learning Outcomes:
* Apply correct punctuation, grammar, sentence structure, and business vocabulary to all forms of communication
* Apply a receiver focus to business writing and speaking
* Apply the "communication by objective approach" to communications
* Write good news and bad news letters
* Understand and utilize appropriate communication channels
* Communicate person-to-person, in groups, and with an audience, using tools and strategies to meet desired outcomes
* Study interpersonal communication skills and strategies
* Apply communication strategies to meet the needs of diverse audiences
* Utilize appropriate technologies to enhance communications
* Solve communication barriers using tools and methodologies that support understanding
* Apply electronic etiquette
* Develop communication skills that reflect high ethical standards
* Utilize distance and collaborative technologies
(3 C: 3 lect/pres, 0 lab, 0 other)

BUSM 1260 - Applied Business Mathematics/Calculators
This course covers application of mathematic functions to the solution of business problems. This course emphasizes practical hands on approaches to prepare students for careers in business with a focus on real-world application. Developing 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 Mathematics prepares students for the math requirement of future business courses and business careers.
Student Learning Outcomes:
* Solve business mathematical functions using a 10-key calculator.
* Identify and calculate the base, rate and percentage of business transactions.
* Use percents to measure increase and decrease in financial data and to allocate overhead expenses.
* 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 based on FIFO, LIFO and Average costing methods.
* Estimate ending inventory using the cost of goods sold.
* Analyze the effect of Fixed Assets on the financial statements using various depreciation methods.
* Calculate and understand the impact of simple and compound interest on business transactions.
* Determine interest earned and deposits required for business investments using future and present value concepts.
* Understand the financial impact of various installment purchase decisions.
* Analyze balance sheets and income statements, comparing items and periods and operating ratios.
* Compute the costs and proceeds of stock transactions along with comparative earning potential.
(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 ownership, economics, business ethics, international

business, 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:
* Explain the contemporary business environment.
* Show the difference between the various forms of business ownership.
* Apply basic economic concepts to the business environment.
* Identify the ethical effects and consequences of business applications in our society.
* Compare and contrast the organizational structures used within organizations.
* Demonstrate various motivational theories as they apply to the workplace.
* Identify marketing principles within business operations.
* Explain how the global economy affects the local business environment.
* Recognize various leadership styles and how they affect business performance.
* Identify investment fundamentals.
* Identify business plan components through analyzing existing business plans.
(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 and print databases and publications.
* Develop appropriate and personalized communications used during job search and interview processes.
* Review acceptable 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 2210 - Project Management
The course presents a practical approach to understanding, implementing, and practicing the principles of project management within different types of organizations. Students gain a basic understanding of project management and how to organize tasks using Microsoft Project and other technologies. Students will learn to communicate and work within different types of project teams using a variety of communication methods and develop skills in planning, managing, and implementing a project.
Student Learning Outcomes:
* Introduce students to the roles and functions of project management in an organization
* Examine the principles and practices of project management utilizing different tools and methodologies
* Apply tools and techniques used in planning, managing, and implementing a project
* Acquire and fine-tune the skills necessary to define, plan, initiate and monitor projects using proven techniques and commonly available computer software tools
* Understand and apply methods for solving and avoiding common difficulties associated with project management
* Develop cost estimates, forecasts, and budgets to proactively track project expenditures
* Apply continuous quality improvement and learn techniques to project initiatives
* Develop the communication, organization, prioritization, problem solving, decision making, teamwork, and analytical skills necessary to manage a project and work with a diverse project team
Prerequisite(s): ADMS2240
(3 C: 3 lect/pres, 0 lab, 0 other)

BUSM 2275 - Legal Environment of Business
This course covers key areas of law that impact both domestic and international businesses. A wide range of topics will be covered, including the ethics and social responsibility the law imparts on a business. The course will focus on constitutional, statutory, and regulatory law as it pertains to business. Key topics covered will be the court system, contracts, employment law issues, torts, product liability, business entities, environmental law, and discrimination. Research and case law will be an integral part of the course as students learn to apply knowledge to business situations.
Student Learning Outcomes:
* Demonstrate knowledge and application of business law concepts and terms, and apply these concepts and terms to both domestic and international business issues.
* Compare and distinguish sources of law including constitutional law, statutory law and case law
* Understand the court system and Alternative Dispute Resolution, and how each applies to civil and criminal business issues
* Evaluate the consequences of business decisions and identify and analyze any ethical issues in a professional context
* Communicate legal and ethical principles in a professional manner both orally and in writing
* Apply legal principles to contracts, product liability and warranties, real property law, landlord/tenant law, agency law, and employment law
* Identify and contrast major components of estate planning including health care directives, wills, trusts and estates
* Evaluate and defend alternative outcomes in legal case scenarios
(3 C: 3 lect/pres, 0 lab, 0 other)

CACE 1400 - Professional Relations in CACE Careers
This course explores career opportunities for working with people in CACE professions. Students will examine job requirements, duties, regulations, and issues, skills, and personal characteristics for becoming successful professionals in child and adult care and education and paraprofessional careers.
Student Learning Outcomes:
* Apply relevant knowledge and proper use of technology in the context of personal, professional and civic interactions within the profession.
* Research licensing requirements for Rule 2, Rule 3, Rule 8, and School-age Child Care Guidelines for application in job settings.
* Compare and contrast: wages, benefits, and pay structures; working conditions; and professional philosophies, missions, and goals in a variety of job settings to determine career opportunities.
* Demonstrate team roles and positive collaborative relationships with colleagues, professionals, and families with sensitivity to diverse peoples and cultures to perform effectively as a team member.
* Exercise individual and social responsibilities through personal development and self-advocacy, healthy life-style choices, ethical behavior, civic involvement and interaction with diverse cultures.
* Identify and demonstrate professional behaviors such as positive attitude, problem-solving skills, confidentiality, and communication to perform effectively in the workforce.
* Identify and utilize professional literature, organizations, and resources to promote a commitment to life-long learning and engagement with advocacy and global issues.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

CACE 1404 - 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 and vulnerable adults. There will be an emphasis on the development of healthy habits and nutritional guidelines for multiple audiences. 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. 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.
* Identify personal, professional and program risks and examine strategies, policies and procedures that promote risk reduction.
* Research safety practices related to topics such as fire, traffic, poison and injury.
* Examine the indicators and responsibilities of protecting children and adults from physical, emotional and sexual abuse and neglect.
* Plan menus for children and adults that outline basic nutritional guidelines and

nutrient strengths of each major food group.
* Develop activities and lesson plans to promote healthy lifestyles for children, vulnerable adults and the elderly.
* Examine health, safety and nutrition licensing requirements.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

CACE 1420 - Foundations of Development
This course is designed to provide an overview of typical and atypical development across the lifespan, from prenatal through late adult, including physical, social/emotional, and cognitive development. It integrates developmental theory with appropriate practices in a variety of care giving, community and educational settings. An understanding of lifespan development is essential to meeting workforce needs for clients in multiple settings.
Student Learning Outcomes:
* Identify physical, cognitive, and social-emotional human growth and development in each of the life-span stages.
* Evaluate current research on issues pertaining to life-span development.
* Examine the stages of moral development for human growth and development.
* Examine the stages of language development for human growth and development.
* Describe methods to support cultural diversity as it applies to human development.
* Analyze the dynamics of family relationships on individuals from birth to late adulthood.
* Study the process of death and dying to gain understanding of cultural variations in attitudes towards death.
* Research current topics related to the life-span development stages.
* Evaluate community resources that support individuals throughout the life span.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

CACE 1422 - Profiles of the Exceptional Child
This course provides an overview of individuals with disabilities. The student will learn the importance of inclusion and the impact it has on children/adults with disabilities by examining legal and social environments. The student will also learn about modification of learning materials, observation techniques and personal philosophy in a variety of learning environments.
Student Learning Outcomes:
* Examine current and past legislation (PL94-142, IDEA) and integrate into present educational systems.
* Examine the characteristics of intellectual and physical disabilities.
* Discuss positive inclusive strategies for a person with disabilities.
* Create a personal philosophy of inclusion that applies the principles of least restrictive environment (LRE) and universal design.
* Analyze and implement techniques for observing, recording, and assessing a child/adults behavior.
* Create and modify activities to meet the unique needs of a child/adult in the least restrictive environment (LRE).
* Examine the Individual Family Service Plan (IFSP), Individual Education Plan (IEP), Individual Service Plan (ISP) and Individual Health Plan (IHP) processes for providing services to children/adult with disabilities.
* Identify community agencies and other resources to meet the individual needs of children and families with disabilities.
* Examine the importance of technology and its impact on learning strategies with children/adults with disabilities.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

CACE 1424 - School-Age Strategies for Learning
This course is designed to introduce and provide an overview of educational strategies with emphasis on school-age theory and development in home, school and/or center-based settings. Students will integrate knowledge of developmental needs, developmentally appropriate environments, effective care-giving, teaching strategies/methods and observation methods for the school-age child (5-12 years old). The course is designed to support the child care component of the CACE/PARA Program and for those preparing for a career in school-age child care.
Student Learning Outcomes:
* Integrate knowledge of the developmental stages and characteristics of school-age children in lesson and program planning.
* Broaden perspective of the historical and philosophical middle childhood theories.
* Compare the relationship and role of families and schools to learning and educational programs.
* Identify strategies to help children make and keep friends, resolve conflicts and develop self-image.
* Implement methods, strategies, and materials to develop the cognitive, social, moral, and physical needs of school age children.
* Implement methods, strategies, and materials to develop content areas of language, arts, math, science and technology for school age children.
* Identify the effects of the home, school and community environment on school-age children.
* Identify diverse cultural needs of the school-age child and environments.
* Develop technology skills related to school-age appropriate tools.
Prerequisite(s): READ0304, CACE1444, ENGL0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

CACE 1426 - Children with Difficult Behaviors
This course helps students understand children with behavior problems. Students will identify intervention strategies to prevent and resolve problem behavior, design behavior plans, and use behavior modification techniques.
Student Learning Outcomes:
* Identify difficult behavior factors and causes
* Evaluate classroom, guidance, and family strategies to support children exhibiting a variety of difficult behaviors, including post traumatic stress syndrome, immaturity, insecurity, nervousness, peer problems, family chemical dependency
* Evaluate classroom, guidance, and family strategies to support children exhibiting anti-social and/or aggressive behaviors
* Explain impact on family structure, stress, and changes on behavior
* Write individual guidance plans and/or behavior modification plans
* Define therapy methods including play therapy and bibliotherapy
* Plan a parent conference addressing the needs of a child with difficult behavior
* Utilize community agencies and other resources
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

CACE 1428 - 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 systems, legal systems, and family support systems in their community.
Student Learning Outcomes:
* Examine families and communities as dynamic, complex social systems across the lifespan.
* Research, practice, and implement positive community strategies that support/enhance and empower families to thrive.
* Examine family diversity and the issues related to attitudes, prejudice and bias related to race, culture, age, sex, and socio-economic class.
* Develop communication skills to build positive partnerships with parents, families and community members.
* Identify and implement community involvement, advocacy roles and responsibilities.
* Examine benefits of and barriers to teacher-parent, family and community partnerships.
* Understand the impact of social and historical context upon family life and dynamics.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

CACE 1440 - 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 in the child and adult care field. The student will also learn about the impact that the social and physical environment plays on behavior management.

Student Learning Outcomes:
* Identify and evaluate environmental influences that impact learning and behavior for children and adults.
* Define and observe interest areas for learning and positive behavior management.
* Explain problem prevention strategies for managing the physical classroom environment.
* Define behavior modification, positive reinforcement and positive behavior management.
* Assess the impact of personal guidance beliefs and assumptions on behavior management.
* Demonstrate the following guidance strategies: recognition, positive communication, limit setting, problem-solving, and behavior modification.
* Describe problem-solving techniques for utilization in managing behaviors.
* Develop rules and expectations for positive guidance strategies.
* Evaluate developmentally appropriate learning environments in the sensory-motor, cognitive, social-emotional, language, and creative arts areas.
* Develop a positive behavior plan for a child and/or an adult.
* Demonstrate validation therapy for adults with dementia.
* Apply and assess technology in managing behavior for children and adults.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

CACE 1444 - Planning and Implementing Curriculum
This course is designed to examine the role of the teacher and teaching strategies in early childhood settings. These strategies apply knowledge of child development, program development, intervention and assessment. This course provides early childhood best practices to support successful instruction and program development with preschool children in childcare and school environments.
Student Learning Outcomes:
* Describe development in the following areas: sensory-motor, cognitive, language, physical and social-emotional.
* Examine developmentally appropriate practices as it relates to individual children, communities, and curriculum.
* Examine the role of parent and family to support childcare and children's services.
* Examine learning through play.
* Demonstrate experimental learning through small and large group play activities.
* Demonstrate motivation strategies to enhance learning and participation.
* Implement teaching strategies and learning experiences in early childhood development areas.
* Demonstrate positive communication and problem-solving techniques.
* Implement activities utilizing age appropriate technology.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

CACE 1448 - 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:
* Identify and analyze whole language learning experiences.
* Examine conversation learning experiences.
* Review, describe and prepare rhyme learning experiences and evaluate the role they play in children's literacy learning.
* Demonstrate the skills necessary for presenting motivational learning experiences in connection with literature and recognizing the value that literature holds for all children
* Develop an awareness of social and multicultural issues as they connect to literature for children and encourage home language/bilingual learning experiences.
* Examine picture books, non-fiction, fiction, fairy tales/folk tales, and poetry.
* Read, examine, and critically compare a wide variety of children's books from all genres and many authors and illustrators.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

CACE 1455 - Aging: Activities and Adaptations
This course explores the importance of cognitive and social activities for the aging population in order to enhance the quality of care for these individuals. It is designed for individuals who would be responsible for coordinating and delivering activities in a variety of settings including residential care, adult day care and short term care facilities. Students will gain the knowledge needed to plan, implement and evaluate activities for the elderly.
Student Learning Outcomes:
* Examine the changes of the aging brain.
* Develop an understanding of the benefits of mental and physical activities for older adults based on current and relevant research.
* Design meaningful activities that meet the cognitive and social needs of the aging individual.
* Integrate teaching strategies when implementing meaningful activities for the elderly.
* Design a form that reflects the importance of communicating relevant information regarding the implementation of activities to the families of those involved and the wider community.
* Examine the principles of working with people with dementia.
* Develop culturally appropriate strategies as part of the activity planning process.
* Record and give feedback as part of the planning process and use this evaluative process to assess future resource needs.
* Analyze the social, interpersonal and cultural stereotypes/biases about aging and develop a positive, sensitive attitude that values the elderly.
* Discuss the importance of confidentiality and vulnerable adults.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

CACE 1460 - 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. 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 CACE/PARA program as it gives the students the opportunity to practice and implement skills learned throughout the program.
Student Learning Outcomes:
* Observe, perform, and evaluate child guidance skills.
* Observe and evaluate learning experiences for the following developmental areas: language, cognition, social-emotional, sensory-motor, creativity, math and science.
* Observe and evaluate parent communication skills.
* Observe and evaluate growth and development in the areas of sensory-motor, cognitive, social-emotional, language, and creativity.
* Observe and implement teaching strategies addressing growth and development in the areas of sensory-motor, cognitive, social-emotional, language, and creativity.
* Demonstrate team building and professional relations skills and behaviors.
* Apply site policies and procedures.
* Prepare a resume.
Prerequisite(s): EMSC1404 or concurrent registration, READ0304 and ENGL 0304 or MATH0400 or Appropriate Accuplacer Score.
(3 C: 1 lect/pres, 0 lab, 2 other)

CACE 1464 - Internship II
This course provides an opportunity to apply knowledge and skill in care giving and/or education settings. Students will observe and assess behavior, facilitate free choice activities and plan and implement child/adult learning experiences, as well as maintain professional relationships. This course is a vital component of the CACE/PARA program as it gives students the opportunity to implement skills learned in other program courses.
Student Learning Outcomes:
* Observe children/adults in the following developmental areas: language, cognition, social-emotional, sensory-motor, creativity, math and science.
* Practice and evaluate one-on-one, small and large group teaching strategies.

* Analyze experiences for cultural sensitivity and diversity in the following developmental areas: language, cognition, social-emotional, sensory-motor, creativity, math and science.
* Integrate learning experiences into the daily or weekly schedule from the following developmental areas: language, cognitive, social-emotional, sensory-motor, creativity, math and science.
* Arrange learning environments for the following developmental areas: language, cognition, social-emotional, sensory-motor, creativity, math and science.
* Implement learning experiences in the following developmental areas: language, cognition, social-emotional, sensory-motor, creativity, math and science.
* Demonstrate communication skills with supervisors, teachers, professional staff and the children/adults.
* Plan and implement daily routines and transitions in a supervised environment.
* Prepare a cover letter and revise a resume.
* Apply site policies and procedures.
Prerequisite(s): CACE1460
(3 C: 1 lect/pres, 0 lab, 2 other)

CACE 1470 - Professional and Leadership Development
This course focuses on the importance of professional organizations and community service. The course allows a student to develop self-confidence, practice leadership and management skills while involved in professional organizations.
Student Learning Outcomes:
* Develop social skills and workplace ethics
* Demonstrate civic responsibility
* Create a portfolio/e-folio that will provide an effective transition from college to work
* Demonstrate leadership skills
* Prepare, revise, and rewrite a resume and cover letter
Prerequisite(s): CACE1400 or Appropriate Accuplacer Score.
(1 C: 1 lect/pres, 0 lab, 0 other)

CACE 1471 - Motivational, Professional and Leadership Development
This course focuses on the importance of: Understanding, motivating, and having students put professional leadership into practice for themselves, their families and communities in which they live/work. The course allows a student to develop self-confidence, practice leadership and management skills while involved in a classroom setting and involvement in a professional organization.
Student Learning Outcomes:
* Demonstrate theories, strategies, and techniques that play a role in motivating professionals
* Identify: leadership roles and responsibilities
* Define practices of exemplary leadership and how that relates to being a professional
* Develop, study, implement; social skills, workplace ethics as it relates to professionalism
* Acquaint students with members of the community that play a role in professionalism and community development
* Learn, develop, and demonstrate qualities of a leader as a professional
* Demonstrate fundraising and service learning skills through a variety of strategies
Prerequisite(s): READ0304 or Appropriate Accuplacer Score.
(1 C: 1 lect/pres, 0 lab, 0 other)

CACE 1472 - Professional and Leadership Citizenship Development
This course focuses on the importance of: Professional Leadership and Citizenship, Civic Responsibility, Professional Organizations and Community Service. The course allows a student to develop self-confidence, practice leadership and management skills while involved in a classroom setting and involvement in a professional organization.
Student Learning Outcomes:
* Demonstrate civic responsibility
* Identify: common sense leadership, balance point of leaders, qualities of a leader, etc.
* Define practices of exemplary leadership
* Develop, study, implement; social skills, workplace ethics as it relates to professionalism and civic responsibility
* Develop an understanding of the legislative system and contact a local legislator to voice your opinion, suggestions, compliments, etc.
* Learn the traits of people of influence and vision and how they impact our communities
* Develop, demonstrate qualities of a leader as a professional and as it relates to civic responsibility
* Demonstrate fundraising and service learning skills through a variety of strategies
Prerequisite(s): READ0304 or Appropriate Accuplacer Score.
(1 C: 1 lect/pres, 0 lab, 0 other)

CACE 1473 - Strategies in Reading for the Paraprofessional
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 reading. This course combines an understanding of how children learn to read with the instructional strategies necessary to promote students as they learn to read. In addition, students will examine the reading skills and knowledge of reading required of prospective and practicing paraprofessionals, and their ability to apply those skills and knowledge when assisting in classroom instruction.
Student Learning Outcomes:
* Develop the ability to access and effectively use available resources for supporting teacher instruction in the subject of reading.
* Identify effective developmental, age-appropriate, and culturally sensitive instructional strategies in reading that support the instruction of licensed teachers.
* Develop and implement the recording of data regarding student performance in the area of reading using tools such as rubrics, curriculum-based measurement, and informal assessments.
* Define the terminology related to the instruction of reading.
* Assess how the Minnesota Standards and Testing (including state and local testing) direct the teaching of reading in Minnesota.
* Evaluate strategies to support and reinforce the instruction of students in reading following written and oral lesson plans developed by licensed teachers.
* Practice the use of technology in the learning and application of reading.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(2 C: 2 lect/pres, 0 lab, 0 other)

CACE 1474 - Strategies in Math for Paraprofessionals
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 math. This course combines an understanding of how children learn math with the instructional strategies necessary to promote math education. In addition, students will examine the math skills and knowledge required of prospective and practicing paraprofessionals, and their ability to apply those skills and knowledge when assisting in classroom instruction.
Student Learning Outcomes:
* Develop the ability to access and effectively use available resources for supporting teacher instruction in the subject of math.
* Identify effective developmental, age-appropriate, and culturally sensitive instructional strategies in math that support the instruction of licensed teachers.
* Demonstrate gathering and recording of data regarding student performance in the area of math using tools such as rubrics, curriculum-based measurement, and informal assessments.
* Define the terminology related to the instruction of math.
* Develop an understanding of how the Minnesota Standards and Testing (including state and local testing) direct the teaching of math in Minnesota.
* Demonstrate strategies to support and reinforce the instruction of students in math following written and oral lesson plans developed by licensed teachers.
* Practice the use of technology in the learning and application of math.
Prerequisite(s): MATH0475 or MATH0485 or Appropriate Accuplacer Score.
(2 C: 2 lect/pres, 0 lab, 0 other)

CACE 1476 - Writing Strategies for Paraprofessionals
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 writing. This course combines an understanding of how children learn writing with the instructional strategies necessary to promote writing education. In addition, students will examine the writing skills and knowledge of writing required of prospective and practicing paraprofessionals, and their ability to apply those skills and knowledge when assisting in classroom instruction.
Student Learning Outcomes:
* Identify effective developmental, age-appropriate, and culturally sensitive

instructional strategies in writing that support the instruction of licensed teachers.
* Develop the ability to access and effectively use available resources (including technology) for supporting teacher instruction in the subject of Writing.
* Demonstrate the gathering and recording of data regarding student performance in the area of writing using tools such as rubrics, curriculum-based measurement, and informal assessments.
* Define the terminology related to the instruction of writing.
* Develop an understanding of how the Minnesota Standards and Testing (including state and local testing) direct the teaching of writing in Minnesota.
* Create activities to support and reinforce the instruction of students in writing following written and oral lesson plans developed by licensed teachers.
* Demonstrate the use of technology in the learning and application of writing.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(1 C: 1 lect/pres, 0 lab, 0 other)

CACE 1478 - Technology Strategies for Paraprofessionals
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. In addition, students will examine assistive/augmentative technology and the knowledge of technology required of prospective and practicing paraprofessionals, and their ability to apply those skills and knowledge when assisting students.
Student Learning Outcomes:
* Demonstrate how to access and effectively use available resources for supporting teachers in their use of technology and assistive/augmentative technology.
* Identify effective developmental, age-appropriate, and culturally sensitive instructional strategies in technology and assistive/augmentative technology that support the instruction of licensed teachers.
* Demonstrate how to gather and record data regarding student performance in the area of technology.
* Define the terminology related to the instruction of technology and assistive/augmentative technology.
* Apply strategies to support and reinforce the instruction of students using various types of technology while following the written and oral lesson plans developed by licensed teachers.
* Analyze the technical skills needed to effectively use technology and assistive/augmentative technology with individual students.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(1 C: 1 lect/pres, 0 lab, 0 other)

CACE 1479 - Autism Spectrum Disorder (ASD)
The course instruction provides an overview of the characteristics of children and adults with Autism Spectrum Disorder. The course illustrates care-giving and classroom strategies to promote inclusion of children and adults into their communities.
Student Learning Outcomes:
* Define the characteristics of Autism Spectrum Disorder.
* Demonstrate sensitivity to beliefs, values and cultures.
* Examine the types of resources available and organize a community resource list for families and professionals.
* Learn a variety of educational modifications and accommodations and create an inclusive education/activity plan.
(1 C: 1 lect/pres, 0 lab, 0 other)

CACE 1480 - 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 after school setting.
Student Learning Outcomes:
* Implement Standard Precautions and describe Administering Medication Safety Standards while caring for children with special health conditions.
* List the principles of basic body mechanics and demonstrate handling, transferring, range of motion, positioning techniques and various adaptive tools and technology to enhance a child's independence.
* Describe the care and support practices for a child with an urinary catheter.
* Define current terminology in the health care field and describe the care for a child with diabetes following health care directives.
* Identify common feeding abnormalities in relationship to sensory disorders and appropriate intervention practices.
* Identify the types of seizures and the implementation of directives as written in the seizure response plan.
* 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(2 C: 2 lect/pres, 0 lab, 0 other)

CADD 1502 - Mechanical CADD I
Students will develop knowledge of system configuration and operation of 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)

CADD 1507 - Mechanical CADD II
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:
* Define and demonstrate the use of STD, dimensioning rules and terms
* 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
* Demonstrate timeliness in finishing assignments
* Treat classmates with respect
Prerequisite(s): CADD1502
(3 C: 1 lect/pres, 2 lab, 0 other)

CADD 1512 - CADD Applications I
This course provides students with additional practice in the fundamentals of multi-view drawings, along with the fundamentals of dimensioning standard machine elements, dimensional notes and functional drawing dimensioning. Students will create component part drawings using 2D and solid modeling software.
Student Learning Outcomes:
* Define and demonstrate the use of standard dimensioning rules and terms
* Produce multi-view drawings according to industry standards
* Utilize dimensional notes to call out various machine element features
* Demonstrate timeliness in meeting deadlines
* Exhibit the ability to respect others and their ideas
* Create and modify basic detail part drawings and 3 dimensional objects
* Create and assemble 3D objects
Prerequisite(s): CADD1502
(3 C: 1 lect/pres, 2 lab, 0 other)

CADD 1516 - CADD Applications II
This course provides information for completing engineering drawings including design layouts, geometric construction, fasteners, tolerances and fits using 2D and solid modeling software.
Student Learning Outcomes:
* Create drawings using geometric construction
* Determine tolerances for mating parts
* Apply tolerances to part features
* Create drawings of fasteners
* Generate section views
* Demonstrate timeliness in finishing assignments
* Treat classmates with respect
* Develop blocks and attributes
* Create symbol libraries

Corequisite(s): CADD1507
Prerequisite(s): CADD1512
(3 C: 1 lect/pres, 2 lab, 0 other)

CADD 1520 - SolidWorks Foundations
The primary goal of this course is to introduce students to the aspect of creating components with Solidworks 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.
* Construct solid model geometry/features from 2d sketches.
* Create placed features on a model.
* Produce a 2 dimensional multi-view drawing from a model
* 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)

CADD 1522 - Applied Physics
The student will study the principles of force, motion, acceleration, deceleration, work, power, energy, thermodynamics and the properties of solids, liquids and gases. They will apply this knowledge 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 affects of heat on materials
* Calculate design information based on the properties of all matter including solids, liquids, and gasses
Prerequisite(s): TECH1522 or MATH1300
(4 C: 1 lect/pres, 3 lab, 0 other)

CADD 1530 - Basic Electric Circuits
This course gives students a fundamental understanding of electrical circuits, the basic components of an electrical circuit, electricity flow and an explanation of the basic units used to measure electricity. The course will cover fundamental principles of AC, DC electricity and basic rules for calculating voltage, current, resistance and power. The course will explain the basic principles of reading electrical prints and provide an overview of various meters used in electrical maintenance.
Student Learning Outcomes:
* Be able to describe the foundational principles and components of AC/ DC electric circuits
* Explain basic meter usage
* Calculate power, voltage, current, resistance values for basic circuits
* Read and understand basic electrical prints
(1 C: 1 lect/pres, 0 lab, 0 other)

CADD 2505 - Production CADD I
This course will provide students with the techniques to do sketches of objects as well as advanced drawings consisting of design layouts, auxiliary views, and the application of finish marks using 2D and solid modeling software.
Student Learning Outcomes:
* Create hand sketches of objects
* Create design layout of bolted assemblies
* Apply surface finishes to drawings
* Create detail drawings requiring auxiliary views
* Demonstrate timeliness in finishing assignments
* Treat classmates with respect
Prerequisite(s): CADD1516
(3 C: 1 lect/pres, 2 lab, 0 other)

CADD 2509 - Production CADD II
This course will provide students with the knowledge and skills to create bolted and welded assembly drawings using 2D and solid modeling software.
Student Learning Outcomes:
* Identify common parts of welding symbols
* Create bolted and welded assembly drawings
* Formulate parts list for drawings
* Demonstrate timeliness in finishing assignments
* Treat classmates with respect
Prerequisite(s): CADD2505
(3 C: 1 lect/pres, 2 lab, 0 other)

CADD 2510 - Design Concepts
Students will examine the relationships between product functions, design, quality control and manufacturing techniques. Students will discuss and apply practical geometric, dimensioning to industry drawings.
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 application as they relate to production and cost
* Demonstrate the ability to respect others and their ideas
* Structure and utilize time effectively to meet deadlines
Corequisite(s): CADD2514, CADD2522
Prerequisite(s): CADD2509
(3 C: 1 lect/pres, 2 lab, 0 other)

CADD 2514 - Computer- Aided Design
This course deals with constructing a drawing portfolio for a completed design. Detail and design drawings are developed with emphasis on accuracy, tolerances, surface finishes, notes, system design and symbol diagrams.
Student Learning Outcomes:
* Evaluate design for manufacturability
* Analyze the design for function
* Identify and incorporate safety requirements
* Evaluate the design for maintenance and appearance requirements
* Prepare related technical documents associated with the completed design
* Treat fellow classmates with respect
* Demonstrate ability to structure and utilize time effectively to meet deadlines
* Apply practical machine design elements and use of vendor catalogs
Corequisite(s): CADD2510, CADD2522
Prerequisite(s): CADD2509
(3 C: 1 lect/pres, 2 lab, 0 other)

CADD 2518 - Statics and Strength of Materials
Statics is an area of study concerned with determining the magnitude and direction of forces acting upon or generated by machine components. Strength of materials involves calculating stress, strain, and modulus of elasticity to determine material to be used and size of structural members.
Student Learning Outcomes:
* Determine unknowns in a concurrent-coplanar force system
* Determine unknown values of stress or strain
* Calculate unknowns in a parallel force system
* Calculate shear diagrams
* Create bending moment diagrams
* Identify proper material and material size for specific applications
Prerequisite(s): PHYS1300 or CADD1522
(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 and springs. Students will also consider more comprehensive design problems in the area of machine design. Upon completion of this course the student will have an understanding of the broad field of activities identified by the term "Machine Design".
Student Learning Outcomes:
* Analyze part failure
* Asses requirements for friction and antifriction bearings
* Perform calculations for shaft, coupling and key design
* Analyze the design and application of spur gears
* Calculate power transfer for belt and chain drive systems
* Asses applications of mechanical fasteners and the design of power screws
* Analyze and apply equations for the design of various spring types
* Employ fluid power principles for cylinders and control valves
* Demonstrate the ability to respect others and their ideas
* Manage and utilize time effectively to meet deadlines
Corequisite(s): CADD2510, CADD2514
Prerequisite(s): CADD2518
(3 C: 1 lect/pres, 2 lab, 0 other)

CADD 2529 - Manufacturing Systems
This course will provide many opportunities to study the basic elements of manufacturing as a managed body of activities. These basic elements are arranged under two major categories: materials and processing and management.
Student Learning Outcomes:
* Examine metallic material types and classifications
* Explore methods of metal, plastic, ceramic and composite material processing, conditioning and finishing
* Examine various casting methods
* Investigate different methods of lean manufacturing
* Participate in industry tours
* Apply fundamental statistical analysis of measurements to verify the quality of a design or process
* Manage time and meet deadlines
* Demonstrate the ability to respect others and their ideas
(2 C: 1 lect/pres, 1 lab, 0 other)

CADD 2532 - Geometric Dimensioning and Tolerancing
This course is designed to give the students a basic understanding of Geometric Dimensioning and Tolerancing standards (ASME Y14.5). Students will learn to communicate with manufacturing and engineering staff what degree of accuracy and precision is needed on each facet of the part. Theoretical and practical concepts of each of the geometric controls are explained relative to design and function.
Student Learning Outcome:
* Explain what each geometric characteristic controls and what datums are used for.
* 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.
* Organize geometric symbols on a drawing for maximum readability.
Prerequisite(s): CADD1516
(2 C: 1 lect/pres, 1 lab, 0 other)

CADD 2541 - Basic CAM
This course will emphasize the function of Computer-Aided Manufacturing software (CAM), and the application of computer generated machining data.
Student Learning Outcomes:
* Manipulate basic 2D and 3D geometry for milling machine using CAM software
* Develop tool paths and CNC program for lathe and milling machine
* Generate basic g-codes using post processors for the mill and lathe
* Generate projects using CNC mill and lathe
* Meet deadlines in a timely manner
* Exercise safe practices when using lab equipment
* Create projects using CNC mill and lathe
Prerequisite(s): CADD1502
(2 C: 0 lect/pres, 2 lab, 0 other)

CADD 2542 - Reverse Engineering
This course will enhance the student's ability to use various forms of inspection devices. Students will sketch and document finished part data. Students will create assembly and detailed piece part drawing. Creation of these drawings will help build a portfolio of engineering documents for job interviews.
Student Learning Outcomes:
* Measure parts with inspection equipment
* Produce sketches of parts and document measurements
* 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 manufacturing practices
* Select drawings to be inserted in a student portfolio
* Manage time and meet deadlines
* Demonstrate the ability to respect others and their ideas
* Utilize the Metric and English measuring system
Prerequisite(s): CADD2509
(2 C: 0 lect/pres, 2 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): CADD2531
(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, OHSA 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 1523 - 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 learner through the steps necessary to understand the mathematical principles, materials and methods used in modern stair and rafter framing. The learner 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.
* Identify roof framing parts used in gable and hip roofs.
* Identify the methods used to calculate the length of rafters.
* Employ a framing square, a speed square, and a calculator to layout rafters.
* 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 of stairs.
* Identify the parts of a stairway.
* Identify the materials used in stair construction.
* Perform the calculations to determine the total rise, the number of risers and number and size of treads required 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): CNST1502, CARP1507
(3 C: 1 lect/pres, 2 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): CNST1502, CARP1507
(4 C: 1 lect/pres, 3 lab, 0 other)

CARP 1531 - Building Layout and Concrete
In residential construction the carpenter may be involved in the layout of the building as well as building forms and placing concrete. This course introduces the learner to the equipment and techniques used to place a building or portion of a building on a site. The course will introduce the learner to the tools and techniques used in placing concrete as well as the ingredients that make up concrete.
Student Learning Outcomes:
* Convert measurements in feet and inches to decimal equivalents.
* Use layout equipment and procedures to make distance measurements and perform site layout.
* Recognize, use and properly care for measuring instruments.
* Record site layout data.
* Establish 90-degree angles using the 3-4-5 rule.
* Identify code and inspections requirements pertaining to building layout.
* Identify foundation types and materials used in each.
* Identify the ingredients in concrete and various types of concrete and their uses.
* Calculate concrete quantities for various shapes.
* Identify tools used in placing concrete.
* Demonstrate the care of tools used in placing concrete.
* Place and finish concrete.
* Recognize safety concerns when working with concrete.
(3 C: 2 lect/pres, 1 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 2506 - Residential Framing II
This course is a further examination of residential building systems. Areas of study include foundations, advanced framing systems, engineered materials and roofs. The learner will estimate materials for projects as well as identify energy efficient construction methods and building code requirements pertaining to residential and light commercial construction. These skills will be applied on a jobsite.
Student Learning Outcomes:
* Explain different types of floor and wall systems.
* Layout and build a foundation
* Describe various advanced framing systems and explain the techniques and materials used in their construction.
* Identify the parts of an engineered roof system.
* Layout the parts of floor, wall and, roof systems.
* Demonstrate the construction of advanced floor, wall and roof systems.
* Demonstrate the ability to combine hand framed and engineered roof systems.
* Construct various portions of a house building project.
* Estimate the materials required to construct advanced floor, wall and, roof systems.
* Identify building code requirements pertaining to foundations and advanced framing systems.
* Identify energy efficient construction principles.
* Apply energy efficient construction principles to on site projects.
* Demonstrate professionalism.
Prerequisite(s): CNST1502, CARP1507
(4 C: 2 lect/pres, 2 lab, 0 other)

CARP 2521 - Interior Finish
This course will enable students to study methods of finishing the interior of a house; from insulation and gypsum board to hanging doors and installing trim. Finish skills will also include: wood flooring, underlayment, shelving, and cabinet installation.
Student Learning Outcomes:
* Identify insulation and ventilation systems and perform installation procedures.
* Identify the type of drywall required for specific applications.
* Perform drywall installations using different types of fastening systems.
* Estimate material quantities for drywall installation.
* Identify materials used in drywall finishing and drywall finishing tools.
* Examine other types of wall and ceiling finish materials.
* List and identify specific items included in a typical trim schedule.
* Identify door jambs and frames and doors used in other than standard openings.
* Demonstrate the procedure for installing selected specialty doors.
* Demonstrate the correct use of hand and power tools used for interior finishing.
* Install door, window, base and ceiling trim.
* Estimate quantities of selected trim materials.
* Demonstrate safe work habits.
* Demonstrate professionalism.
Prerequisite(s): CARP1521, CARP1527
(2 C: 1 lect/pres, 1 lab, 0 other)

CARP 2524 - Residential Construction Lab I
This course is a culmination of the skills and knowledge the learner has developed in the prerequisite courses. The learner will practice those skills on a jobsite while developing new knowledge and skills. The focus will be on concrete work, framing and exterior finishes.
Student Learning Outcomes:
* Layout, form and pour concrete footings, foundations and flatwork.
* Estimate materials for concrete projects.
* Layout and frame floors, walls and roofs.
* Estimate materials for framing projects.
* Prepare the building for installation of exterior finish materials.
* Install windows and doors to manufacturers specifications and applicable building codes.
* Install various types of siding and accessories.
* Estimate materials for siding projects.
* Demonstrate an understanding of the importance of jobsite safety.
* Identify safety hazards.
* Develop leadership skills.
* Demonstrate professionalism.
Corequisite(s): CARP2506 Prerequisite(s): CNST1502, CARP1507, CARP1521
(5 C: 0 lect/pres, 5 lab, 0 other)

CARP 2546 - Residential Construction Lab II
This course will enable the student to implement and practice the knowledge and skills learned to build a residence. Course will focus on interior finish and trim techniques and materials.
Student Learning Outcomes:
* Form, calculate, pour, and finish interior and exterior concrete
* Construct floors, walls, ceilings, and roofs; from framing through exterior and interior finish, including wallboard and finish floor systems
* Install windows and doors, from framing through interior and exterior finish
* Perform interior finish functions: install doors, interior trim work, closets, cabinetry, and finish hardware
* Construct decks and interior and exterior stair and railing systems
* Perform site work; form excavation layout and building elevations to final grading and job site clean-up
Prerequisite(s): CARP2524
(3 C: 0 lect/pres, 3 lab, 0 other)

CARP 2562 - Carpentry Internship
The internship presents an opportunity to the student to apply and showcase the skills they have developed in the course of their training. While the student is in the employ of a contractor they will be able to observe others working in a real world setting and will gain practical experience.
Student Learning Outcomes:
* Apply skills learned in previous courses while working in a real life setting.
* Synthesize academic knowledge with practical job experiences.
* Observe technical problems and solutions while working with people under varied and unpredictable conditions.
* Demonstrate the ability to function independently.
* The learner will gain practical experience in the construction industry.
* The learner will gain a greater sense of responsibility maturity, and self-confidence through interaction with co-workers and by performing competent work.
* The learner will gain an awareness and appreciation of different cultures as they interact with others in new environments.
* Students may have the opportunity for employment after graduation or to make professional contacts that may lead to future employment.
Corequisite(s): CARP2546
(3 C: 0 lect/pres, 0 lab, 3 other)

CHEM 1305 - Chemistry for the Non-Scientist
Meets MN Transfer Curriculum Goal Areas 3 and 10 - 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. In addition to learning the basic concepts that comprise the field of chemistry, the practical applications and impact that chemistry has on modern concerns such as: food and drug production, health and fitness, environmental pollution and energy sources will also be examined. Hands-on laboratory sessions 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 produc-

tion, health and fitness, 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 ways and means including: recording, interpreting and reporting experimental observations as well as using laboratory equipment and chemicals safely.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(4 C: 3 lect/pres, 1 lab, 0 other)

CHEM 1340 - Introduction to General Chemistry
Meets MN Transfer Curriculum Goal Area 3 - This course is intended as a broad introduction to chemistry for the non-science major as well as for the allied health science major. Topics covered include the scientific method, atomic structure, the periodic table, bonding, acids and bases, nomenclature, equations, stoichiometry, gas laws, and oxidation and reduction. 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 first week lab safety session is mandatory.
Student Learning Outcomes:
* Quantify measurements in the appropriate metric units as well as convert between the English and the metric system.
* Identify and describe chemical and physical properties and changes.
* Understand and use the Periodic Table to describe subatomic particles, predict types of bonding and ion formation, and to name compounds and molecules.
* Represent molecular bonding in two and in three dimensions and predict molecular geometry.
* Quantitatively and qualitatively describe chemical reactions and predict products of reactions.
* Understand the submicroscopic differences in the three phases of matter and predict how that will affect macroscopic observations.
* Apply appropriate laboratory ways and means including: recording, interpreting and reporting experimental observations as well as using laboratory equipment and chemicals safely.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(4 C: 3 lect/pres, 1 lab, 0 other)

CHEM 1342 - Organic and Biological Chemistry
Meets MN Transfer Goal 3 - Natural Sciences
This course is intended as an introduction to key concepts of organic and biological chemistry for the non-science major as well as for the allied health science major. Topics covered include nomenclature and characterization of hydrocarbons and functional groups, organic reactivity, classification and behavior of biochemicals including carbohydrates, lipids, amino acids, proteins, and nucleic acids. This course includes four hours of required lecture per week and two hours of required lab per week. The laboratory will apply concepts learned in lecture while introducing students to safe handling of chemicals, appropriate use of lab ware, and transcription of observations and data. Attendance in the first week during the lab safety is mandatory.
Student Learning Outcomes:
* Identify and name hydrocarbons and organic compounds with functional groups
* Predict and describe qualitatively and quantitatively common organic and biochemical reactions
* Identify and describe the behavior of classes of biochemicals in living systems
* Demonstrate an understanding of the relationship of submicroscopic form with macroscopic function in organic and biochemicals
* Relate organic and biochemistry topics to everyday life
Prerequisite(s): CHEM1340
(5 C: 4 lect/pres, 1 lab, 0 other)

CMAE 1502 - 360 Degree Technical Mathematics
This is an introductory technical math course. The course is designed for students who have basic math skills and for those you need a review of basic technical math concepts. The primary goals of this course are to help individuals acquire a solid foundation in the basic skills of math/shop algebra and geometry. This course will show how these skills can model and solve authentic real-world problems. This is a blended on-line course utilizing Tooling "U", D2L and proctored unit exams.
Student Learning Outcomes:
* Solve practical problems in all topic areas
* Demonstrate and apply critical thinking skills to solve a variety of problems
* Utilize a systematic approach to problem solving
* Demonstrate the ability to work online and be self motivated to meet deadlines for assignments and tests
* Demonstrate effective use of resources including faculty, reference materials, industry sources, and the Internet
* Exhibit the use of a scientific calculator
Prerequisite(s): MATH0380 or MATH0400
(3 C: 3 lect/pres, 0 lab, 0 other)

CMAE 1506 - Intro to Computer Technology
This course has 2 parts. Part 1 covers the use of D2L and e-mail, eFolio, Smarthinking and Research, and Computer Security. Part 2 of the course is an overview of Windows XP and the Microsoft Office 2007 software suite including MS Word, Excel, Access and PowerPoint.
Student Learning Outcomes:
* Use D2L to access and submit coursework, quizzes, communication, and grades
* Access student e-mail services to send and receive e-mail including attachments
* Set up an efolio account, customize a personal efolio, and include appropriate artifacts
* Access Smarthinking and other Library Research Services to conduct research
* Explain appropriate and available security measures in maintaining a personal computer
* Use the Windows XP operating system to create and manage files and folders
* Create and edit MS Word 2007 documents
* Create and edit MS Word Excel 2007 spreadsheets with formulas
* Design, create, and use MS Access 2007 database and associated tables
* Create MS Power Point 2007 presentations
(2 C: 1 lect/pres, 1 lab, 0 other)

CMAE 1510 - Print Reading
This course will orient the student in the basic skills and abilities required for understanding prints utilized in a manufacturing/industrial environment. Emphasis will be on interpretation of Geometric Dimensioning and Tolerancing symbols/principles; Alphabet of lines; Multi-view drawing (including Orthographic Projection, Isometric Views and Perspective Drawing); Title blocks; Revision systems; identification of general/local notes; Dimensions and tolerances; Basic principles of math/geometry in relation to mechanical print reading; interpretation of basic weld symbols; Techniques of basic shop sketching and interpretation of three-dimensional drawings, will also be discussed. Each student will have the opportunity to apply the knowledge acquired through a variety of in-class activities and external assignments.
Student Learning Outcomes:
* Define basic blueprint terminology
* Differentiate between general and local notes
* Interpret common abbreviations and terminology
* Determine tolerances associated with dimensions on a drawing
* Identify types of lines within a drawing
* List essential components found in title and revision blocks
* Identify isometric views
* Identify positions of views: top, front, side, auxiliary, and section
* Visualize one or more views from a given isometric of pictorial representation of an object, or from an actual object
* Determine the scale of the view or section
* Check for revisions
(2 C: 2 lect/pres, 0 lab, 0 other)

CMAE 1514 - Safety Awareness
This course is designed to align with the Manufacturing Skill Standards Council's (MSSC) assessment and certification system for Safety. The course curriculum is based upon federally-endorsed national standards for production workers. This course will introduce OSHA standards relating to personal protective equipment, Hazard Communication, tool safety, confined spaces, electrical safety, emergency response, lockout/tagout, and others.

Student Learning Outcomes:
* Work in a safe and effective manufacturing workplace
* Perform environmental safety inspections
* Perform emergency drills
* Identify unsafe condition and take corrective action
* Provide safety orientation for other employees
* Train personnel to use equipment safely
* Suggest processes and procedure that support safety in the workplace
* Fulfill safety and health requirements for maintenance, installation and repair
* Monitor equipment and operator performance
* Utilize effect safety enhancing workplace practices
(2 C: 2 lect/pres, 0 lab, 0 other)

CMAE 1518 - Manufacturing Processes
This course is designed to align with the Manufacturing Skill Standards Council's (MSSC) assessment and certification system for Manufacturing Processes. The course curriculum is based upon federally-endorsed national standards for production workers. This course emphasized, Just-In-Time (JIT) manufacturing principles, basic supply chain management, communication skills, and customer service.
Student Learning Outcomes:
* Identify customer needs
* Determine resources available for the production process
* Set up equipment for the production process
* Set team production goals
* Make job assignments
* Coordinate work flow with team members and other work groups
* Communicate production and material requirement and product specifications
* Perform and monitor the process to make the product
(2 C: 2 lect/pres, 0 lab, 0 other)

CMAE 1530 - 360 Degree Machining Math
This is a math course designed for students in a machine shop environment. The primary goals of this course are to help individuals acquire a solid foundation in the basic skills of math that relate directly to the machine shop and industrial manufacturing. This course will show how these skills can model and solve authentic real-world problems. This is a blended on-line course utilizing Tooling "U", D2L and proctored unit exams.
Student Learning Outcomes:
* Solve practical problems in all topic areas
* Demonstrate and apply critical thinking skills to solve a variety of problems
* Utilize a systematic approach to problem solving
* Demonstrate the ability to work online and be self motivated to meet deadlines for assignments and tests
* Demonstrate effective use of resources including faculty, reference materials, industry sources, and the Internet
* Exhibit the use of a scientific calculator
Prerequisite(s): CMAE1502
(2 C: 2 lect/pres, 0 lab, 0 other)

CMAE 1532 - Machine Tool Print Reading
This course covers the principles of mechanical print reading. Course includes sketching, lines, dimensioning and tolerancing, and single/multi-view drawings.
Student Learning Outcomes:
* Develop an understanding of pictorial and orthographic projection drawings
* Proficiency in understanding dimensioning and print specifications
* Determine view location in first and third angle projection
* Decipher thread representation in both inch and metric threads
* Solve practical problems in all topic areas
* Demonstrate and apply critical thinking skills to solve a variety of problems
* Demonstrate the ability to work online and be self motivated to meet deadlines for assignments and tests
Corequisite(s): CMAE1510
(2 C: 2 lect/pres, 0 lab, 0 other)

CMAE 1534 - Machine Tool Technology Theory
This course will address the machining theory related to the safety and operation of basic machine tools including; drill press, vertical milling machine, engine lathe, precision and non-precision grinders, saws and precision measuring equipment. This is a blended on-line course utilizing Tooling "U" and D2L.
Student Learning Outcomes:
* Knowledge of safe work habits around all metalworking equipment and co-workers
* Perform speed and feed calculations
* Understand the use of saws, grinders, and drill presses
* Understand the use of mills and lathes
* Describe proper machine tool operations
* Describe use of precision measuring equipment
* Demonstrate the ability to work online and be self motivated to meet deadlines for assignments and tests
(2 C: 2 lect/pres, 0 lab, 0 other)

CMAE 1536 - Machine Tool Technology Lab I
This course will address the setups and operation of a drill press, grinder, vertical milling machine, engine lathe, and saws. Machine safety, machine component identification, as well as turning, milling, sawing, bench work, drilling and single-point tool grinding projects are also included in the components listed above. The student will also learn the care and use of inspections and layout tools.
Student Learning Outcomes:
* Application of safe work habits around all metalworking equipment and co-workers
* Completion of milling projects on vertical milling machine
* Completion of fundamental lathe operations on the engine lathe
* Completion of bench work projects utilizing hand tools
* Understand the importance of proper machine setup
* Proficiency using various saws to complete machining projects
* Completion of drilling projects on metalworking equipment
* Proficiency in operation and setup of tool grinder
* Proficiency in using precision measuring tools
Corequisite(s): CMAE1534
(2 C: 0 lect/pres, 2 lab, 0 other)

CMAE 1538 - Machine Tool Technology Lab II
This course will address the advanced operations of a drill press, vertical milling machine, engine lathe, surface grinder and saws. Machine safety as well as turning, milling, sawing, drilling and surface grinding projects are also included in the components listed above. The student will also learn the care and use of high precision measuring equipment.
Student Learning Outcomes:
* Application of safe work habits around all metalworking equipment and co-workers
* Completion of advanced milling projects on vertical milling machine
* Completion of advanced lathe operations on the engine lathe
* Understand the importance of proper machine setup and cutting tool usage
* Proficiency using various saws to complete machining projects
* Completion of drilling projects on metwalworking equipment
* Proficiency in using high precision measuring equipment
* Completion of precision surface grinding projects
Prerequisite(s): CMAE1536
(2 C: 0 lect/pres, 2 lab, 0 other)

CMAE 1540 - Introduction to CNC
This online course is an introduction to CNC Machining. The focus will center on CNC machining centers and will include the history of CNC machining, GandM codes, programming, set-up and operating procedures. The is an on-line course utilizing Tooling "U" and D2L.
Student Learning Outcomes:
* Demonstrate the ability to edit a CNC program
* Demonstrate the ability to create a manually written CNC program
* Demonstrate and apply critical thinking skills to solve a variety of problems
* Demonstrate the ability to work online and be self motivated to meet deadlines for assignments and tests
* Demonstrate effective use of resources including faculty, reference materials, industry sources, and the Internet
(3 C: 3 lect/pres, 0 lab, 0 other)

CMAE 1542 - Geometric Dimensioning and Tolerancing
This course is designed to allow students to interpret the latest ANSY Y 14.5 drawing standard that applies to blueprint standards. Students will learn the symbols, rules and geometric controls shown on today's prints. Students will learn from given prints and exercises to enhance their skills in print reading.
Student Learning Outcomes:
* Understanding of ANSI Y14.5 standards that affect geometric dimensioning and tolerancing applications
* Proficiency in using geometric dimensioning and tolerancing symbols and controls
* Decipher how piece-parts must be inspected if the features have GDandT controls and symbols
* Interpret a sketch or print with pertinent feature control frame and its contents based on written geometric requirements
* Decipher the correct precision tool(s) to inspect geometric requirements on a piece-part
* Determine the total tolerance of a feature using bonus and non-bonus tolerances
(2 C: 2 lect/pres, 0 lab, 0 other)

CMAE 1560 - Interpreting Symbols
The Welding profession requires a good working knowledge of the fundamental component of welding prints that make up structures in the welding industry. To accurately layout and fabricate parts, the welder will need basic knowledge of print lines, dimensions, notes, and welding symbols. The students will breakdown welding prints to develop the skills necessary to fabricate individual component parts that will make-up welded structures. Written and Fundamental tests will be administered in accordance with the American Welding Society (AWS) and the appropriate correlating code books.
Student Learning Outcomes:
* Interprets basic elements of a drawing or sketch.
* Interprets welding symbol information and placement guidelines.
* Nondestructive Examination (NDE) methods and symbol use.
* Calculate weight and cost of welding consumables and materials
* Prepares an applicable bill of materials.
(2 C: 2 lect/pres, 0 lab, 0 other)

CMAE 1562 - Oxyfuel Welding and Cutting Process
This course covers the use of oxy-fuel 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 into laser cutting equipment. A very important part of this course will be discussing safety as it relates 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) codes and standards.
Student Learning Outcomes:
* Explain and identify the proper personal protection used in welding and cutting operations
* Demonstrate safety habits consistent with industry standards and college policy
* Show the ability to select, set up and operate the proper equipment proficiently
* Determine the differences between gas welding, brazing, and soldering
* Perform welds in the flat, horizontal, vertical, and overhead position with required processes
* Determine the differences between plasma cutting, laser cutting and carbon arc cutting
* Perform cutting applications with oxyfuel hand torch, motorized hand torch, track torch, carbon Arc cutting, and plasma cutting
* Research and identify the welding and cutting applications within the welding industry
(3 C: 1 lect/pres, 2 lab, 0 other)

CMAE 1564 - Shielded Metal Arc Welding (SMAW)
Students will study the safety concerns connected with the Shielded Metal Arc Welding (SMAW) process, along with the an introduction into the types of power sources used for arc welding, process applications, electrode selections, overview of weld types, and other work-related safety conditions in the welding field. Time will be spent in the lab developing skills using the SMAW 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) codes and standards.
Student Learning Outcomes:
* Explain and identify proper personal protection used during welding
* Demonstrate safety habits consistent with industry standards and college policy
* Show the ability to select, set up, and operate the proper equipment proficiently
* Identify the various types of power sources and the type of current produced by each one
* Explain the characteristics that set welding apart from other joining processes
* Identify factors that affect electrode selection
* Demonstrate the ability to determine weld quality, and determine if they meet American Welding Society codes and standards
* Perform welds in the flat, horizontal, vertical, and overhead positions with required electrodes
* Research and identify the welding applications of the SMAW process within companies
(3 C: 1 lect/pres, 2 lab, 0 other)

CMAE 1566 - Gas Metal Arc Welding (GMAW) Flux Cored Arc Welding (GCAW)
Students will study the safety concerns connected with the Gas Metal Arc Welding (GMAW) and Flux Cord Arc Weld (FCAW). The GMAW process will be discussed in depth in relationship to the different type of modes of transfer available, shielding gases, and the different types of materials that can be welded. The FCAW process is similar in the type of equipment used for mode of transfer. The differences in the electrode types of gas-shielded wires and self-shielded wires will be discussed along with the types of shielding gases that are used. There will be discussion on the importance of how the welding process intersects with the arc welding symbols and codes. Along with this, we will also do a review of procedures used in the visual inspections of welds. Time will be spent in the lab developing skills using the GMAW and 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) codes and standards.
Student Learning Outcomes:
* Explain and identify proper personal protection used in welding
* Demonstrate safety habits consistent with industry standards and college policy
* Show the ability to select, set up and operate the proper equipment proficiently
* Identify the various types of power sources and the type of modes of transfer used
* Distinguish GMAW and FCAW from each other and other welding processes
* Identify common shielding gases and metals welded with the GMAW and FCAW processes
* Define the importance of arc welding symbols and codes
* Demonstrate the ability to determine weld quality by following procedures for visual inspections of welds
* Perform welds in the flat, horizontal, vertical, and overhead positions with required processes
* Research and identify how companies use the GMAW and FCAW processes
Prerequisite(s): CMAE1564
(3 C: 1 lect/pres, 2 lab, 0 other)

CMAE 1568 - Gas Tungsten Arc Welding (GTAW)
This course covers the safety hazards and applications for Gas Tungsten Arc Welding (GTAW) in the welding industry. Material covered in the classroom will be power sources, setup, types of current, current selection, shielding gases and torch types. Various procedures will be discussed for welding different metals (Aluminum, Stainless Steel, and Mild Steel) ad potential problems that may be encountered. Applications for the process in different industries, and the use of back purging and its application will also be discussed. 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) codes and standards.
Student Learning Outcomes:
* Explain and identify proper personal protection used in welding
* Demonstrate safety habits consistent with industry standards and college policy
* Show the ability to select, set up, and operate the proper equipment proficiently
* Distinguish the GTAW process from other arc welding processes
* Identify the various types of power sources, types of current, and applications

* Distinguish between the appropriate metal transfer modes for welding aluminum
* Distinguish between the mechanical and physical properties of ferrous and nonferrous metals
* Explain the proper electrode preparation and how it affects the weld for ferrous and nonferrous metals
* Perform welds in the flat, horizontal, vertical, and overhead positions with required materials
* Research and identify the welding applications of the GTAW process within companies
Prerequisite(s): CMAE1564, CMAE1566, CMAE1570
(3 C: 1 lect/pres, 2 lab, 0 other)

CMAE 1570 - Metallurgy and Mechanical Properties of Materials
This course covers the study of metals and how the effects of welding and heat treatment affect them. Terminology dealing with metallurgy will be an important part of this course. Physical and mechanical properties of ferrous and nonferrous metals will be covered along with the classifications of the different types of metals. By understanding the mechanical properties of metals, you will gain an understanding of the range of usefulness of the materials in the metal working community. Written tests will be done in accordance with the American Welding Society (AWS) codes and standards.
Student Learning Outcomes:
* Develop an understanding of the terminology used in the study of metals
* Gain an understanding of the evolution of metals and how their use has affected our lives
* Describe the types of tests that are performed on metals to determine their range of usefulness
* Gain an understanding of the importance of selecting the proper metal for specific applications
* Determine the difference between ferrous and nonferrous metals, and how the applications will vary
* Explain how the heat of the welding process and heat treatments will affect various metals, and how the addition of alloys will change the effect of heat
* Identify the variables that determine the properties of the different metal classifications
(1 C: 1 lect/pres, 0 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 in this course will study a variety of program design tools, structures, object-oriented, and procedural methodologies. Using a mix of theory and practical application students will learn the introductory skills needed in structured program logic to continue in the programming major.
Student Learning Outcomes:
* Develop basic skills to understand the programming process, including data hierarchy, flowcharts, pseudocode, variables and data types
* Understand program structures and study concepts such as spaghetti code, sequence, decision and looping structures, priming reads and case structures
* Implement documentation and design theory with external and internal documentation, modularization and logic to develop programs
* Learn array concepts such as declaring, initializing, manipulating and sorting single and multi-level arrays
* Draw flowcharts and write pseudocode to describe algorithms and solve programming problems
* Use loops, decision structures and sequential structures to solve programming problems
* Understand file maintenance including merging and master file/transaction file handling
* Use single-level and multi-level control breaks to solve programming problems
* Understand object-oriented, procedural and event driven models and methodologies
(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 1206 - Basic Networking/ Security
This course will cover basic concepts and terminology used in local area networks, including the Open Systems Interconnection (OSI) and Transmission Control Protocol/Internet Protocol (TCP/IP) models of networking. Fundamental problems associated with management of local area networks will be presented and solved. The student will be able to identify the hardware and software necessary to implement a local area network and address network security issues. This understanding of information security management and the technical components of security includes learning the history and terminology of security and an overview of how to manage information security issues through effective risk management, security design, and maintenance.
Student Learning Outcomes:
* Define networking fundamentals.
* Describe how LAN and WAN communications work.
* Analyze and select appropriate networking devices for connecting networks.
* Describe and practice a process for connecting devices in a wireless network.
* Perform resource sharing on a network.
* Define and implement a basic network design.
* Organize a network maintenance and troubleshooting plan.
* Describe the need for information security.
* Describe the legal, ethical and professional issues in information security.
* Define risk management.
* Analyze criteria needed in planning for security.
* Select appropriate security technology tools.
* Design a plan for physical security.
* Structure and implement an information security plan.
* Define security as it relates to personnel.
* Organize an information security maintenance plan.
(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 and sites using HTML, the markup language used by the Internet, as well as XHTML. Students will follow industry formatting standards by using Cascading Style Sheets (CSS3) to format web pages. JavaScript will give students the ability to make web pages dynamic and functional. Browsers, ftp clients and servers are additional tools that enable students to 'publish' their website to the Internet.
Student Learning Outcomes:
* Develop a working knowledge of HTML and HTML5, JavaScript and CSS3.
* Develop and build web pages using HTML, HTML5, JavaScript and CSS3.
* Create dynamic web pages with JavaScript and JavaScript functions.
* Create dynamic web pages with Asynchronous JavaScript and XML (AJAX).
* Format web pages with Cascading Style Sheets (CSS).
* Integrating Images, Image maps and multimedia into web pages.
* Discuss XML documents, validation concepts and structure.
* Discuss Bootstrap framework concepts.
(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 1215 - XML
XML is a language that allows information and services to be encoded with meaningful structure and semantics. Uses for XML include information exchange over the internet, server settings, project properties and User Interface definitions. Programming languages and relational database constructs are used to create and extract data from an XML document. XML fundamentals and concepts, architecture, information modeling, data extraction using DOM, SAX and XPATH, styling, filtering, transformations and testing will be covered.
Student Learning Outcomes:
* Prepare well-formed and valid XML documents.
* Implement namespaces in XML documents.
* Write computer programs to apply data manipulation and filtering techniques for XML data extraction from XML documents.
* Write computer programs to process XML document data using elements by type.
* Write computer programs to validate XML documents using DTDs and Schemas.
* Write computer programs that integrate Cascading Style Sheets with XML documents.
* Write computer programs that process XML documents using DOM, SAX and XPATH.
* Write computer programs that transform XML documents with XSLT.
* Implement processing of XML documents stored in relational databases.
Prerequisite(s): CMSC1203, CMSC1225
(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 1216 - Database Modeling I
Databases are an integral part of computer applications. This course is an introductory database modeling course. Using a relational database, this course introduces the student to relational database concepts. Data definition language constructs as well as data manipulation concepts show the student how to insert, read, update and display data in the relational database management system.
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.
* Write SQL scripts to create stored procedures, triggers and user defined functions to retrieve, insert, update and delete data from SQL Server databases.
* Determine differences between different relational databases as well as to how relational and ORM/NoSQL databases differ.
* Explain user roles in a relational database environment.
Prerequisite(s): CMSC1203
(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 1217 - Data Analytics
The goal of data analytics is to gain knowledge and communicate conclusions drawn from data. This course provides an introduction to Business Intelligence (BI) using SQL Server. The class also provides an overview of advanced machine learning, data mining and statistical techniques that arise in data analytic applications. Throughout the course, the students will utilize BI tools and services, such as SQL Server Integration Services (SSIS), SQL Server Analysis Services (SSAS), SQL Server Reporting Services (SSRS) and Power BI. 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:
* Identify the architecture and components of a Business Intelligence system
* Differentiate between Business Intelligence Structures
* Design and Implement Control and Data Flow
* Apply SQL Server Data Tools, Libraries and Expressions to Analyze Data
* Build and Perform Analysis of Data from In-Memory Databases
* Analyze data using different processing methods
* Illustrate Pattern Recognition
* Apply Hierarchy Design Best Practices
* Implement Administrative Security
Prerequisite(s): CMSC1203
(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 1225 - Java Language I
Java is a programming language that is utilized extensively in the programming world. It is used to program applications, network programs, mobile devices and more. Students will learn the skills necessary for the effective and efficient creation of computer programs using Java as well as Java fundamentals and concepts, Java structures and testing. Students will complete exercises which include creating new programs as well as modifying existing code. The programs are developed using an Integrated Development Environment (IDE) on a virtual PC.
Student Learning Outcomes:
* Create the Java programming environment by installing the JDK and JRE.
* Construct Java programs using variables, structures, arrays, and other language constructs.
* Construct Java programs using in-class agile programming methods.
* Construct Java programs using object-oriented programming techniques.
* Construct Java programs that process data from files.
* Construct Java programs with an IDE.

* Employ debugging techniques while working in Java programs.
(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 1227 - Agile Programming Methodology
Agile programming methodology abandons the SDLC in program development. Simple design, design as you go, incremental steps, independent steps and knowing the tools that are available to use for your purpose are core rules of Agile programming. Agile programming implements the use of team programming, usually groups of 2-10. With Agile methodology, programmers can react more quickly to requirement changes and additions. Constant coding, testing and implementation are iterative in Agile programming. An expert user is also always part of the process to ensure design is meeting user expectations and needs.
Student Learning Outcomes:
* Understand the principles and practices of Agile Programming methodology
* Understand team-based dynamics for application development
* Learn skills to work collaboratively and cooperatively on application development
* Learn processes for designing, coding, testing and refactoring application with Agile methodology
* Manage communication with users to effectively and efficiently develop applications
(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 1255 - PHP
This course is an introduction to PHP, Hypertext Preprocessor. The students will be involved in writing HTML pages that incorporate PHP into them. This will enable the students to perform database connectivity from an HTML page, utilize the GD library and create graphics on their pages as well as learning the basics of the PHP language including variables, decision and loop structures and more. This will also enable the students to stay current with market demands for programmers. Dynamic web applications will be developed using HTML and PHP.
Student Learning Outcomes:
* Implement PHP functions and include files in HTML pages
* Define PHP data types
* Understand the rules and types of variables in the PHP language
* Understand decision and loop structures of the PHP language
* Write and execute HTML/PHP pages/websites
* Have basic knowledge of the GD library
* Connect to a database with PHP from their HTML page
Prerequisite(s): CMSC1203
(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 2201 - Database Modeling II
Database Modeling II is an advanced Database Modeling course. A review of database maintenance and creation is included in this course. Primary focus for this course, however, is on server administration. Installing and configuring multiple instances of Microsoft SQL Server as well as data redundancy, backup and recovery are performed by the student. User permissions are covered as well as monitoring and performance tuning for the server.
Student Learning Outcomes
* Create, configure and maintain SQL Server databases, tables, views, constraints, indexes, queries with T-SQL scripts
* Distribute and partition data
* Import and export data
* Design policies for user groups
* Perform Data Backup and Recovery
* Schedule Jobs and Alerts
* Analyze SQL Server performance monitoring and tuning
* Create and configure user permissions
* Implement database mirroring, log shipping, replication on multiple SQL Server instances
* Install and query Spatial data databases
* Export and Import XML data
Prerequisite(s): CMSC1203, CMSC1216
(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 2202 - Web Scripting Language
A web scripting language enables the developer to create dynamic web applications, web services and web sites using Graphical User Interface (GUI) controls and interfaces. Development with a web scripting language allows the programmer to incorporates ease of use into the web application for the user. Consuming and manipulating data; testing and debugging; maintaining and supporting a web application; and configuring and securing a web application are components of web applications that are addressed in this course. The student will develop on a virtual computer that they install on their laptop to become familiar with environments that are implemented in industry.
Student Learning Outcomes:
* Install develop web sites in an Integrated Development Environment (IDE) on a virtual PC
* Design GUI web pages with a scripting language
* Create and manipulate GUI controls
* Evaluate website navigation and apply design techniques that provide the user easy navigation through the web site
* Integrate web form validation, Ajax, database connectivity, jQuery functionality and security into the web application
* Utilize exception handling in websites
* Apply testing and debugging techniques to a web application
* Program web services
Prerequisite(s): CMSC1203
(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 2203 - C# Programming
C# is an objected-oriented language from Microsoft that is derived from C and C++. C# is programmed in the Net environment. C# features include using variables, functions, multi-dimensional and jagged arrays, overloading, indexes, attributes and overriding and XML integration. Console applications, Windows applications and ASP.Net web services can be written in C#.
Student Learning Outcomes:
* Understand object-oriented programming
* Create new C# programs and classes
* Debug and modify existing C# programs
* Implement arrays, overloading and index in C# programs
* Integrate XML into a C# application
Prerequisite(s): CMSC1203
(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 Eclipse Integrated Development Environment (IDE) to write and deploy mobile applications.
* Write mobile applications using jQuery, jQuery Mobile 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.
Corequisite(s): CMSC2202
Prerequisite(s): CMSC1203
(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 2205 - Internship
This will be available to students who have demonstrated readiness and willingness to work in an on-the-job situation. It usually will be a training culmination and an opportunity to apply the skills learned.
Student Learning Outcomes:
* Maintain satisfactory attendance at the internship site
* Perform job tasks satisfactorily

* Display honesty and courtesy
* Demonstrate initiative and dependability
* Conform to all rules and regulations of the host company and industry
(3 C: 0 lect/pres, 0 lab, 3 other)

CMSC 2220 - Cryptography
Data resides on many different platforms. Many factors contribute to secure data including architecture, operating systems, and secure hardware. This class will focus on one more part of data integrity: securing data by integrating cryptography into computer programs. This class will write client/server applications, stand-alone applications and database applications that utilize standard cryptographic algorithms and protocols as well as certificate-based encryption. Data integrity via email is achieved by encrypting and signing emails. Security terminology will be reviewed. By writing computer programs that utilize cryptographic APIs, students will develop a good understanding of how to integrate cryptography to add one more level of security to data integrity.
Student Learning Outcomes:
* Recognize encryption terminology and standards.
* Write computer programs that utilize symmetric and asymmetric cipher encryption.
* Write computer programs that utilize cipher-based I/O encryption.
* Write computer programs that utilize message digests, MAC and HMAC encryption.
* Write computer programs that utilize secret key exchange encryption.
* Illustrate certificate-based encryption in computer programs.
* Manipulate keystore certificates.
* Produce email SSL encryption.
Prerequisite(s): CMSC2266
(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 2240 - Advanced C# Programming
This course will expose the student to advanced C# components which will increase their programming expertise and value in industry. Students will build additional knowledge and skills by creating ASP.Net applications and learning how to use Generics, Delegates, Collections, events and Lambda expressions. Integrating remote database connectivity with ADO.Net into applications and program performance techniques will be reviewed and implemented.
Student Learning Outcomes:
* Demonstrate knowledge of Visual Studios (VS) IDE
* Develop ASP.Net Applications with C#
* Build applications that use Generics, Delegates, Collections and events
* Develop anonymous functions using Lambda expressions
* Develop multi-threaded applications
* Integrate synchronization into multi-threaded applications
* Develop applications that utilize tasks and asynchronous techniques
* Write C# applications to access and manipulate data in a database using ADO.NET
* Develop, deploy and consume Web Services applications
Prerequisite(s): CMSC1203, CMSC2203
(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 2266 - Java Language II
This course is a continuation of Java Language I. After a brief review of Java Language I, the students will be involved in writing Java stand-alone applications as well as Java applets to be embedded in HTML documents. Graphics will be explored further through the use of Java Swing and students will become versed in advanced Java concepts including Exception Handling, Collections, serialization, and queues and stacks. Database connectivity and file processing will be covered thoroughly. Java applications will be developed using command line as well as the Eclipse IDE techniques.
Student Learning Outcomes:
* Develop Java programs using an IDE
* Code inheritance, polymorphism, object aggregation, exception handling, recursion, Collections, serialization, and queues and stacks in Java programs
* Develop Java applications that will include database connectivity
* Develop Graphical User Interfaces in Java
* Create and execute Java applets
* Recognize Java frameworks
Prerequisite(s): CMSC1225 (3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 2268 - Network Programming
Writing dynamic web applications is a vital skill for today's computer programmer. This course introduces the student to current Internet technologies and practices that are used to develop dynamic web applications.
Student Learning Outcomes:
* Develop dynamic web applications.
* Design, implement and deploy Restful web services.
* Write web applications to consume deployed web services.
* Integrate browser-based testing into web applications.
* Design model-view-controller (MVC) web applications using structural frameworks.
* Integrate database object-relational mapping frameworks into web applications.
* Write web applications using dependency injection.
* Integrate Advanced jQuery and JavaScript into web applications.
* Manage web application developing with version control, branching, merging.
Prerequisite(s): CMSC2203, CMSC2202
(3 C: 2 lect/pres, 1 lab, 0 other)

CMSC 2279 - Systems Analysis and Design
This course provides the student with an opportunity to design and implement an application from start to finish. Various agile methodologies are studied. The student will design and build the application as part of a team using agile development and object-oriented methods. The team will design the applications database, incorporate reporting, implement remote database connectivity through web services, implement project source control, ensure iteration success through recording and executing stories and tasks and integrate testing throughout the applications development. When the system is finished, the team will deploy the application to a remote web server.
Student Learning Outcomes:
* Analyze agile methodologies.
* Interact with other students in a group environment.
* Analyze and develop a practical approach to build an application.
* Participate in fact-finding activities to determine user needs for application development.
* Choose the appropriate language, platform and database to build the application with.
* Produce stories and tasks to document iteration goals.
* Participate in weekly team stand-up meetings.
* Recognize the dynamics of team development.
* Recognize the challenges of application development.
Prerequisite(s): CMSC2266, CMSC2203
(3 C: 2 lect/pres, 1 lab, 0 other)

CMST 1320 - Introduction to Communication Studies
This course meets MN Transfer Curriculum Goal Area 1 - Oral Communication. This course introduces students to a variety of communication areas, including 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 messages both in writing and speaking.
* Utilize effective communication choices that meet the needs of a multicultural audience.
* Study how communication functions within personal relationships, small groups, and public contexts, and apply these concepts to one's own communication.
* Explore how communication is affected by language and nonverbal communication choices within `personal, academic and professional settings.
* Apply effective listening strategies individually and within groups.
* Participate in group communication to develop effective small-group skills.
* Develop communication skills and improve self-confidence when public speaking by preparing, practicing, and delivering logical speeches.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

CMST 2300 - Introduction to Public Speaking
Meets MN Transfer Goal 1 - Oral Communication. This course helps students become familiar with, and use, a variety of techniques for effective public speaking. Topics included are topic selection and development; audience analysis; message and argument construction, critical thinking and evaluation; outlining and organization; and delivery and presentation skills.
Student Learning Outcomes:
* Develop understanding of public speaking as an interactive process through audience analysis and evaluation of speeches.
* Demonstrate the components of effective speaking including research, topic development, organization, and methods of informing and persuading.
* Deliver at least four speeches effectively.
* Examine the role of speech-making in society.
* Analyze ethical issues related to public speaking.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer 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. This course covers basic Small Group Communication principles and features. Students are given a variety of group projects to allow them time to experience for themselves the capacity for superior solutions through group discussion using mediated and face to face methods. Students will investigate the various technologies that are used for group planning and problem-solving. In core groups, students will try a variety of group roles, weed out successful from unsuccessful group behaviors, uncover cultural biases around teamwork, analyze power in groups, and examine the role of groups in our society. Team presentations (preparation, delivery, assessment) will be part of this course.
Student Learning Outcomes:
* Demonstrate communications skills necessary for effective groups
* Apply effective communication strategies for groups involving technology and virtual environments
* Identify types of leadership and the benefits and limits of different leadership styles
* Research, create, present, and assess group presentations
* Analyze ethical issues and responsibilities of groups and their members in society
* Examine and articulate individual views of power in group settings
* Research, discuss, and evaluate effective group decision making and problem solving
* Evaluate groups and their purpose in our society, both as participant and observer
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

CMST 2310 - Interpersonal Communication
This course meets MnTC goal area 1 - oral communication. This course covers the theory and practice of interpersonal communication. Core concepts are verbal and nonverbal communication, communication styles, perception, self-identity, active listening, and conflict resolution skills.
Student Learning Outcomes:
* Identify basic theories and concepts in the processes of Interpersonal Communication.
* Analyze the effects of culture, gender, self, and perception when sending and receiving verbal and nonverbal interpersonal communication messages across varying channels.
* Evaluate the implications of various communication behaviors and influence of those behaviors on self and others.
* Demonstrate active listening.
* Demonstrate effective communication with positive outcomes for human relationships.
Prerequisite(s):
READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

CMST 2315 - Persuasion and the Media
Meets MN Transfer Curriculum Goal Area 1 and goal are 9 - This course will explore the 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): READ0304 and ENGL 0304 or Appropriate Accuplacer 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 1201 - Computer Basics
This course teaches the skills and basic concepts related to personal computer use. The course will provide an introduction to various components for desktop and laptop computers (hardware), common devices attached to computers (peripherals), and current computer operating systems. Students gain experience with keyboarding, basic productivity applications, file storage and management, electronic mail, internet use, as well as learning management systems. This course is intended for students with little or no prior computer experience.
Student Learning Outcomes:
* Identify and describe major components of desktop and laptop computer hardware
* Customize an operating system to meet the needs of the user
* Use current application software to produce word processed documents, simple spreadsheets, and slide show presentations
* Demonstrate how to save files locally, on removable drives, and on a cloud system
* Demonstrate file management by creating files and folders and placing items into these files and folders
* Use common electronic mail systems to send, receive, retrieve, and manage electronic mail
* Demonstrate the use of internet browsers to conduct web searches to locate news and information
* List safe practices and internet etiquette guidelines
* Demonstrate the use of learning management systems
(3 C: 2 lect/pres, 1 lab, 0 other)

CPTR 1210 - Introduction to Computers
Students in this course will learn and demonstrate a strong proficiency in all components of the Microsoft Office Suite (Word, Excel, Access, and PowerPoint) by creating documents, worksheets, databases, and presentations. Students will also gain hands on experience with the most recent Microsoft Windows operating system. In addition, students will gain an understanding of the components of a computer, computer terminology, the internet, networks, security, and privacy. Keyboarding proficiency is recommended for any student entering this course.
Student Learning Outcomes:
* Demonstrate an understanding of computer hardware, software and terminology.
* Employ proper file management skills for local, networked and removable storage devices
* Use skills needed to work in the Windows environment.
* Explore the internet, World Wide Web and the potential security and privacy issues associated with their usage.
* Acquire an appreciation of the moral and social implications of computer technology.
* Create professional documents using word processing to include use of appropriate referencing, citations, tables, building blocks, special formatting.
* Create professional and informational slide shows using presentation software.
* Use worksheets to process, manipulate, and display numeric data in a meaningful manner through the use of special functions, charts, and graphs.
* Demonstrate the ability to plan and create basic databases with an emphasis on efficient data access and retrieval using database software.
* Mobilize information by integrating content between word processing, spreadsheet, databases and presentation software.
(3 C: 2 lect/pres, 1 lab, 0 other)

CRTK 1300 - Introduction to Critical Thinking
Meets MN Transfer Goals 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 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

CSSC 1300 - Career Exploration
This course is designed for students who are not enrolled in a program of study and are uncertain about their career choices. The course will assist students in determining educational and career direction through an examination of values, preferences, interests, and skills. In addition, students will become familiar with sources of occupational information. Decision-making and goal setting skills are utilized in the development of an educational and career plan.
Student Learning Outcomes:
* Assess their skills, values and interests
* Integrate self-knowledge into career decision-making process
* Relate their needs and characteristics to the employment market
* Gain understanding of employment characteristics and employment trends through utilization of a variety of research activities
* Identify future educational objectives
* Develop a career action plan
Prerequisite(s): READ0300 or Appropriate Accuplacer Score.
(1 C: 1 lect/pres, 0 lab, 0 other)

CSSC 1302 - Career Development/Job Search
This course is intended for students in their last two semesters before graduation. The focus of this course is to assist students with the skills needed to find and obtain career related employment, to become familiar with methods of developing career development opportunities essential for life-long learning, and to become aware of critical attitudes needed in job keeping and career advancement. Students not within 2 semesters of graduation need instructor approval.
Student Learning Outcomes:
* Develop a career portfolio
* Demonstrate ability to use software, internet and other sources for career and education exploration and development
* Develop career documents including resumes, cover letters, and thank you letters
* Demonstrate interviewing skills
* Demonstrate skills in job seeking, including exploring the hidden job market, including telephone usage
* Identify job keeping skills
(1 C: 1 lect/pres, 0 lab, 0 other)

CULN 1202 - Introduction to Culinary Arts
This course includes an introduction to the Food Service Industry, culinary terms, safety, and sanitation, history, use of weights and measures. This course also covers basic cooking techniques and knife identification and use.
Student Learning Outcomes:
* Provide and explain the program expectations.
* Competently define industry segments.
* Readily identify employment opportunities.
* Easily identify industry equipment.
* Demonstrate proper knife usage and care.
* Demonstrate safety and sanitation knowledge.
Prerequisite(s): MATH0380 or MATH0400 or Appropriate Accuplacer Score.
(3 C: 2 lect/pres, 1 lab, 0 other)

CULN 1205 - Kitchen Operations
This course teaches the skills students will need to know about the food service industry. This course will cover counter service operation, kitchen math, warewashing procedures, equipment identification and equipment usage.
Student Learning Outcomes:
* Utilize and apply kitchen terminology
* Efficiently perform dish room procedures.
* Demonstrate and performance of kitchen math
* Calculate food expenses including profit and loss statements.
* Demonstrate knowledge of recipe utilization.
* Design, plane and sequence menus.
* Efficiently perform preparation procedures (Misen Place).
(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, HACCP procedures. This course is designed to prepare students for the State of MN food management certificate examination.
Student Learning Outcomes:
* Identify and understand food-borne illnesses.
* Understand proper sanitation techniques.
* Practice good personal hygiene methods.
* Successfully 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 and from these stocks; various 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. Additional key topics covered in this course include herb, spice and flavoring use/identification, proper use of thickening agents, stock and sauce ingredients, selection and utilization of proper equipment, and preparation and production of various types of soups.
Student Learning Outcomes:
* Prepare various stocks and sauce ingredients and apply to stock and sauce production.
* Demonstrate selection and utilization of proper equipment for stock, sauce, and soup production.
* Prepare from scratch various stocks including, chicken, beef, vegetable, and other stocks.
* Identify and 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 leading 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 a knowledge of pantry food preparation including the safety and storage of various ingredients and sanitization methods for various pantry food items.
* Identify by sight and flavor profiles various salad ingredients and types.
* Identify and evaluate various types of oils and vinegars and apply knowledge to the creation of 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 and critique various pantry items for quality and usage.
Prerequisite(s): CULN1201
(2 C: 1 lect/pres, 1 lab, 0 other)

CULN 1230 - Vegetables, Potato, Rice and Farinaceous Products
This course covers the key components of cooking practices related to vegetables, potato, rice, and farinaceous products (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 farinaceous products 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 farinaceous products to menu preparation and design.
* Identify and evaluate proper safety and storage procedures for vegetables.
* Develop an understanding of starch products (rice, pasta, potato, and grains) and apply knowledge to multiple areas of food production.
* Apply small and large batch cooking techniques to various food products.
* Demonstrate troubleshooting and problem solving skills in food production.
Prerequisite(s): CULN1201
(2 C: 1 lect/pres, 1 lab, 0 other)

CULN 1235 - Introduction to Breakfast
This course covers keys components of breakfast production including the preparation of various egg dishes, meats, cereals, starch products, breakfast pastries, fruits, and beverages. Teamwork, professionalism and efficiency in 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 2 minutes.
Student Learning Outcomes:
* Identify various types of breakfast food products and demonstrate proper food safety and sanitization techniques.
* Learn and 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.
* Identify and prepare various types of meats and potato products for breakfast service.
* Perform and serve breakfast beverage preparation.
* Identify, prepare, and properly 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.
* Properly prepare 2 over-easy eggs and an omelet within 2 minutes.
(2 C: 1 lect/pres, 1 lab, 0 other)

CULN 1245 - Basic Baking
This course covers keys components of bakeshop production and will provide an understanding of 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:
* Identify and 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 method, angel food method, sponge method, and creaming method.
* Prepare a variety of cakes, cookies, pies, pastries and dough products utilizing skills and production techniques demonstrated in class.
* Learn and 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.
Prerequisite(s): CULN1201
(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 identification of various meat products, fabrication of meats, poultry, wild game, various seafood items, processing and curing of meats, and the application of complimentary 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 to various meat, poultry, and seafood dishes.
* Develop, assess, and evaluate various dishes on presentation and garnishing to determine final product for customers.
* Apply proper cooking principles to a multitude of dishes.
* Learn industry terminology and apply to multiple aspects of food production.
* Apply proper safety, sanitization, and storage procedures for all meat, poultry and seafood items.
Prerequisite(s): CULN1240
(4 C: 0 lect/pres, 4 lab, 0 other)

CULN 1265 - Basic Food Production Principles
This course covers keys 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 gaining knowledge of various cooking methods and techniques including broiling and grilling, roasting and baking, and sautéing. A capstone project to this course will include preparing a 3-course dinner for 4 people to whom the student will demonstrate and apply various cooking methods and procedures.
Student Learning Outcomes:
* Identify and 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.
* Develop and apply various concepts related to kitchen leadership including sense of urgency, time management, preparation/planning, management, and direction and delegation.
* Apply and practice food production principles for convenience foods and ingredients.
* Develop and 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 3-course meal (soup/salad, main entree with accompaniments, and dessert) to an evaluating team.
Prerequisite(s): CULN1245, CULN1250
(3 C: 1 lect/pres, 2 lab, 0 other)

CULN 1270 - Garde Manger
Developing visual appeal to food is an essential skill for all professional cooks. This course teaches students the fundamentals of garde manger work. Students will learn multiple selection and preparation skills to make food more visually appealing. Specific work with aspic sheets, chaud froid, fruit, vegetable, and tallow carvings as well as centerpiece displays 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 and apply the knowledge to various classroom projects.
* Identify products used in garde manger work.
* Prepare and display 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.
Prerequisite(s): CULN1250
(4 C: 1 lect/pres, 3 lab, 0 other)

CULN 1275 - Social Etiquette
Social etiquette behaviors within a society or group vary 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:
* Learn the key elements of professional and social etiquette for formal dining.
* Learn specific professional behaviors for use in a variety of global industry settings.
* Describe, practice, and demonstrate social dining etiquette for a formal 8-course gourmet dinner.
* Research and present on social etiquette from different countries throughout the world.
* Demonstrate proper place settings for a multiple-course gourmet dinner and describe proper use of various utensils and dishware.
* Develop communication strategies and techniques that demonstrate professional behaviors and standards.
(2 C: 0 lect/pres, 2 lab, 0 other)

CULN 1280 - Foodservice Internship
This course involves a three-week (96 hour) internship at local restaurant operations. This course will provide the student an opportunity to sharpen their culinary skills in a fast-paced, real-world environment. The student will, under the direction of experienced chefs/cooks, experience teamwork, problem solving, and a feel for the Food Service industry.
Student Learning Outcomes:
* Set up and assist with the coordination of internship expectations, hours/scheduling, goals, paperwork, and duties to be assigned.
* Develop teamwork skills through communication and daily work with kitchen and restaurant 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 full-service restaurant in operation.
* Demonstrate professional behaviors and standards and 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.
(2 C: 0 lect/pres, 0 lab, 2 other)

DEHY 1400 - Dental Hygiene Seminar I
This course is an introduction to dental hygiene clinical techniques and clinical practice. This course provides didactic instruction on patient medical history and data gathering, sterilization, infection control protocol, comprehensive patient treatment to include assessment, planning, implementation and evaluation of selective services.
Student Learning Outcomes:
* Describe theory in dental hygiene clinical techniques
* Explain the rationale for preventive dentistry including assessment, planning, implementation and evaluation of selective services necessary for complete patient treatment
* Explain the rationale for universal blood and body fluid precautions to include sterilization and infection control protocols
* Discuss the concepts of health and wellness in relation to health
* Relate the importance of communication to the profession of dental hygiene
* Identify and describe how the knowledge of a health history relates to meeting the client's human need for safety
* Review common normal and atypical findings of skin and oral mucosa
* Explain the purposes, characteristics and procedures of dental charting
* Discuss how the dental hygienist can assist clients with disease prevention and oral health promotion at various stages of the life cycle
* Explain the role of the dental hygienist in the prevention and treatment of periodontal disease within the dental hygiene process of care
* Discuss the relationship of human need theory to the dental hygiene process
Corequisite(s): DEHY1480, DEHY1424
(2 C: 1 lect/pres, 1 lab, 0 other)

DEHY 1402 - Dental Hygiene Seminar II
This course is designed to continue the student's education in the basic dental hygiene sciences with an emphasis on dental health education, primary preventive measures, client dietary counseling, tobacco cessation, and xerostomia counseling. The course emphasizes the special needs of diabetes, cognitively and developmentally challenged clients, autoimmune diseases, cancer therapy, HIV clients, and eating disorders. The needs of clients with fixed and removable dentures, orofacial clefts and orthodontic appliances will also be emphasized.
Student Learning Outcomes:
* Implement the scientific basis for dental hygiene care in the area of education and preventive care.
* Assess, plan and implement dental hygiene care in the area of nutritional counseling, tobacco cessation and xerostomia counseling.
* Evaluate the scientific basis for dental hygiene care with an emphasis on the special needs of diabetes, cognitively and developmentally challenged clients, clients with autoimmune disease and HIV, cancer therapy, and eating disorders.
* Assess and evaluate the needs of clients with fixed and removable dentures, orofacial clefts and orthodontic appliances.
Corequisite(s): DEHY1482, DEHY1484
Prerequisite(s): DEHY1400, DEHY1480
(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, hypersensitivity treatment, ultrasonic powered instrumentation, sealants, dental antimicrobials and chemotherapeutics, implant care and care for the client who is medically compromised with cardiovascular disease. This course also includes electronic record keeping to be applied to DEHY 1486. This course is to be taken concurrently with DH Materials and Methods (DEHY 1420) and Clinical DH III (DEHY 1486).
Student Learning Outcomes:
* Interpret and utilize the process of dental hygiene diagnosis, care planning, therapy and maintenance and how they all fit into the total dental hygiene treatment plan.
* Formulate, write and present a dental hygiene care plan.
* Recognize the need for preventative therapy: placement of sealants, restorative therapy, 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.
* Research, prepare and present a scientific paper on a product or specific method that would be utilized in the overall dental hygiene care plan.
* Incorporate electronic record keeping using computerized dental software.
Corequisite(s): DEHY1420, DEHY1486
Prerequisite(s): DEHY1402, DEHY1484
(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, management, ethics and jurisprudence in dentistry, and the role of the dental hygienist in alternative care settings. This course is to be taken concurrently with DEHY 1488.
Student Learning Outcomes:
* Assess management and recognize alteration in dental hygiene care planning for clients with special needs. This includes older adults, women and children, medically compromised and both mental and physical disabilities.
* Recognize criteria for reporting child abuse.
* Recommend parameters for the dental hygiene practitioner in selection of new products for clients.
* Write a scientific paper recommending a new product for the client.
* Complete the Minnesota Jurisprudence exam.
* Design an appropriate resume and cover letter for the dental hygienist.
* Critique current trends in dentistry as evidenced by scientific articles.
* 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 cultural diversity in the delivery of the dental hygiene health care plan.
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 cements, varnishes, liners, esthetic anterior restorations, posterior restorations, sealants, impression materials, dental stone and plaster, polymers for prosthetics, and provisional restorations. Students will work with dental materials and typodonts in the laboratory setting.
Student Learning Outcomes:
* Recognize the agencies that regulate the manufacturing of dental materials.
* Differentiate the physical properties and biological characteristics of dental materials as they relate to the oral environment of the mouth.
* List the properties and characteristics of an ideal dental material.
* Differentiate between direct and indirect restorative materials.
* Explain the uses of dental cements, varnishes, liners and bonding agents in restorative dentistry.
* Explain the types of dental materials used to fabricate mouthguards, retainers, bleaching trays, dentures and resin based prosthetics.
* Explain the types of dental materials used to fabricate crowns, inlays, onlays, dental bridges, composite restorations, amalgam restorations, porcelain restorations, and dental veneers.
* Explain and demonstrate the steps in taking an alginate impression.
* Identify the uses and limitations of dental stone and dental plaster in making dental study models.
* Demonstrate pouring and trimming of dental study models.
(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 both traditional and digital radiography. Course content includes theoretical concepts of radiation, effects of radiation exposure, radiation production, radiation safety and monitoring, infection control, x-ray film, processing and mounting, operation of x-ray unit, intraoral and extraoral radiographic techniques, anatomical landmarks, and processing errors. The laboratory portion of the course will prepare the student to demonstrate competency in exposing radiographs using the bisecting and paralleling techniques for both traditional and digital radiology.
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.
* Compare the processing, mounting and critiquing of dental radiographs for traditional versus digital radiographic surveys.
* Describe and implement necessary infection control guidelines for preparation, during and after x-ray exposure for the operator, the patient and the equipment.
* Recognize the difference between the paralleling and bisecting technique for both traditional and digital radiation.
* Demonstrate the exposure and processing of both digital and traditional 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, amalgam polishing, 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.
Prerequisite(s): DEHY1484, DEHY1402, DEHY1410
(1 C: 0 lect/pres, 1 lab, 0 other)

DEHY 1422 - Dental Pharmacology
This course covers a survey of drug groups with special emphasis on the drugs used in dentistry. This course will include content in the following: physical, and chemical properties of drugs, modes of administration, therapeutic and adverse effects, and drug interactions. Identifying and managing clinical emergencies is also included.
Student Learning Outcomes:
* Explain the scientific basis and rationale for drug use
* Explain the process of pharmacokinetics
* Describe pharmacological actions and effects on drugs
* Explain the role of the CNS, PANS, and SANS in drug use
* Utilize drug references in assessing patient medical histories and medications
(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 development, form and function of primary and permanent dentitions.
* Identify primary and permanent dentitions using the Universal, International, and Palmer notation systems.
* Identify and classify teeth according to class, arch, type and function.
* 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.
* Describe and explain the four types of tooth tissues, their locations and functional qualities.
* Identify the various glandular tissues found in the head, face and neck.

* Identify the major and minor salivary glands of the mouth.
* Locate and identify bones and muscles of the head and neck utilizing diagrams, skulls and models.
* Describe and locate 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 origin, insertion, and action of the muscles of mastication and muscles of facial expression.
* Locate and identify the major lymph nodes of the head, neck, face and teeth.
* Describe the drainage patterns of lymph tissues from the face and oral structures.
(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:
* Recognize and describe the theoretical basis of inflammation, immunity and deviations from normal health as it relates to the general disease process.
* Identify, describe and differentiate pathology in the oral cavity and on radiographs applying differential diagnosis theory to dental patient case studies.
* Identify common etiologies of neoplasms differentiating between benign and malignant oral neoplasms and classify odontogenic cysts and tumors.
* Explain how metabolic changes affect the oral cavity in relationship to oral manifestations of systemic diseases and nutritional disturbances.
* Differentiate between healthy periodontium and diseased periodontium according to the Guidelines from the American Academy of Periodontology.
(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:
* Introduce the theories of dental community health as a background for lifelong participation in planning and implementation of community projects
* Compare and contrast the histories of public health dentistry and public health medicine
* Explain dental needs as related to age, sex, race, income and geographic regions
* Explain periodontal indices and compare subjective, objective and quantitative measures
* Describe the chronology of fluoride research and it's identification to public health
* Explain the value of statistics in research studies
* Describe the important variables to be considered in choosing a sample
* Explain examiner bias and how it relates to research and experimental studies
* Define the three measures of central tendency
* Evaluate statistical research from professional journals and publications
* Describe the assessment, planning and implementation process for dental health programs
(2 C: 2 lect/pres, 0 lab, 0 other)

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.
* Plan, develop, implement and evaluate a children's dental health presentation.
* Create a portfolio consisting of community dental health based data and information regarding alternative dental hygiene careers.
* Research and develop a professional Table Clinic to be presented in collaboration with a classmate at various community venues.
* Create a pamphlet for consumer use to be incorporated into the presentation of a Table Clinic.
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 continue to cover: the paralleling and the bisecting technique, processing and mounting, anatomical landmarks, intraoral and extraoral radiographic techniques, and exposing and processing errors. The laboratory aspect of this course prepares the student to demonstrate competence in exposing radiographs using the bisecting and paralleling techniques on human experiences using both traditional and digital radiology. This course also covers the interpretation of dental radiographs for the dental hygienist. The emphasis is on recognition of anatomic conditions, caries, periodontal disease, abnormalities, dental materials, foreign objects and periapical lesions. All dental hygiene students must complete this course prior to graduation.
Student Learning Outcomes:
* Integrate didactic and clinical skills in exposing, developing and evaluating radiographic films using both traditional and digital techniques.
* 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.
* Demonstrate Digital Panoramic Exposure Technique 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.
* Explain the American Academy of Periodontology (AAP) periodontal disease classifications based on periodontal assessments of clinic patients.
* Discuss principles of nonsurgical periodontal therapy and treatment planning when formulating patient care plans.
Prerequisite(s): DEHY1428
(2 C: 2 lect/pres, 0 lab, 0 other)

DEHY 1464 - Periodontics II
This course will cover ADA insurance codes for billing dental and periodontal procedures, advanced periodontal treatment planning, and the use surgical and non-surgical procedures to treatment periodontal disease.
Student Learning Outcomes:
* Prepare treatment plans using ADA dental insurance codes.
* Compare local and systemic risk factors that impact surgical and non-surgical periodontal treatment.
* Demonstrate preparation and application of periodontal dressings.
* Describe the periodontal and calculus requirements for the CRDTS dental board exam.
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.
Prerequisite(s): DEHY1424, DEHY1422
(2 C: 1 lect/pres, 1 lab, 0 other)

DEHY 1480 - 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. Differentiate plaque and calculus deposits on the teeth.
* Demonstrate and explain usage of dental hygiene assessment instruments.
* Demonstrate and explain usage of calculus removal instruments. Assess and document occlusion class and bite characteristics.
* Perform and document hard tissue assessment of the mouth and teeth.
* Perform oral cancer screenings and document all findings of soft tissue assessments.
* Explain the protocol for managing a medical emergency in the dental clinic setting.
* Document assessment data using electronic dental record software
(3 C: 0 lect/pres, 3 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.
Prerequisite(s): DEHY1480
(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, amalgam polishing, and sealant placement. Radiographic interpretation is incorporated within the radiographic portion of this clinical experience. To be taken concurrently with DEHY 1404, Clinical Seminar III and Materials and Methods DEHY 1420.
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 effective communication in areas of client counseling.
* Demonstrate intermediate clinical competency in areas of time management, instrumentation, tissue management and radiography.
* Demonstrate sharpening of instruments and maintain sharpness throughout all procedures for scaling and root planing.
* Summarize and record all assessments, observations and procedures using SOAP format.
Prerequisite(s): DEHY1482, DEHY1402
(6 C: 0 lect/pres, 6 lab, 0 other)

DEHY 1488 - Clinical Dental Hygiene IV
This course is a continuation of Clinical DH III (DEHY 1486) 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.
Student Learning Outcomes:
* Demonstrate clinical competency in areas of client assessment, care planning, implementation of care and evaluation of success.
* Demonstrate effective communication in areas of client counseling.
* Prepare for the workplace by progression in clinical competency in the areas of time management, instrumentation, tissue management and radiography.
* Prepare for the workplace by incorporating current delivery methods used in current dental procedures.
* Correlate the relationships between oral health and general health and the interrelationships between medical and dental care.
* Assess periodontal clients for advanced periodontal therapy and treatment; determine success/failure of initiated therapies.
* Evaluate sharpening of instruments and maintain sharpness throughout all procedures for scaling and root planing.
* Perform methods to minimize patient discomfort for tissue sensitivity and postoperative care.
* Perform pain management techniques on clinical clients.
* Summarize and record all assessments, observations and procedures in SOAP format.
Prerequisite(s): DEHY1404, DEHY1486, DEHY1468
(6 C: 0 lect/pres, 6 lab, 0 other)

DEHY 1490 - Dental Hygiene Licensure and Jurisprudence
This lecture course will include instruction on the process of taking the Dental Hygiene National Board, the Central Regional Dental Testing Service (CRDTS) examination and the Minnesota Jurisprudence exam. It will cover areas of law and legislation as they relate to the dental profession. This course will look at the Minnesota Board of Dentistry, their responsibilities and how they are involved with legal actions. This course will also prepare the dental hygienist for ethical issues in the profession including mandated reporting.
Student Learning Outcomes:

* Recognize criteria for reporting child abuse.
* Describe and complete the process of applying for Dental Hygiene National Boards.
* Describe the periodontal and calculus requirements for the CRDTS board exam.
* Describe and complete the process of applying for CRDTS board exam.
* Prepare for the Minnesota 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.
(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.
Prerequisite(s): READ0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

DENT 1405 - Introduction to Dental Assisting
This course combines lecture and laboratory practice to acquaint the student to the fundamentals of working as a chairside assistant in a dental office. The student will be introduced to numbering systems and basic instruments and equipment utilized in dental procedures. Emphasis is placed on the proper technique of hand washing, patient seating and dismissal and oral evacuation while maintaining infection control protocols and following disinfection and sterilization guidelines. Students will apply knowledge and complete clinical records including medical/dental histories and vital signs.
Student Learning Outcomes:
* Identify basic dental instruments and equipment
* Recognize numbering systems of the teeth
* Complete clinical records and record medical/dental histories and vital signs
* Describe and prepare the dental treatment area for patient care and apply concepts of patient, operator and assisting positions while performing oral evacuation
* Apply infection control protocols and concepts of disinfection and sterilization before and after performing chairside procedures
(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:
A student successfully completing this course will
*Recognize various medical conditions, indications and contraindications of drugs used and demonstrate protocols for managing compromised patients and medical emergencies in the dental office.
* Identify general concepts involved in pharmacology including types, sources and categories of drugs as well as medical abbreviations and symbols used in prescription writing.
* Differentiate key nutrients and their primary functions providing insight for making healthy food choices as a means for evaluating dietary intake.
* Relate the biochemical nature of nutrients to oral conditions, the impact of nutritional education and the psychosocial aspects of food and eating.
(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:
* Classify individual gypsum materials and correctly manipulate according to its use.
* Relate the use of impression materials to their clinical application.
* Classify waxes and explain their clinical application.
* Distinguish the differences of various dental cements and correctly manipulate according to its clinical application.
* Comprehend uses of individual restorative materials and correctly manipulate according to its clinical application.
* Comprehend use of resins (acrylic and/or thermoplastic) and manipulate according to its application.
* 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 various full mouth dental image surveys and provides instruction on the paralleling and bisecting techniques. Concepts include; dental image anatomy, pathology, intraoral and extraoral imaging, processing, critiquing skills, quality assurance and infection control. 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.
* Demonstrate radiation health protection techniques and infection control.
* Identify anatomical landmarks and pathologies on dental images.
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 patients 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 en employment professional portfolio
* Prepare a resume, cover letter and follow-up letter necessary to attain employment
* Relate staff/patient interactions as the 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 den-

tistry 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 preclinical 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 to assist the student in reviewing and successfully passing the Minnesota Jurisprudence examination which is a requirement to become a licensed dental assistant.
Student Learning Outcomes:

* Discuss ethical and legal issues as they relate to dentistry
* Successfully write the Minnesota Board of Dentistry Jurisprudence examination
* Be aware of legal and ethical ramifications of licensure
* Develop a personal plan to meet the continuing education requirements as established by the Minnesota State Board of Dentistry as well as for life long learning
(1 C: 1 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 student will learn the sonographer profile, sonographer safety; legal, ethical, and legislative issues; current sonographic examinations; and basic patient care skills.
Student Learning Outcomes:
* Understand 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 safety considerations and professional confidentiality when dealing with patient care
* Identify ergonomic methods of prevention of musculoskeletal injuries in the field of sonography
* Determine patient preparations for abdominal, obstetric-gynecologic, and vascular procedures, and state the major specialty sonographic examinations
* Explain how patients, peers, and other health care professionals interact in a considerate and professional manner
* Observe various ultrasound procedures performed in the simulated lab
* Prepare and present a paper on a topic of choice that relates to the ultrasound field
Prerequisite(s): MATH1300, PHYS1300, BLGY2310, BLGY2320
(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:
* Determine normal sonographic cross-sectional anatomy and sizes of the abdominal organs.
* Identify the principal functions of the abdomen organs.
* Determine normal sonographic cross-sectional anatomy and sizes of the neck, musculoskeletal and non-cardiac chest.
* Identify the principal functions of the thyroid and parathyroid glands.
* Interpret normal ultrasound appearances and locations of abdominal vasculature.
* Identify the principal functions of the abdomen vessels.
* Analyze characteristics of normal Doppler flow signals of abdominal vessels.
* Identify normal neonatal brain anatomy and functions.
* Interprets normal ultrasound appearances of the neonatal head.
* Define how body structure relationships apply to sonography.
* 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.
Student Learning Outcomes:
* Evaluate normal and abnormal ultrasound appearances of the abdominal organs.
* Determine normal and abnormal ultrasound appearances of the thyroid and parathyroid glands.
* Investigate pertinent patient history and laboratory data that apply to the abdomen, thyroid and parathyroid.
* Evaluate scanning techniques, transducer selection and scanning protocols of the abdomen, thyroid and neonatal head.
* Identify ultrasound artifacts.
* Analyze Doppler characteristics of the abdomen and thyroid vessels.
* Complete mock diagnostic medical sonographer worksheets.
* Incorporate pathology case studies of abdominal organs and blood vessels, neck, musculoskeletal, and neonatal brain into sonography practice.
(3 C: 3 lect/pres, 0 lab, 0 other)

DMSG 1405 - Ultrasound Physics
A study of the physical principles and mathematical equations required to understand diagnostic ultrasound. Course includes parameters of sound waves, pulsed and continuous wave principles, laws of reflection and refraction and the role of piezoelectricity in the production and processing of ultrasound.
Student Learning Outcomes:
* Define selective terms in the production and use of ultrasound and Doppler
* List and describe the properties of sound waves including pulse and continuous wave
* Identify and calculate the mechanisms of attenuation and impedance
* Compare and contrast ultrasound transducers and their components
* List and describe factors affecting resolution to include reflection and refraction
* Describe the Doppler effect and interpret components of the Doppler equation
* Compare and contrast the differences between imaging modes
* Diagram and describe the role of the scan converter and all other major components of the US machine
* Demonstrate quality assurance through the use of a phantom in the lab
(3 C: 3 lect/pres, 0 lab, 0 other)

DMSG 1406 - Clinical Ultrasound Lab I
Introduction to the aspects of sonography in a hospital or simulated clinical laboratory setting. Emphasis will be placed on instrumentation, on imaging, and identification of anatomy of the abdomen and thyroid.
Student Learning Outcomes:
* Demonstrate aspects of patient care pertaining to ultrasonography
* Perform ultrasound instrumentation, transducer care and maintenance
* Perform and observe abdominal and thyroid ultrasound scans in a hospital or simulated clinical setting following set protocols
* Perform measurements on ultrasound exams of the abdomen and thyroid
* Document patient history, measurements and comments on an ultrasound technologist worksheet
* Perform Doppler spectral waveform images of the abdomen vessels
(3 C: 0 lect/pres, 3 lab, 0 other)

DMSG 1409 - 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 different ultrasound equipment used in ultrasound departments.
(1 C: 1 lect/pres, 0 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 determine normal sonographic appearances and recognize variances and sizes of organs and vessels. This course will explore the hemodynamics pat-

terns 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.
* Perform 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.
Prerequisite(s): DMSG1402, DMSG1406, DMSG1404, DMSG1401, DMSG1405
(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.
* Evaluate sonographic technique and protocols used for the first, second and third trimester obstetric ultrasound.
* Identify normal and abnormal sonographic appearances of the fetus during the first, second and third trimester.
* Conduct obstetric measurements used for gestational age and fetal growth assessment.
* List risk factors associated with vascular disease.
* Differentiate sonographic techniques and protocols used to evaluate the extracranial cerebrovascular and peripheral vascular systems.
* Recognize sonographic vascular anatomy of the extracranial cerebrovascular and peripheral vascular systems, along with the use of Doppler to determine the presence of vascular disease.
Prerequisite(s): DMSG1402, DMSG1406, DMSG1404, DMSG1401, DMSG1405
(3 C: 3 lect/pres, 0 lab, 0 other)

DMSG 1412 - Clinical Ultrasound Lab II
Practical training in a hospital or 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:
* Explain aspects of patient care pertaining to sonography.
* Perform proper ultrasound instrumentation, transducer care and maintenance.
* Perform abdominal, thyroid, pelvic, obstetric, 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.
Prerequisite(s): DMSG1402, DMSG1406, DMSG1404, DMSG1401, DMSG1405
(5 C: 0 lect/pres, 5 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 edition to your regular study and as a method to determine your strengths and weaknesses so that you can study more effectively. This course will cover test taking skills and preparation on the computer. Students will be able to better recognize pathology better 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.
* Interpret mock examination results.
* Present case studies.
Prerequisite(s): DMSG1412, DMSG1409, DMSG1410, DMSG1411
(1 C: 1 lect/pres, 0 lab, 0 other)

DMSG 2412 - 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, 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 any abdominal and pelvic organs, gravid uterus, superficial structures 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): DMSG1409, DMSG1410, DMSG1411, DMSG1412 or DMSG2402, DMSG2406, DMSG2404, DMSG1409
(11 C: 0 lect/pres, 0 lab, 11 other)

DMSG 2413 - 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): DMSG2412
(4 C: 0 lect/pres, 0 lab, 4 other)

DVRS 1304 - Diversity and Social Justice
Meets MN Transfer Curriculum Goal Areas 5 and 7 - Diversity and Social Justice is a course that uses critical thinking and questioning to define, recognize and analyze individual, institutional and cultural/societal racism, sexism, classism, heterosexism and other forms of oppression. It will focus on development of practical skills for eliminating racism, sexism, classism, heterosexism and other oppressive elements from personal, professional and public lives in the United States. Students will 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 Outcomes:
* Critically examine ideas about people, perspectives, and experiences that are different than their own.
* Recognize and evaluate how their experiences impact how they view others.
* Examine critically, and challenge, unexamined, stereotypical or false beliefs, values, and opinions.
* Critically examine the dehumanizing biases and misinformation that lead to oppression that various groups in society experience.
* Discuss the national debates which provide a societal context in which oppressive behaviors occur.
* Recognize ideological messages and social control in US culture.
* Recognize and analyze the prejudices, privilege and power that motivate individual and institutional classism, racism, sexism, heterosexism, and other forms of oppression.
* Explain the interrelationships of various forms of oppression.
* Identify respectful interpersonal behaviors, and personal actions for challenging disrespectful behaviors, discrimination and harassment, and skills in creating a more supportive community for all people.
* Plan constructive ways to act as allies in dealing with conflict, and in channeling personal power toward societal change.
* Examine successful social movements in the US that have challenged oppression.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

DVRS 2301 - Race and Ethnic Relations
Meets MN Transfer Goal 7 - 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

EAP 0300 - EAP College Writing I
EAP College Writing I is the first-level course for non-native speakers of English. In this course, students increase proficiency in the writing skills necessary for basic personal and academic communication. Students use process writing techniques to write simple paragraphs, outlines and essays, and gain mastery in the use of the basic structures of the English language while immersing themselves in culturally and contextually relevant writings and readings. This course does not fulfill a general studies or general education requirement. Students with serious writing difficulties can expect to attempt this course multiple times. In order to receive a passing grade at the end of this course, students will submit a writing sample completed in class which demonstrates the focus, development, clarity, and coherence necessary for success in EAP College Writing II.
Student Learning Outcomes:
* Use prewriting devices (e.g. brainstorming, outlining, drafting) to compose paragraphs
* Write as a way of discovering ideas
* Generate, select, develop, and relate ideas coherently
* Use the conventions of academic English focusing on writing clear and concise sentences
* Write complete simple sentences, compound and complex clauses with basic tenses
* Begin to vary writing for different social contexts, readers, and purposes
* Work within a community of writers
* Demonstrate correct use of paragraph organization and structure by discussing and reading about a culturally and contextually relevant issue and writing a well-organized narrative and expository paragraph
* Demonstrate correct use of paragraph unity and coherence by discussing and reading about a culturally and contextually relevant issue, and writing multi-paragraph narrative, comparison/contrast and response papers with thesis statements, topic sentences and conclusions
* Employ essay structure in simple and annotated five-paragraph and six-paragraph outlines and write at least one essay
* Revise and edit their work for structural, grammatical and mechanical errors
* Use basic technology commonly expected in general studies and general education courses including Word, D2L, and peer editing software
(4 C: 3 lect/pres, 1 lab, 0 other)

EAP 0301 - EAP College Writing II
EAP College Writing II is the second-level structure course for non-native speakers of English. In this course, English Language Learners increase proficiency in the writing skills necessary for personal and academic communication. Students use process writing techniques to write multiple-paragraph assignments through short expository, response or researched essays. Students use sophisticated grammar structures in their writings while immersing themselves in culturally and contextually relevant writings and readings.
Student Learning Outcomes:
* Select appropriate topics for academic writing
* Use the conventions of standard American English in writing complete sentence with appropriate and sophisticated grammar structures and variety
* Use writing processes including brainstorming, freewriting, defining and restricting topics, creating thesis statements, developing supporting information formulating conclusions, revising and editing
* Research, read, discuss and respond to academically appropriate reading selections
* Write well-developed, focused paragraphs using various methods of development
* Write unified, coherent, and well-developed short essays, using various methods of development
* Work within a community of writers
* Develop skills in summarizing, paraphrasing, and incorporating ideas from other writers into essays without plagiarizing
* Use technology commonly expected in general studies and general education courses in a professional manner including internet subscription databases, D2L, turnitin, e-mail, peer editing software, and internet resources
Prerequisite(s): EAP0300 or Appropriate Accuplacer Score.
(4 C: 3 lect/pres, 1 lab, 0 other)

EAP 0310 - EAP Listening I
EAP Listening I is designed to provide non-native speakers of English with the foundational academic listening skills necessary to improve performance at the college level. Students entering this course will have scored between 50-69 on the ESL Accuplacer or between 0-27 on the Regular Accuplacer or will have been identified as expected to benefit by participation in this course. EAP Listening I is intended as a complimentary course EAP Reading I and EAP Writing I so students are encouraged to take all three classes during the same semester.
Student Learning Outcomes:
* Listen for main ideas and supporting details

* Understand the theme and outline of academic lectures
* Apply specific note taking techniques in a lecture
* Understand news stories about past, present, and future events
* Make/respond to requests and follow/give directions
* Employ new words in speaking and writing situations
* Use new words encountered in other classes
* Utilize study behavior techniques to improve academic performance
* Adapt and transfer study skills to a wide variety of learning contexts
* Access D2L and other online resources
(4 C: 3 lect/pres, 1 lab, 0 other)

EAP 0320 - EAP Listening II
EAP Listening II is designed to provide non-native speakers of English with the academic listening skills necessary to improve performance at the college level. Students entering this course will have scored between 70-89 on the ESL Accuplacer or between 28-50 on the Regular Accuplacer or will have been identified as expected to benefit by participation in this course. EAP Listening II is intended as a complimentary course to EAP Reading II and EAP Writing II so students are encouraged to take all three classes during the same semester.
Student Learning Outcomes:
* Comprehend lectures in academic content areas
* Recognize the organization of lecture
* Take and organize notes using specific note taking methods
* Interpret verbal and nonverbal language markers in a lecture
* Predict the content of lectures and evaluate information
* Understand elements of natural speech, such as digressions
* Develop academic discussion skills for the classroom
* Emulate conversational styles in English
* Utilize D2L and other online resources
* Demonstrate competence in study skills and behavior
Prerequisite(s): EAP0310 or Appropriate Accuplacer Score.
(4 C: 3 lect/pres, 1 lab, 0 other)

EAP 0330 - EAP College Reading I
This is the first course in the developmental sequence of reading for non-native speakers of English. In this preparatory course, students will expand their ability to successfully use reading strategies for success in college courses, with an emphasis on academic vocabulary, cultural context development, and comprehension. Students will explore reading through a variety of materials including novels, newspapers, textbooks, Internet, and technical resources. This course is developmental and does not fulfill a general education or general studies requirement.
Student Learning Outcomes:
* Practice reading a variety of texts to strengthen the comprehension and understanding of written materials for success in college classes
* Recognize the common roots, suffixes and prefixes of general vocabulary for greater word identification and meaning
* Demonstrate usage of the different parts of a textbook for vocabulary and reading comprehension
* Develop and apply techniques to manage personal strengths and weaknesses in reading comprehension and in vocabulary building
* Respond to and evaluate readings through writing and class discussion
* Develop vocabulary at both the receptive and productive levels
* Demonstrate understanding of cultural contexts of reading to develop and activate cultural schemata
* Develop and apply techniques to manage personal strengths and weaknesses in reading comprehension and in vocabulary building
* Respond to and evaluate readings through writing and class discussion
* Develop vocabulary at both the receptive and productive levels
* Demonstrate understanding of cultural contexts of reading to develop and activate cultural schemata
(4 C: 3 lect/pres, 1 lab, 0 other)

EAP 0331 - EAP College Reading II
This is the second course in the developmental sequence of reading for non-native speakers of English. In this preparatory course, students will expand their ability to successfully use reading strategies for success in college courses, with an emphasis in active reading, activating schemata, and comprehension development. Students entering this course will have scored between 70-89 on the ESL Accuplacer Test. This course is developmental and does not fulfill a general education or general studies requirement.
Student Learning Outcomes:
* Practice reading to strengthen the comprehension and understanding of written materials for success in college classes
* Understand and utilize a reading process including tasks used before, during, and after reading
* Practice using different patterns of organization commonly used in college-level textbooks to understand meaning
* Respond to and evaluate college-level readings through writing and class discussion
* Develop critical reading skills
* Demonstrate and practice strategies for vocabulary development
Prerequisite(s): EAP0330 or Appropriate Accuplacer Score.
(4 C: 3 lect/pres, 1 lab, 0 other)

EASC 1310 - Meteorology
Meets MN Transfer Goal 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 explain atmospheric phenomena. This course emphasizes key atmospheric concepts that enable students to understand how science can explain the weather phenomena they see in their daily lives and how these phenomena are connected to short term events such as local weather, severe storms and atmospheric stability and long term effects such as global warming. This course includes a lab component where students will learn to use real data to analyze and predict weather patterns and atmospheric phenomena.
Student Learning Outcomes:
* Describe the physical processes that affect and create meteorological phenomena
* Describe the layers and components of the atmosphere and the energy cycle in the atmosphere
* Interpret temperature cycles in terms of the surface energy budget and atmospheric stability
* Explain how clouds and precipitation form and describe the different types
* Explain how weather observations are made and interpreted
* Explain atmospheric forces and global scale winds, the jet stream, and high and low pressure systems
* Explain Atmosphere-Ocean interaction and the El-Nino phenomena
* Describe types of air masses and the formation and types of fronts
* Explain how surface cyclones and the jet stream interact to create life threatening storms and be able to identify these patterns on satellite images
* Describe formation and characteristics of different types of thunderstorms and tornados
* Identify the cause and location of small-scale winds severe turbulence
* Interpret various types of weather data and use that data to generate numerical weather forecasts
* Identify climate zones of the world and describe the natural processes that affect global climate and climate changes
* Explain the feedback mechanisms that stabilize the world climate, discuss human causes of global climate change, and identify ramifications and options for addressing global warming
* Evaluate societal issues from a natural science perspective, ask questions about the evidence presented, and make informed judgments
* Demonstrate and apply critical thinking skills to analyze a variety of weather 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(4 C: 3 lect/pres, 1 lab, 0 other)

ECON 1310 - Personal Finance
Meets MN Transfer Goal 9 - Ethical and Civic Responsibility. The students will learn what it means to make responsible economic decisions and analyze the social and personal impact on these choices. Techniques for dealing with ethical

questions and solutions based on economic consumption in a technology driven society will be identified.
Student Learning Outcomes:
* Understand how to improve one's standard of living based on income, career choice, and time constraints
* Examine issues of personal and civic responsibility
* Apply ethical standards to economic decision-making
* Examine the impacts of short-term and long-term economic decision-making
* Collaborate successfully with other students in economic problem solving activities
* Examine the concepts of freedom and responsibility as they relate to economic decisions
* Examine the connection between personal economic choices and social issues
* Demonstrate an understanding of consumer credit and alternatives to accumulating debt
* Use economic skills to build a budget and statement of net worth
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score
(3 C: 3 lect/pres, 0 lab, 0 other)

ECON 2320 - Introduction to Macroeconomics
Meets MN Transfer Curriculum Goal Area 5 - 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score
(3 C: 3 lect/pres, 0 lab, 0 other)

ECON 2330 - Introduction to Microeconomics
Meets MN Transfer Curriculum Goal Area 5 - 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.
* Predict how pure monopoly impacts the market structure and economic efficiency.
* Appraise government and market failure.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer 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 is 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): ELEC1523, ELEC1502, ELEC1510, ELEC1518
(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): MATH0380 or MATH0400 or Appropriate Accuplacer 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 mpower 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 students to identify various types of electric heat systems and heat transfer methods. Critical thinking will be applied in calculating heating needs and service load. Students will be required to install and connect various heating controls and electric heat units.
Student Learning Outcomes:
* Possess entry level skills beneficial for an apprenticeship
* Exhibit an ability to calculate and layout electric heat
* Identify electric heat design requirements and components
* Be aware of load management configurations and connections
* Actively demonstrate terminating line voltage and low voltage installations
Prerequisite(s): ELEC1502, ELEC1510, ELEC1523
(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
The student will install light fixtures, trim out outlets and switches, wire a furnace, water heater, range and dryer and complete the final installation of a residential dwelling for a final code inspection.
Student Learning Outcomes:
* Plan material and equipment to finish wiring a home
* Plan/packet tailored to student's needs will be developed by student to match the career job they want
* Demonstrate electrical troubleshooting skills
* Use NEC Code as a reference in their electrical work
* Develop their skills to plan and install the final electrical equipment in a house
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 ½ inch and ¾ 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: 2 lect/pres, 0 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
Corequisite(s): ELEC2538
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 and PLC Controls
This course will enable students to analyze solid state devices and applications. Students will assemble solid state devices using diodes, rectifiers, filters, and transistors. The course will develop into basic PLC motor control situations. Students will write PLC logic, program, and wire PLCs.
Student Learning Outcomes:
* Exhibit approved safety practice in all lab projects.
* Analyze solid state devices.
* Identify solid state device applications in industry.
* Program various PLCs.
* Outline operating procedure of PLCs.
* 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 NEC article 500, and interpret various job blueprints.
Student Learning Outcomes:
* Complete lab projects demonstrating appropriate safety practices.
* Contrast electrical code and electrical safety requirements.
* Develop electrical wiring strategies.
* Select materials, tools and equipment for a job.
* Assemble industrial electrical systems.
* Operate industrial electrical equipment.
* Perform all work in a professional manner.
* Demonstrate professionalism and team performance attributes.
* Examine diversity issues in the job environment.
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 and apply that knowledge to a lab situation where they will construct working models of transformers and three phase systems. Students will also use complex trigonometric formulas to describe electrical principals.
Student Learning Outcomes:
* Participate as a member of a team during lab performance activities
* Complete lab projects demonstrating appropriate safety practices
* Solve practical problems
* Use Trig to solve electrical circuits
* Analyze technical functions of a transformer
* Solve 3 phase circuit problems
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 1443 - EMT-1
This 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.
Upon successful completion of EMT 1 students will be eligible to continue to EMT 2 or they may elect to test out and become certified at the Emergency Medical Responder (EMR) level.
Student Learning Outcomes:
* Identify the basic human anatomy and physiology
* Describe how and when to access the EMS system.
* Perform vital signs, oxygen therapy, and airway management.
* 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.
* Conduct patient assessments on medical and trauma patients of all ages.
* Describe the incidence of semi-automatic defibrillators (AED).
* Demonstrate performance of CPR.
(3 C: 2 lect/pres, 1 lab, 0 other)

EMSC 1445 - EMT-2
This 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.
Upon successful completion of EMT 1 students will be eligible to continue to EMT 2 or they may elect to test out and become certified at the Emergency Medical Responder (EMR) level.
Student Learning Outcomes:
* Identify the basic human anatomy and physiology
* Describe how and when to access the EMS system.
* Perform vital signs, oxygen therapy, and airway management.
* 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.
* Conduct patient assessments on medical and trauma patients of all ages.
* Describe the incidence of semi-automatic defibrillators (AED).
* Demonstrate performance of CPR.

Prerequisite(s): EMSC1443
(6 C: 5 lect/pres, 1 lab, 0 other)

EMSC 1462 - Emergency Medical Responder (First Responder)
This National Highway and Transportation Safety Administration (NHTSA) course is designed to enable a person to have the fundamental knowledge base to perform as an entry level Emergency Medical Responder. This 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). The focus of this course is the recognition of, and emergency care of sick or injured people, utilizing basic EMS equipment and assisting Emergency Medical Technicians once they have arrived. Upon passing this course the student will be eligible to be registered with the Minnesota EMSRB as an Emergency Medical Responder. Emergency Medical Responder Certification is valid for two (2) years.
Student Learning Outcomes:
* Describe how and when to access the EMS system.
* Recognize and provide emergency care to sick persons.
* Recognize and provide emergency care to injured persons.
* Describe the need for and show proficiency in the use of semi-automatic defibrillators.
* Demonstrate performance of CPR.
* Articulate simple, appropriate care plans for a sick or injured person
* Perform 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 1401 - EMS Operations
This is an introductory course for the Paramedicine student reflective of the 2010 National Standards Curriculum. This course will enable the student to advance their knowledge base from the EMT education to the advanced role of the Paramedic in topics, such as, medical-legal issues, roles and responsibilities, communication, personal wellness, and emergency vehicle operations.
Student Learning Outcomes:
* Identify roles and responsibilities for all levels of care within an EMS system.
* Explain the value of personal well being, stress management and injury prevention in the healthcare environment.
* Demonstrate effective communication with patients and other allied healthcare providers within legal and ethical boundaries.
* Describe safety measures on the scene of an emergency with regard to themselves, other allied health professionals, the public, and the patient(s).
* Apply safe emergency vehicle operation measures to the scene of an incident.
* Implement safe operating procedures of an emergency vehicle.
(3 C: 3 lect/pres, 0 lab, 0 other)

EMSP 1402 - Paramedicine Skills I
This is an introductory skills course for the Paramedicine student reflective of the 1998 National Standards Curriculum. It will cover the core skills of the basic EMS provider and then expands to the advanced skills of the paramedic. Students will be enabled to apply fundamental skills in patient care to include I.V. therapy, basic and advanced airway management, advanced patient assessment/ physical exam and others.
Student Learning Outcomes:
* Demonstrate basic life support skills as required by the National Registry of Emergency Medical Technicians - Basic Practical Exam
* Develop and refine basic and advanced skills needed to assess, manage and treat critically ill and injured patients in the out of hospital setting
* Demonstrate proper dissemination of patient information in verbal and written form to and from allied health care providers
Prerequisite(s): HLTH1440, BLGY1320
(3 C: 0 lect/pres, 3 lab, 0 other)

EMSP 1403 - Introduction to Pharmacology
Students learn pharmacological concepts, drug legislation and drug categories. Emphasis is placed on medical math and development of equations used in the calculation of medication administration.
Student Learning Outcomes:
* Define the basics of pharmacology including, drug schedules, pharmacokinetics, pharmacodynamics and drug profiles.
* Calculate formulas commonly used in medical math.
(1 C: 1 lect/pres, 0 lab, 0 other)

EMSP 1404 - Emergency Pharmacology for Paramedics
This course covers the pharmacology portion of the 2010 National Standard Paramedic Curriculum. Students learn pharmacological concepts, drug legislation and drug categories. Emphasis is placed on commonly used drugs in the emergency setting and their effects on body systems. This course will also provide the student with a basic understanding of pharmacology necessary for safe drug administration.
Student Learning Outcomes:
* Categorize the indications, contraindications, dosage, routes of administration, precautions and side effects of various medications used in the emergency setting.
* Synthesize the basics of pharmacology to each medication used in the pre-hospital setting.
* Formulate the dose and volume of each medication to administer in a given scenario.
* Contrast the appropriate medication for the corresponding patient condition.
Prerequisite(s): EMSP1403
(2 C: 2 lect/pres, 0 lab, 0 other)

EMSP 1405 - Medical Emergencies
Topics covered are Hematology, OB/GYN, Toxicology, Gastroenterology, Neurology, Endocrinology and others. Emphasis is placed on understanding pathology and how it relates to specific medical emergencies. Students also learn to put it all together and practice assessment, management and treatment of various medical and traumatic emergencies in scenario based learning.
Student Learning Outcomes:
* Perform an assessment on the critically ill or injured patient in a scenario based setting.
* Integrate pathophysiological principles with assessment findings.
* Formulate a field impression for the patient with a medical or traumatic emergency.
* Implement a treatment plan for the pre-hospital patient.
* Describe pathophysiological principles used to assess, manage and treat various types of medical emergencies to include OB/GYN, Neonatal, geriatric, psychiatric, and chronic care patients.
* Explain the etiology of various types of medical emergencies with respect to acute illness or disease.
Prerequisite(s): HLTH1440, BLGY1320
(3 C: 0 lect/pres, 1.5 lab, 1.5 other)

EMSP 1407 - Cardiology I
Emphasis is placed on electrophysiology and pathophysiological principals. Students will learn to identify components on the ECG and measurement standards for cardiology.
Student Learning Outcomes:
* Explain the electrophysiology of the heart.
* Describe the anatomy and physiology of the cardiovascular system.
* Identify components of the ECG.
* Utilize standards to interpret various rhythms.
(2 C: 2 lect/pres, 0 lab, 0 other)

EMSP 1409 - Paramedicine Skills II
This course is the skills component of EMSP1410 and EMSP1404, reflective of the 2010 National Standard Paramedic Curriculum. It will continue to enhance and refine the skills learned in EMSP1402. Fundamental skills of critical cardiac and respiratory related emergencies will be enhanced. More advanced techniques and skills such as rapid sequence intubation, 12-lead application and interpretation, thoracentesis and surgical airways will be explored. Emphasis is placed on scenario-based learning.
Student Learning Outcomes:
* Perform a complete patient history and physical exam.
* Formulate a field diagnosis and implement a treatment plan for various patient presentations, to include the use of medications and other advanced level skills.
* Manage a traumatic, respiratory and cardiac emergency, including cardiac arrest for patients of all ages.
* Employ advanced invasive procedures when needed to manage a patients airway, cardiovascular and hemodynamic status.
Prerequisite(s): EMSP1406, EMSP1404, EMSP1410
(2 C: 0 lect/pres, 2 lab, 0 other)

EMSP 1410 - Cardiology II
This course will cover the Pulmonary and Cardiology portion of module five of the 2010 National Standard Paramedic curriculum. Emphasis is placed on pathophysiological principles and assessment findings for the student to formulate a field impression and implement a treatment plan for a patient with a respiratory or cardiovascular emergency. Students will learn to interpret cardiac rhythms on the ECG.
Student Learning Outcomes:
* Formulate a field impression for the patient with respiratory problems.
* Formulate a field impression for the patient with cardiovascular disease.
* Interpret cardiac arrhythmias.
* Explain the basics of cardiology including electrophysiology, anatomy, and physiology.
* Evaluate components of the ECG.
* Incorporate the standards used in interpretation of cardiac arrhythmias.
* Establish a treatment plan for the respiratory patient.
* Implement a treatment plan for cardiac arrhythmias.
Corequisite(s): EMSP1404
Prerequisite(s): EMSP1407
(4 C: 3 lect/pres, 1 lab, 0 other)

EMSP 1432 - Support Services Internship
This course is designed to allow the Paramedicine student to refine basic and advanced airway management skills and knowledge along with IV therapy techniques in a clinical setting. Opportunity is also afforded to allow students to develop an understanding of care given in a critical care setting. The student utilizes all of the knowledge and skills learned to this point to provide and assist in patient care in this setting under the direct supervision of an Anesthesiologist, Registered Nurse or both.
Student Learning Outcomes:
* Provide basic and advanced airway management skills and techniques to a variety of patients of all ages.
* Perform venipuncture and IV therapy on a variety of patients of all ages.
* Demonstrate a history and physical exam.
* Discuss procedures and equipment used to care for the critical care patient.
Prerequisite(s): EMSP1402
(2 C: 0 lect/pres, 0 lab, 2 other)

EMSP 1441 - ALS Ambulance Internship
This course is designed to introduce the student to an Advanced Life Support (ALS) ambulance service. The student will become familiar with the operations, procedures and care provided by the Paramedic in the field. The student will be involved with Basic Life Support (BLS) and ALS patient care, treatment and transport under the direct supervision of a staff Paramedic.
Student Learning Outcomes:
* Explain the roles and responsibilities of a Paramedic within an EMS system.
* Establish and/ or maintain a patent airway, oxygenate, and ventilate.
* Perform a comprehensive physical exam, including a complete history on any patient
* Communicate patient findings to the patient and allied health professionals.
* Demonstrate a treatment plan for the medical and trauma patient of all ages.
Prerequisite(s): EMSP1410
(2 C: 0 lect/pres, 0 lab, 2 other)

EMSP 2412 - Paramedicine Skills III
This course provides fundamental skills related to critical medical emergencies will be enhanced and applied in treatment of patients with a variety of etiologies and presentations. Emphasis is placed on team-based approach in simulation and scenario-based learning.
Student Learning Outcomes:
* Performs a comprehensive patient assessment.
* Formulates a field diagnosis, and implements a treatment plan for various patient presentations, to include the use of medications and other advanced level skills.
* Maintains overall patient perspective through coordination of treatment and transportation.
* Demonstrates leadership to the team by designating tasks.
* Utilizes advanced procedures when appropriate to manage special population patients, including neonate, pediatric, geriatric, and chronic condition patients.
Corequisite(s): EMSP2410
Prerequisite(s): EMSP1406, EMSP1404, EMSP1410
(2 C: 0 lect/pres, 2 lab, 0 other)

EMSP 2420 - Specialized Populations
This course is designed to address the needs of specialized populations, including pediatric, geriatric and OB patients, in our communities. It will continue to enhance and refine the skills previously learned. Fundamental skills of critical cardiac and respiratory related emergencies will be enhanced. This course will incorporate standard certification courses as specified by the industry. Emphasis is placed on scenario-based learning.
Student Learning Outcomes:
* Perform a complete patient history and physical exam.
* Formulate a field diagnosis and implement a treatment plan for various patient presentations, to include the use of medications and other advanced level skills.
* Manage a traumatic, respiratory and cardiac emergency, including cardiac arrest for patients of the extreme age categories.
* Employ advanced invasive procedures when needed to manage a patients airway, cardiovascular and hemodynamic status; while adhering to American Heart Association standards.
* Demonstrate pediatric cardiac arrest management.
* Perform an intraosseous cannulation and infusion.
* Identify developmental characteristics of infants and children of varying age groups.
* Apply principles of injury prevention to case studies.
* Differentiate between respiratory distress, failure, and arrest.
* Distinguish different forms of shock and identify compensated and decompensated states.
Prerequisite(s): EMSP1404, EMSP1410
(2 C: 1 lect/pres, 1 lab, 0 other)

EMSP 2425 - Advanced Trauma Care
This course covers areas such as kinematics, various injury pathologies and mechanisms, and trauma patient management priorities. This course addresses treatment standards as they relate to the state trauma system.
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 any patient.
* 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)
Prerequisite(s): EMSP1410
(2 C: 1 lect/pres, 1 lab, 0 other)

EMSP 2430 - ALS Ambulance Internship II
This course is designed to introduce the student to an Advanced Life Support ambulance service. The student will become familiar with the operations, procedures and care provided by the Paramedic in the field. The student will be involved with BLS and ALS patient care, treatment and transport under the direct supervision of a staff Paramedic.
Student Learning Outcomes:
* Establish and/ or maintain a patent airway, oxygenate, and ventilate.
* Summarize the results of a comprehensive physical exam, including a complete history, on any patient.
* Contrast the diagnoses of the patient and communicate them with an allied health professional.
* Compare treatment plans for the trauma and medical patients of all ages.
Prerequisite(s): EMSP1441
(2 C: 0 lect/pres, 0 lab, 2 other)

EMSP 2435 - Critical Care Internship
This course covers the various support services and ancillary areas in a clinical setting that affect what a Paramedic does in the field. The student utilizes all of the knowledge and skills learned to this point to provide and assist in patient care in this setting under the direct supervision of a Registered Nurse and/or Physician.
Student Learning Outcomes:
* Demonstrate an understanding for invasive interventional cardiology and how this applies to patients who are treated using these various methods.
* Correlate various heart dysrhythmias to disease pathology and cardiac output.
* Utilize all skills and knowledge acquired to this point to determine pathology of various illness and injuries.
* Perform history and physical exam and utilize skills within the Paramedics scope of practice to assist in caring for patients of all ages with a variety of illness and injuries.
Prerequisite(s): EMSP1406, EMSP1404, EMSP1410
(2 C: 0 lect/pres, 0 lab, 2 other)

EMSP 2438 - Emergency Department Internship
This course covers the operations of the Emergency Department of a Level I or Level II trauma center. The student utilizes all of the knowledge and skills learned to this point to provide and assist in patient care in this setting under the direct supervision of a registered Nurse and/or Physician.
Student Learning Outcomes:
* Establish and maintain a patent airway.
* Provide adequate oxygenation and ventilation for the patient.
* Identify the pertinent patient history.
* Perform a comprehensive physical exam on any patient.
* Communicate patient findings to the patient and other allied health professionals.
* Implement the treatment plan for the trauma patient.
* Formulate a field Impression for the medical and trauma patient of all age groups.
* Implement the treatment plan for chronically ill patients of all ages.
Prerequisite(s): EMSP1406, EMSP1404, EMSP1410
(3 C: 0 lect/pres, 0 lab, 3 other)

EMSP 2442 - Acute Care Internship
This course provides clinical rotation through labor and delivery, pediatrics and psychiatry. The student utilizes all of the knowledge and skills learned to this point to provide and assist in patient care in this setting under the supervision of appropriate staff.
Student Learning Outcomes:
* Apply the general concepts of pathophysiology for the assessment and management of emergency patients.
* Integrate the principles of therapeutic communication to effectively communicate with any patient while providing care.
* Apply a process of clinical decision making to use the assessment findings to help form a field impression.
* Effectively document the essential elements of patient assessment, care and transport.
* Describe and demonstrate safe, empathetic competence in caring for patients with behavioral emergencies.
* Explain the anatomy and physiology of the female reproductive system to the assessment and management of a patient experiencing normal or abnormal labor.
* Integrate pathophysiological principles and assessment findings to formulate a field impression and implement the treatment plan for the neonatal patient.
* Integrate pathophysiological principles and assessment findings to formulate a field impression and implement the treatment plan for the pediatric patient.
Prerequisite(s): EMSP2412
(2 C: 0 lect/pres, 0 lab, 2 other)

EMSP 2460 - ACLS Provider
This course will result in the awarding of Advanced Cardiac Life Support Provider certification from the American Heart Association. It will cover all aspects of treating cardiac and stroke patients at the advanced level to include basic and advanced airway management, cardiac rhythm interpretation, medication administration and post resuscitation management.
Student Learning Outcomes:
* Perform post resuscitation care
* Perform as a team member and team leader
* Perform vascular access
* Perform I.V. and ETT medication administration
* Identify and treat various cardiac dysrhythmias
* Demonstrate adult cardiac arrest management
* Describe special arrest situations
* Perform defibrillation, cardioversion and TCP
* Describe and perform initial resuscitation steps
* Identify ACLS purpose
* Perform basic and advanced airway management
* Demonstrate an understanding of various types of medication used in ACLS
Prerequisite(s): EMSP1406, EMSP1408 or ICVT2446
(1 C: 1 lect/pres, 0 lab, 0 other)

EMSP 2462 - ITLS Provider Course
This course will award certification as a Pre-Hospital Trauma Life Support Provider at the Advanced level. This course covers areas such as Kinematics, various injury pathologies and mechanisms and trauma patient management priorities.
Student Learning Outcomes:
* Outline pregnant patient trauma considerations
* Perform in-line intubation
* Describe body cavity trauma
* Describe head, neck and spine trauma
* Describe thermal trauma
* Describe extremity trauma
* Perform traumatic airway management
* Perform trauma patient assessment
* Describe general patient trauma
* Perform trauma I.V. therapy
* Identify trauma patient priorities
* Perform trauma patient management
* Perform trauma patient care
* Differentiate Kinematics
* Perform initial resuscitation steps
* Describe burn trauma
Prerequisite(s): EMSP1406, EMSP1408
(1 C: 1 lect/pres, 0 lab, 0 other)

EMSP 2468 - PALS Provider Course
This course will result in the awarding of Pediatric Advanced Life Support Provider certification from the American Heart Association. It will cover all aspects of treating pediatric respiratory and cardiac patients at the advanced level to include basic and advanced airway management, cardiac rhythm interpretation, medication and fluid administration, intraosseous cannulation and post resuscitation management.
Student Learning Outcomes:
* Perform post resuscitation care
* Perform as a team member and team leader
* Perform vascular and intraosseous cannulation
* Perform I.V., I.O. and ETT medication administration
* Identify and treat various cardiac dysrhythmias

* Demonstrate pediatric cardiac arrest management
* Describe special arrest situations
* Perform defibrillation, cardioversion and TCP
* Describe and perform initial resuscitation steps
* Identify PALS purpose
* Perform basic and advanced airway management
Prerequisite(s): EMSP1406, EMSP1408
(1 C: 1 lect/pres, 0 lab, 0 other)

EMSP 2472 - PEPP Provider
Pediatric Education for Prehospital Professionals is a 13-hour two day course designed for any allied health professional who is responsible for the emergent care of children. This course has skill stations for ALS and BLS providers concurrently and emphasis is placed towards caregivers that practice in the out-of-hospital setting. Topics include Pediatric Assessment, Respiratory, Medical and Traumatic Emergencies, Children with Special Needs, Child Maltreatment, Emergency Delivery and Newborn Stabilization and others.
Student Learning Outcomes:
* Identify developmental characteristics of infants, children of different age groups
* Perform pediatric assessment using the pediatric assessment triangle (PAT)
* Apply principals of injury prevention to case studies
* Differentiate between respiratory distress, respiratory failure and respiratory arrest
* Perform a treatment strategy from the least to the most invasive, for children with respiratory compromise
* Differentiate between compensated and decompensated hypovolemic shock
* Perform the steps in the management of cardiopulmonary arrest
* Describe the common causes of altered level of consciousness in infants and children and outline management
* Perform appropriate assessment and treatment techniques to case studies presenting patients with seizures and other medical emergencies
* Perform assessment and treatment of pediatric burn patients
* Describe how to prepare for delivery, perform a delivery and go to postdelivery care
* Apply assessment techniques and treatment plans to case studies presenting a newborn in distress
* Describe the complications of tracheostomy tubes, central venous lines, gastrostomy tubes or gastric feeding tubes and ventriculoperitoneal shunts and outline management
(1 C: 1 lect/pres, 0 lab, 0 other)

EMSP 2481 - Paramedicine Internship
This course covers the application of advanced level skills and knowledge in the evaluation and care of the sick and injured patient. The student will be involved in practicing the art and science of out-of-hospital medicine as a team member and a team leader under the direct supervision of a staff paramedic.
Student Learning Outcomes:
* Synthesize the pathophysiology of disease and trauma into patient findings.
* Compose a differential diagnosis for each patient.
* Defend the differential diagnosis for each patient.
* Summarize ambulance operations and standard operating procedures.
* Contrast out of hospital treatments as a team member and team leader for a variety of patient presentations in accordance with the U.S. D.O.T. National Paramedic Curriculum and local protocol.
* Formulate a treatment plan based on patient presentation and disease or injury pathophysiology.
* Evaluate the rationale for the treatments rendered and how the treatments alter disease or injury.
* Explain Primary Injury Prevention methods.
* Describe the role of a Paramedic within an EMS system and the community.
* Anticipate patients needs based on condition of patient.
* Predict the outcome of the patient based on findings.
* Justify transport decision based on patient condition.
Prerequisite(s): EMSP2412
(6 C: 0 lect/pres, 0 lab, 6 other)

EMSP 2485 - Paramedicine Skills IV
This course is a technical course available for second year Paramedicine students in their last semester. The course will enhance the students level of competency in advanced life support skills and their preparedness to enter the workforce as an entry-level paramedic.
Student Learning Outcomes:
* Synthesize skills used to manage a scene of a medical or traumatic emergency.
* Implement a treatment plan for medical and trauma patients.
* Justify the treatment plan developed for various scenarios.
* Compose a differential diagnosis for disease pathologies when presented.
* Incorporate the skills as outlined by the National Registry of EMT at the Paramedic level.
Prerequisite(s): EMSP2412
(2 C: 0 lect/pres, 2 lab, 0 other)

ENGL 0300 - Foundations for College Writing I
Students in this course will be introduced to English necessary for college and career. The course emphasizes conventions of academic English necessary for college and career readiness. In addition, students can expect to read a variety of written work from various academic and/or professional sources. By the end of the semester, students will have written 3000 words of revised work. Students will submit a writing sample completed in class which demonstrates focus, development, clarity, and coherence. This is a college readiness course and does not fulfill college writing requirements.
Student Learning Outcomes:
* Write for an academic/professional audience using description, narration, and exposition.
* Develop a controlling idea with specific and relevant examples and details.
* Apply organizational strategies in academic/professional writing.
* Express ideas coherently for a diverse academic/professional audience.
* Evaluate and revise writing as a result of individual, peer and instructor feedback.
* Utilize the conventions of Academic English.
* Demonstrate digital literacy appropriate for college courses.
(3 C: 3 lect/pres, 0 lab, 0 other)

ENGL 0304 - Foundations for College Writing II
This is the second course in the developmental sequence for students seeking an AA or AAS degree. In this preparatory course, students will study and apply principles of sentence, paragraph, research, and essay structure as they read and write narrative, descriptive, expository and persuasive pieces. Students entering this course will have scored between 51 and 77 on the Accuplacer reading test or have successfully completed ENGL 0300. This course is developmental and does not fulfill a general education or general studies requirement.
Student Learning Outcomes:
* Select appropriate topics for academic writing. Write complete sentences with appropriate structure and variety.
* Write well-developed, focused paragraphs using various methods of development. Write unified, coherent, and well-developed short essays, using various methods of development
* Select, analyze, and use appropriate support from extensive reading materials in essay writing
* Understand and evaluate critical reviews
* Write critical reviews
* Work within a community of writers
* Use the conventions of standard English
* Understand the correct use of MLA format in documenting sources
* Develop critical awareness of one's own writing and the writing of others
* Use technology commonly expected in general studies and general education courses in a professional manner including internet subscription databases, D2L, turnitin, e-mail, peer editing software, internet resources
Prerequisite(s): ENGL0300 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ENGL 0355 - Foundations for College Success
This course provides students with preparatory skills necessary for college success including reading, writing and class presentation. In addition, students will cover personally relevant topics of learning styles, study strategies, and group dynamics. Finally students will be introduced to and use technology relevant to

their general course work.
Student Learning Outcomes:
* Understand and apply learning styles in essay writing
* Identify and apply personally relevant study strategies
* Produce quality work efficiently in a group setting
* Comprehend full length high interest reading selections, i.e., novel or novel length non-fiction
* Select, analyze, and use appropriate support from extensive reading material in essay writing
* Understand and evaluate critical reviews
* Write critical reviews
* Prepare and deliver a short class presentation
* Use technology commonly expected in general studies and general education courses in a professional manner including internet databases, D2L, turnitin, e-mail, peer editing software, internet resources
* Use MLA documentation in both written and verbal contexts
* Use conventions of Academic English
(4 C: 4 lect/pres, 0 lab, 0 other)

ENGL 1100 - Writing for the Workplace
This is a writing intensive course which builds essential written communication skills for the workplace. Through extensive practice, students will develop writing skills necessary for success in professional and academic environments. Students will apply professional English usage to a variety of written communications, such as memos, letters, applications, documentation, proposals, and reports. This course will also prepare them for today's complex workplace by focusing on appropriate tone and style for a diverse audience.
Student Learning Outcomes:
* Utilize correct spelling, punctuation, grammar and sentence structure.
* Apply professionalism in all workplace communication.
* Analyze written material for purpose, organization, tone and point of view.
* Employ diverse forms of workplace correspondence.
* Identify audience needs and expectations.
* Write clearly and coherently.
* Practice the writing process by producing a variety of communications.
* Apply critical thinking skills to writing, and communication issues.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ENGL 1302 - Analytical Writing
Meets MN Transfer Goal 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 produce for grading at least 6,500 words during the semester, including an extensive research paper. This course can be used in place of ENGL 1100 - Writing for the Workplace".
Student Learning Outcomes:
* Demonstrate the writing process through invention, organization, drafting, revision, editing and presentation
* Participate effectively in groups with emphasis on listening, critical and reflective thinking, and responding
* Locate, analyze, evaluate, and synthesize in a responsible manner material from diverse sources and points of view
* Select appropriate communication choices for specific audiences
* Construct logical and coherent argument
* Use authority, point of view, and individual voice and style in writing
* Employ syntax and usage appropriate to academic disciplines and the professional world
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(4 C: 4 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ENGL 1321 - Introduction to Modern Fiction
Meets MN Transfer Curriculum Goal Area 6 and 8 - This course introduces students to the pleasure of reading by focusing on American and global novels published after 1965. Students will analyze and interpret modern literature from diverse authors, genres, and cultural contexts with attention paid to self- and global awareness. Through interaction with various novels, students will engage and formulate theories about fundamental human experiences. Tools for reading and writing critically will be emphasized.
Student Learning Outcomes:
* Critically read representative works of modern fiction from American and global authors.
* Analyze and appreciate representative works of modern fiction from around the world.
* Examine the impact of diversity on the themes of modern fiction.
* Apply the human universals expressed in novels from around the world to formulate a comparative perspective of cross-cultural social, economic and political experiences.
* Recognize and use novel and literary analysis terminology.
* Explore literary elements used in novels as social commentary.
* Apply perspective 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ENGL 1322 - Introduction to Literature
Meets MN Transfer Goal 6 - Humanities. 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.
Student Learning Outcomes:
* Explore the scope and variety of creative literature
* Examine literature and 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, reading, speaking, writing, and listening
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ENGL 1330 - American Literature About War
Meets MN Transfer Goal 6 - Humanities. This course introduces students to the history, culture, and social implications of war through the experiences of soldiers and civilians of countries at war. In this class, students will gain a better understanding of the hardships that people endure during wartime and reasons that countries go to war.
Student Learning Outcomes:
* Compare and contrast examples of literature about war
* Analyze literature about war in relationship to the values, culture and artistic expressions of society
* Demonstrate an informed personal response to literature about war
* Analyze literature about war as expressions of literature
* Analyze literature about was as expressions of humanity's values within historical periods

* Apply critical thinking skills to achieve clarity, accuracy, precision, depth and fair-mindedness to reading, speaking, writing and listening skills
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ENGL 1340 - Introduction to Multicultural Literature
Meets MN Transfer Curriculum Goal Areas 6 and 7 - 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): READ0304 and ENGL 0304 or Appropriate Accuplacer 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 - 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): READ0304 and ENGL 0304 or Appropriate Accuplacer 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ENGL 1345 - Gender in Literature
Meets MN Transfer Curriculum Goal Areas 6 and 7 - This course explores the portrayal of gender roles (experience and perspectives), gender identity, and sexual identity/orientation in context of historical, social, and cultural structures and values in literature. 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:
* Define and apply literary and gender-related glossary terms.
* Identify and examine 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.
* Examine 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.
* Analyze gender issues in literature as they relate to the values, culture, and artistic expressions of society.
* Apply critical thinking skills to achieve clarity, accuracy, precision, depth, and fair-mindedness to reading, discussing, writing, and listening to the gender-based study of literature.
Prerequisite(s): ENGL0304, READ0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ENGL 2304 - Analytical and Research Writing
Meets MN Transfer Curriculum Goal Area 1 - This course emphasizes argumentative and research writing while building on skills learned through previous college coursework in writing. The course develops further the writing, research, analytical, and peer evaluation skills necessary to succeed academically, professionally and personally. Students will produce for grading at least 3,500 words during the semester, including an extensive research paper. This course is not an advanced research class and is instead intended for transfer students who have completed a Composition I class or for SCTCC students who have completed Technical Writing.
Student Learning Outcomes:
* Demonstrate the writing process as it relates to academic writing.
* Apply research methods to academic writing.
* Analyze and synthesize factual information from diverse sources covering various perspectives.
* Prepare appropriate documentation of sources in written discourse.
* Analyze and construct logical, coherent, comprehensive, and well-supported claims and arguments.
* Demonstrate critical thinking skills in communication choices for specific audiences.
* Participate effectively in groups with emphasis on active observation, critical and reflective thinking, and conscientious responding.
Prerequisite(s): ENGL1303 Or Composition I with a grade of C- or better from another college
(2 C: 2 lect/pres, 0 lab, 0 other)

ENGL 2310 - Introduction to Creative Writing
Meets MN Transfer Curriculum Goal Areas 1 and 6 - 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 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 and edit 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): ENGL1302
(3 C: 3 lect/pres, 0 lab, 0 other)

ENVR 1305 - Environmental Science
Meets MN Transfer Goals 3 and 10 - Natural Sciences and People and the Environment. This course in environmental science studies the impact of humankind's activities on the planet. Class discussion and interaction will be encouraged. The problems and issues which the course will be dealing with are difficult and complex. The instructor promises no easy answers to these challenges.
Student Learning Outcomes:
* Understand how human impacts on earth have changed through history and why environmental concerns have recently become so prominent
* Recognize the major environmental challenges facing modern societies and understand the choices and trade-offs these challenges pose
* Grasp the scientific principles underlying the basic phenomena of environmental change
* Understand the technologies associated with major environmental problems and the technologies that may help solve these problems
* Distinguish the environmental impacts of industrial and developing societies, and understand why different types of societies perceive different problems and pursue different solutions
* Broaden your familiarity with world geography and international affairs
* Understand how the issues discussed in the course are connected to the decisions and choices you make in your personal life
* Appreciate that the complexities and intricacies of environmental problems demand a holistic approach, manifested by team work and group communication
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(4 C: 3 lect/pres, 1 lab, 0 other)

ENVR 1310 - Environmental Issues
Meets MN Transfer Goals 3 and 10 - Natural Sciences and People and the Environment. This is an introductory course in Environmental Issues. The course reviews the fundamentals of environmental science and the concept of sustainability, stressing the problems of unsustainable use of natural resources and the devaluing earths life support systems. The class emphasizes a sustainability approach to identify solutions that incorporate positive actions, beginning with individuals and then incorporating approaches from countries and regions. Perspectives on a variety of local, regional, and national environmental issues are addressed, while also emphasizing comprehensive coverage of worldwide resource and environmental issues. During the face-to-face meetings, the students will individually and collectively engage in field and laboratory research projects and address selected environmental topics through debates, presentations, and critical thinking evaluations. The students will be evaluating viewpoints from individuals, debating the hot topic environmental challenges of the day, as well as weighing the complexities of environmental issues.
Student Learning Outcomes:
Goal Area 3:
* Synthesize and evaluate information and data sets that form the basis of scientific theory
* Demonstrate mathematical and scientific reasoning abilities while engaging in research and critical thinking activities
* Communicate effectively in interpersonal and group presentations settings
* Demonstrate an appreciation of human and ecosystem diversity and be able to adopt and practice an environmental stewardship ethic
* Conduct scientific research
* Collect, record, and analyze data, and report research conclusions, orally and in writing
* Demonstrate teamwork and collaboration abilities while conducting research
* Present environmental issues orally and in writing
Goal Area 10:
* Demonstrate the impact of economic conditions and political change on human interactions with their environment
* Demonstrate comprehension of written material
* Demonstrate the ability to present environmental issues orally and in writing
* Demonstrate the ability to synthesize, analyze, record and draw conclusions from scientific data.
* Demonstrate the ability to articulate and justify innovative solutions to environmental challenges
* Practice effective oral communication in interpersonal, group and public settings
* Demonstrate teamwork and collaboration in group settings
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ENVR 1315 - Natural Resource Conservation
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 and scarcity, and possible solutions to resource and environmental challenges. The course provides comprehensive coverage of a variety of local, regional, national and worldwide resource and environmental issues. A sustainability theme is stressed.
Student Learning Outcomes:
* Describe natural resources conservation and management concepts
* Discuss the tools for creating a sustainable future
* Explain ecological concepts
* Describe the human population challenge
* Discuss the challenge of world hunger
* Describe the nature of soils
* Discuss soil conservation and sustainable agriculture practices
* Discuss integrated pest management concepts
* Discuss aquatic environment issues and challenges
* Describe sustainable management of water resources
* Describe water pollution issues and challenges
* Discuss fisheries conservation practices
* Discuss rangeland management practices
* Discuss forest management practices
* Discuss plant and animal extinction issues and challenges
* Discuss wildlife management practices
* Describe sustainable waste management practices
* Describe air pollution issues and challenges
* Explain global warming and climate change concepts
* Discuss acid deposition and stratospheric ozone depletion
* Discuss minerals, mining and a sustainable society
* Explain the issues and options connected with using nonrenewable energy resources
* Explain the issues and options connected with creating a sustainable energy system
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

ETEC 1507 - Digital Electronics
This is a first course in Digital Electronics. The primary goals of this course are to help individuals acquire a fundamental knowledge of digital electronics. Boolean algebra, digital devices, analog to digital conversion and digital to analog conversion, and how to apply their knowledge and skills through problem solving, simulation and practical projects.
Student Learning Outcomes:
* Draw and read digital logic and schematic diagrams
* Write Boolean logic statements
* Read and interpret truth tables
* Design and build basic digital logic decision and interface circuits
* Design and build basic timing, counter circuits
* Design and build basic digital to analog and analog to digital circuits
* Convert between binary, octal, hexadecimal, and decimal number systems
* Use a Programmable Logic device to implement a Boolean logic statement
(3 C: 1 lect/pres, 2 lab, 0 other)

ETEC 1511 - 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 individuals acquire a solid foundation in the theories and laws of direct current (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 Ohms law.
* Measure DC voltage, current, and resistance.
* Draw and read 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)

ETEC 1512 - 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 individuals 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:
* Apply alternating current (AC) concepts and laws and perform calculations and measurements including the following:
  o Alternating current (AC) theory and AC sources (such as ideal voltage and current, non-ideal voltage and current)
  o Basic electrical circuits such as series and parallel
  o Units of electrical measurement (such as henries, farads, reactance, impedance)
  o Passive components, capacitors, inductors
  o Single-phase versus three-phase
  o Voltage, current, impedance, real, reactive, apparent power and power factor relationships
* Describe the theory, construction and application of rotating equipment including the following:
  o Generators
  o Motors
  o Motor-generators
* Describe the theory, construction and application of electrical supply components including the following:
  o Batteries and chargers
  o Circuit breakers (such as protection)
  o Inverters and uninterruptible power supplies
  o Switchgear, load centers, and motor control centers (such as protective relaying and schematics of a basic system from high voltage to lower voltage)
  o Transformers (such as step-up transformers and step-down transformers, winding configurations)
* Describe the theory, construction and application of electrical control components including the following:
  o Cables (such as routing for train separation and methods of fire detection/protection for cables/cable trays)
  o Meters (such as voltage and current and how a change in meter indication could indicate circuit degradation of a change in process (pump discharge valve opened for increased flow)
  o Relays (such as schematics to show operation of relays that energize to actuate, de-energize to actuate, time delay energize and time delay de-energize)
* Explain the basics of the following topics:
  o Grounding systems
  o Electrical hazards and safety
  o Electrical power sources
  o Power distribution (AC and DC)
* Measure single and three phase voltage.
* Analyze single and three phase capacitor circuits.
* Analyze single and three phase inductor circuits.
* Analyze single and three phase transformer circuits.
* Measure phase angles between voltage and current.
* Draw and read basic electrical schematic diagrams.
Prerequisite(s): ETEC1511
(3 C: 1 lect/pres, 2 lab, 0 other)

ETEC 1515 - Industrial Safety
This course design aligns with the Manufacturing Skill Standards Councils (MSSC) assessment and certification system for Safety. The course curriculum follows federally endorsed national standards for production workers. This course will introduce OSHA standards relating to personal protective equipment, HAZMAT, tool safety, confined spaces, and others.
Student Learning Outcomes:
* Identify appropriate safety procedures in given situations.
* Read and interpret SDS sheets 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.
(2 C: 2 lect/pres, 0 lab, 0 other)

ETEC 1521 - Analog Circuits
The primary goals of this course are to help individuals acquire the knowledge and skills required to analyze and troubleshoot electronic equipment comprised of semiconductor devices and circuits. Individuals will apply these skills through problem solving, simulation, and laboratory exercises and projects.
Student Learning Outcomes:
* Draw and read basic schematic diagrams.
* Identify semiconductor components and terminal connections.
* Remove and replace components on a two sided printed circuit board.
* Test regulated and unregulated power supplies.
* Troubleshoot and repair power switching circuits.
* Troubleshoot and test opto electric devices.
* Identify and apply appropriate safety procedures.
Prerequisite(s): ETEC1512
(3 C: 1 lect/pres, 2 lab, 0 other)

ETEC 1523 - Print Reading and Design
This is a foundational course in industrial print reading. This course is designed for students who have no previous experience with print reading. The primary goals of this course are to help individuals acquire a solid foundation in print reading, mechanical drafting concepts, and machine layout tools to transfer measurements from drawing to stock. Student will be able to understand and read piping and instrumentation diagrams (PandID).
Student Learning Outcomes:
* Explain the purpose of common mechanical drafting equipment including the protractor, compass, scale and angles.
* Recognize commonly used drafting lines and briefly explain what each line represents.
* Describe the three principal views and dimensions of a 3-view drawing and accurately draw a 3-view of a simple object.
* Explain the requirements of an isometric drawing and produce an accurate isometric drawing of a simple object.
* Perform basic sketching techniques.
* Explain the basic rules of interpreting a mechanical drawing.
* Demonstrate a working knowledge of mechanical drafting concepts and practices by accurately drawing a drill gauge.
* Demonstrate the ability to read a mechanical drawing.
* Identify information found on a title block using a PandID.
* Using a PandID legend, identify the valve symbols used on piping and instrumentation diagrams including gate, globe, butterfly, check, and safety valves.
* Using a PandID legend, identify the types of valve operators used including pneumatic (diaphragm), motor, hydraulic, and solenoid operated.
* Discuss the major flow path found on a PandID example.
* Identify and apply appropriate safety procedures.
(3 C: 1 lect/pres, 2 lab, 0 other)

ETEC 1531 - Instrumentation I
This course covers the fundamental principles of process measurement and control equipment and systems. Student 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 RTDs, 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.
* Read Piping and Instrumentation Diagrams.
* Identify and apply appropriate safety procedures.
Prerequisite(s): ETEC1512 (3 C: 2 lect/pres, 1 lab, 0 other)

ETEC 1541 - Mechanical Systems
This course teaches students the basic knowledge and skills required to install, and maintain pumps, compressors, hoists, rigging and power transmission systems.
Student Learning Outcomes:
* Identify basic mechanical drive components.
* Assemble and disassemble mechanical mechanisms.
* Perform coupling and shaft alignment.
* Check and adjust belt and chain drive tensions.
* Perform vibration analysis.
* Perform routine maintenance of mechanical mechanisms.
* Troubleshoot mechanical systems.
* Explain principles and concepts related to heat including the following:
  o Heat transfer mechanisms and heat exchanger construction and types.
  o Temperature including temperature scales, F, C and K (such as kinetic theory of gases).
* Explain the principles of heat transfer including the following:
  o Heat transfer mechanisms such as conduction, convection and radiation.
  o Heat exchangers.
  o Latent and sensible heat.
  o Thermal efficiency.
* Describe the theory, construction and application of the following mechanical components:
  o Air compressors (such as rotary, reciprocating, and centrifugal).
  o Heat exchangers (such as cross-flow, counter-flow and parallel flow); steam condensers and steam generators (U-tube and once-through)) - Include discussion on heat transfer across the heat exchanger and indications of heat exchanger fouling.
* Describe the theory, construction and application of air conditioning, heating and ventilation systems, including refrigeration machines and the basic refrigeration cycle.
* Describe the theory, construction and application of structural and auxiliary equipment including Boilers (such as electric, gas-fired, fuel-oil-fired).
* Describe the theory, construction and resistive electrical equipment including the following:
  o Heaters.
  o Heat tracing (such as reasons for using heat tracing).
* Describe the operation and use of the following:
  o Air conditioning, heating and ventilations systems (such as refrigeration machines)
  o Types.
  o Structural components.
  o Accessories/support systems.
  o Compressors including rotary, reciprocating and centrifugal.
  o Heat exchangers.
  o Structural and auxiliary equipment.
  o Boilers.
(3 C: 1 lect/pres, 2 lab, 0 other)

ETEC 1550 - Introduction to Robotics
This is an introductory course for students. This course covers robot applications in an industry setting. Course also covers types of robots, robotic movement, cell design and structure, and safety specifically for robots. Students learn flow charting, safety devices and robot tooling.
Student Learning Outcomes:
* Describe and analyze rigid motion.
* Solve simple inverse kinematics problems.
* Select sensors for performing robotics tasks
* Create and follow flow charts
* Identify safety device related to robotics.
* Design and layout a cell structure
* Identify different robot tooling device.
* Describe where robots are used in industry and their tasks.
* Identify and apply appropriate safety procedures.
(3 C: 1 lect/pres, 2 lab, 0 other)

ETEC 1554 - Robotic Controls
Course covers normal maintenance and troubleshooting. Software, and hardware failure. Configuring controller for different applications. Robot configuration such as calibration of robot. Advanced features such as tool handling, and arc mate.
Student Learning Outcomes:
* Describe different types of software utilized in robots.
* Navigate through software and write basic code
* Define arc mating and its application in the field
* Calibrate and configure robot using hand pendant
* List the main hardware components on a robot.
* Identify and apply appropriate safety procedures.
(3 C: 1 lect/pres, 2 lab, 0 other)

ETEC 2512 - Hydraulics
This course is an introductory course in hydraulics. The course design is for students who have no previous experience working with hydraulic systems. The primary goals of this course are to help individuals acquire the knowledge and skills required to install, troubleshoot and maintain hydraulic systems.
Student Learning Outcomes:
* Read and draw schematics of hydraulic systems.
* Plumb basic hydraulic circuits.
* Connect electro-hydraulic control devices.
* Interpret hydraulic device specifications.
* Assemble and disassemble hydraulic components.
* Perform routine maintenance of hydraulic actuators, control valves, and pumps.
* Use appropriate safety precautions with stored energy.
(3 C: 1 lect/pres, 2 lab, 0 other)

ETEC 2513 - Pneumatics
This course is an introductory course in pneumatics. The course design is for students who have no previous experience working with pneumatics systems. The primary goals of this course are to help individuals acquire the knowledge and skills required to install, troubleshoot and maintain pneumatic systems.
Student Learning Outcomes:
* Read and draw schematics of pneumatic systems.
* Plumb basic pneumatic circuits.
* Connect electro-pneumatic control devices.
* Interpret pneumatic device specifications.
* Assemble and disassemble pneumatic components.
* Perform routine maintenance of pneumatic actuators, control valves, air supply equipment and compressors.
* Use appropriate safety precautions with stored energy.
(3 C: 1 lect/pres, 2 lab, 0 other)

ETEC 2516 - Mechanical Systems II
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, proper fasteners. Students become skilled using advanced predictive maintenance equipment, such as infrared thermography, and vibration analyzers.

Student Learning Outcomes:
* Identify major components of mechanical drive systems.
* Disassemble, inspect, refurbish, and reassemble mechanical mechanisms.
* Perform coupling and shaft alignment using three different procedures.
* Check and adjust belt and chain drive tensions, along with belt pitch, size, and materials.
* Identify different chain sizes and functions.
* Perform vibration analysis. Monitor and analyze vibration data, and offer recommendations on replacement.
* Perform routine maintenance of mechanical mechanisms. Gather PM data and analyze information.
* Understanding of proper rigging equipment and setup procedures for different applications.
* Troubleshoot, repair, and analyze mechanical systems.
* Demonstrate proper pipe sweating, flange connections, and swag locks.
* Identify and apply appropriate safety procedures.
Prerequisite(s): ETEC1541
(4 C: 1 lect/pres, 3 lab, 0 other)

ETEC 2531 - Instrumentation II
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.
* Read 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.
* Perform routine maintenance on instrument air systems.
* Identify and apply appropriate safety procedures.
Prerequisite(s): ETEC1531
(3 C: 1 lect/pres, 2 lab, 0 other)

ETEC 2541 - Electric Motor Control I
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, continuing into AC and 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.
* Read and draw electrical motor control diagrams.
* Connect reversing DC motor starters.
* Connect and test overload protection and monitoring devices.
* Perform routine maintenance of AC and DC motors.
Prerequisite(s): ETEC1521
(3 C: 1 lect/pres, 2 lab, 0 other)

ETEC 2542 - Electric Motor Control II
This course provides students with the knowledge and skills necessary to install, and maintain a variety of motor controllers, relays and other relay logic, continuing into 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.
* Read and draw electrical motor control diagrams.
* Connect reversing AC motor starters.
* Connect and test overload protection and monitoring devices.
* Perform routine maintenance of AC motors.
Prerequisite(s): ETEC2541
(3 C: 1 lect/pres, 2 lab, 0 other)

ETEC 2543 - Programmable Logic Control
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.
* Read and draw basic ladder logic diagrams and programs.
* Read and 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.
* Disaster recovery.
Corequisite(s): ETEC2542
Prerequisite(s): ETEC1512
(3 C: 1 lect/pres, 2 lab, 0 other)

ETEC 2544 - 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 pulls everything together including problem solving and communication skills.
Student Learning Outcomes:
* Maintain industry-wiring standards.
* Perform modifications of existing automated system.
* Perform system maintenance tasks.
* Identify systemic problems.
* Implement safety systems.
* Demonstrate ability to work as part of a team.
* Demonstrate effective communication skills.
Prerequisite(s): ETEC1521
(3 C: 1 lect/pres, 2 lab, 0 other)

ETEC 2545 - 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 between different networks.
* Test network cables and wiring.
* Assemble network cables.
* Identify components of a given network.
* Utilize different measures of network security.
Prerequisite(s): ETEC1521
(2 C: 1 lect/pres, 1 lab, 0 other)

ETEC 2546 - Power Plant Technology
This course teaches basic power plant technology, power plant engineering, and energy conversion offered in departments of mechanical engineering and nuclear engineering. The focus of this course is on fossil and nuclear power plants.
Student Learning Outcomes:
* Develop an understanding of thermodynamics.
* Have exposure to condensate feed-water systems and circulating water systems.
* Principles of power plant operation .
* Basic understanding of thermal fission reactors.
* Introduction to nuclear power generation.
* Basic understanding of alternative power generation.
* Understanding of the environmental aspects of power plant generation.
* Troubleshoot, repair, and analyze power plant equipment.
Prerequisite(s): ETEC1512, ETEC1531, ETEC2516
(4 C: 2 lect/pres, 2 lab, 0 other)

ETEC 2547 - Mechanical Fundamentals for Process Control
This course is a comprehensive introduction to the workings of a modern manufacturing facility in the process industry. Key topics include valves, vessels, motors and turbines, heat exchangers, cooling towers, reactors and distillation,

extraction and separation systems, and process instrumentation.
Student Learning Outcomes:
* List and Physically identify motors, pumps, valves, heat exchangers, cooling towers, centrifuges, compressors, thermal oxidizers, scrubbers, distillation towers, evaporators, and molecular sieves.
* Describe the internal workings and characteristics of process equipment.
* Explain the significance of major process equipment and their interaction within process systems
Prerequisite(s): ETEC1512
(3 C: 2 lect/pres, 1 lab, 0 other)

ETEC 2551 - Robotic Operations
Course covers operations of a robot with automated cells. Students will learn correct power up procedures, e-stops, tooling control, I/O types, conditional programming and motion types. Students will also transducers that are photo, inductive, capacitive, analog, and machine vision. Integration of PLC I/O, programing, and sensors.
Student Learning Outcomes:
* Demonstrate correct power up procedure for a robotic system
* Define operation standards and procedures
* Identify correctly what I/O is being used and its functions
* Demonstrate knowledge on photo, inductive, capacitive, and analog
* Correctly show how to set up vision system on a robot.
* Identify and apply appropriate safety procedures.
Prerequisite(s): ETEC1521
(3 C: 1 lect/pres, 2 lab, 0 other)

ETEC 2553 - Robotics I
This course covers robot applications in an industry setting. Course also covers types of robots, robotic movement, cell design and structure, and safety specifically for robots. Students will learn correct power up procedures, e-stops, tooling control, I/O types, conditional programming, motion types, integration of PLC I/O, programming, and sensors.
Student Learning Outcomes:
* Describe and analyze rigid motion.
* Solve simple inverse kinematics problems.
* Design and layout a cell structure.
* Identify different robot tooling device.
* Describe where robots are used in industry and their tasks.
* Demonstrate correct power up procedure for a robotic system.
* Identify correctly what I/O is being used and its functions.
* Identify and apply appropriate safety procedures.
Prerequisite(s): ETEC1521
(4 C: 2 lect/pres, 2 lab, 0 other)

ETEC 2554 - Advanced Robotics
Students will implement the robotics application and design developed from other courses. This will include building electrical center, building robot end of arm tooling, programming of all devices within the cell. Students will document all process throughout the development of a robotics cell. Continue to expand on robot controllers, PLC's, and advanced programming.
Student Learning Outcomes:
* Demonstrate electrical skills used in robotics industry.
* Show analytical skills in robot controller software.
* Create program code from start to finish.
* Display skills in mechanical systems.
* Knowledge of end of arm tooling.
* Identify and apply appropriate safety procedures.
Prerequisite(s): ETEC1507, ETEC1521
(4 C: 2 lect/pres, 2 lab, 0 other)

ETEC 2555 - Robotics II
Students will implement the robotic application and design they developed from the other courses. Course covers normal maintenance and troubleshooting, software, and hardware failure, configuring controller for different applications, and robot configuration such as calibration. Students will document all process throughout the development of a robotics cell. Continue to expand on robot controllers, PLC's and advanced programming.
Student Learning Outcomes:
* Describe different types of software utilized in robots.
* Navigate through software and write basic code.
* Correctly list the main hardware components on a robot.
* Demonstrate electrical skills in robot controller software.
* Show analytical skills in robot controller software.
* Create program code from start to finish.
* Demonstrate knowledge of end of arm tooling.
* Identify and apply appropriate safety procedures.
Prerequisite(s): ETEC2552
(4 C: 2 lect/pres, 2 lab, 0 other)

ETEC 2562 - Instrumentation Flex Lab
This is a capstone course that allows students to expand their knowledge and skills in a specific area of interest. Students may work as an individual or as a member of a 2 person team. Students choose their project, perform the necessary research, design, build, test, demonstrate the working project and submit a written paper about the project.
Student Learning Outcomes:
* Model professional and responsible behavior by being on time, participating in class discussions and performing assigned tasks on time
* Work as a member of a team to achieve a common goal, by showing respect for other people's needs, ideas and feelings
* Apply common safety practices when working with electricity, hand and power tools, and other equipment
* Demonstrate the ability to apply scientific methods to solve technical problems
* Use multiple resources for research
* Demonstrate time management and organization skills by keeping a journal, documenting all project activities and time spent on activities
* Use computers for research, word processing, spreadsheets, simulation and CAD
* Apply technologies to solve practical problems
* Demonstrate effective oral, written and listening communication skills
Prerequisite(s): ETEC1507, ETEC1512
(2-8 C: 0 lect/pres, 2-8 lab, 0 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, self and business 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:
* Examine current levels of business exposure to risk
* Utilize the decision making process
* Determine the unpaid and paid labor needs for the farm business
* Determine the capital needs of the business (i.e. buildings, land, equipment)
* Identify balance sheet ratios
* Determine credit needs
* Construct the cash flow plan
* Explain the process for conducting a year-end closeout and analysis
* Apply enterprise budgeting concepts
* Interpret current issues related to the farm business
(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:
* Determine credits and deductions for tax management
* Capture the data necessary to complete a business analysis
* Determine compatibility of new technology with existing systems
* Compare the sources, pricing, and performance of business and production inputs
* Enhance the record system detail through expanded enterprising of income and expenses

* Evaluate business, family, and personal goals
* Monitor cash flow by comparing actual vs. planned
* Explain how the farm management cycle pertains to the farm business
* Recognize the implications of asset valuation and depreciation
(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 technologies and their effect on different enterprises
* Determine benefits of ownership vs. leasing of capital assets
* Evaluate credit options
* Establish standard operating procedures for labor and management resources
* Examine enterprise analysis information
* Tabulate income and expense data for yearend analysis and tax preparation
* Refine enterprise budgets
* Examine historical farm data
* Establish marketing goals and strategies
* Relate financial ratio indicators to the farm business
(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
* Investigate the advantages and disadvantages of ownership of capital assets
* 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
(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:
* Compile 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
* Apply business and personal goals
* Validate ownership options of capital assets within a business
* Formulate a risk management plan
* Implement enterprise budgeting
(4 C: 0 lect/pres, 0 lab, 4 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 (plan, implement, control)
* Complete a risk management assessment in all aspects of both farm and non farm operations
* Differentiate between tax and management depreciation
* Estimate income and expenses for the tax year
* Describe farm business enterprise characteristics (i.e. crops, livestock, value added)
* Execute a comprehensive record system
* Construct selected financial statements (i.e. balance sheet)
* Investigate available technologies for improving the farm business
* Establish business, family, and personal goals
* Examine current enterprise resource needs (i.e. feed, seed, fertilizer)
* Integrate time management strategies for the operation
(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 assists the students with a farm business analysis, and the exploration of possible implications and/or solutions of these concepts. A systematic method to assess farm business strengths and weaknesses based on the analysis will be used.
Student Learning Outcomes:
* Review completed farm business analysis
* Assess farm business strengths and weaknesses from the farm business analysis
* Summarize the implications of the farm business analysis
(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:
* Refine data management system(s) to enhance the farm business analysis process
* Establish detailed data management systems
* Analyze enterprise budgets
* Compare current business projections with historical data
* Manage labor and management resources
* Evaluate impact of personal retirement plans on tax liability
* Determine profitability of new technology systems
(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:

* Evaluate financial accounting system(s) for effectiveness and accuracy
* Analyze historical farm data
* Analyze farm financial ratios
* Interpret trend data for farm business decision-making processes
* Analyze working capital and debt levels
* Analyze business, family and personal goals
* Examine trend data for business, family, and personal goal setting
* Integrate risk management and production plans
* Examine trend data to modify marketing strategies
(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:
* Relate tax management to estate planning
* Assess capital asset ownership options
* Evaluate labor and management performance
* Validate the importance of financial and production data
* Evaluate best management practices
* Incorporate farm financial trend data in establishing a tax management strategy
* Relate farm tax laws to the business
* Assess the profitability of technology investments
(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 risk management plan
* Plan business exit strategies
* Develop an investment plan for retirement
* Use trend data to develop enterprise budgets
* Compare long-range business plan options
* Refine business, family and personal goals
* Modify financial plans as required by business needs
* Investigate trend data to develop a business needs assessment
* Analyze income statements
(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
* Redefine future business, family, and personal goals
* Cite strengths and weaknesses of the management system
* Investigate business structure models
* Explain deferred tax liability
* Evaluate tax strategies
* Appraise the financial and data accounting system
(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 farm business strategic plan.
Student Learning Outcomes:
* Identify business continuation opportunities
* Justify business projections
* Justify enterprise budgeting
* Evaluate financial ratios
* Prioritize strategies to improve enterprise trend direction
* Evaluate historical farm trends
* Assess a risk management plan
* Evaluate emerging technologies
(4 C: 0 lect/pres, 0 lab, 4 other)

FBMT 2200 - 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 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 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 2205 - 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 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
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 2211 - 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 2212 - 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 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 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 2221 - 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 2222 - 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 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 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 2231 - 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 2232 - 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 2233 - Milker Training School
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 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 2235 - 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 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
* 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 2930 - Fundamentals of Financial Mgmt. as it relates to Risk Mgmt.
This course is intended to have the student enhance their decision-making skills relating to business risk management. This course will have the student 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 budgets/plans 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 structure to determine if modification is beneficial in reducing risk
* Re-address 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
* Examine financial trends to determine future bearing capabilities
(3 C: 0 lect/pres, 0 lab, 3 other)

FBMT 2931 - Applied Financial Management as it Relates to Risk Management
This course is intended to have the student apply concepts in financial management that can be used in the development of a business risk management program. The student is to implement risk management tools that will assist in meeting their business, family and personal needs.
Student Learning Outcomes:
* Implement risk management strategies that will meet the goals of the business risk management program
* Apply information gained from analyzing of historical business data in determining risk in the business
* Apply knowledge gained from analysis of historical business data in determining risk in the business
* Implement use of risk management tools that will address risk factors affecting the business
* Implement a modified management structure for the business that will benefit in reducing business risk
* Develop a risk management program that meets business, family and financial goals
* Apply 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)

FBMT 2932 - Fundamentals of Financial Mgmt/Strategic Planning Emphasis
This course will enable students to identify the elements necessary to evaluate and create a strategic plan for the business. Determining uses for the plan today and tomorrow and developing a plan to locate those team members necessary for strategic plan creation.
Student Learning Outcomes:
* Determine what part of the strategic plan will have on the farm portfolio
* Recognize the importance of both internal and external environmental monitoring
* Identify the action necessary to implement the plan
* Categorize the steps necessary to formulate action plans and contingency plans
* Recognize key financial ratios to use to create gap analysis to identify the ideal future and business capacity
* Identify specific business trends and evaluate a potential business performance audit
* Diagram the primary elements of strategic business modeling
* Contrast the driving force of a business from distinctive business competencies
* Recognize the who, what, how, and why in creating a business mission statement
* Determine elements of business values. Scan and integrate those with family, business and financial goals
* Describe the process of strategic planning
(3 C: 0 lect/pres, 0 lab, 3 other)

FBMT 2933 - Applied Financial Mgmt./Strategic Planning Emphasis
This course will provide practical application of strategic planning skills. Application skills will be practiced upon and applied to the student's business and business plan.
Student Learning Outcomes:
* Update the current business portfolio to reflect implemented strategic plans
* Craft an internal and external monitoring which includes the use of business analysis
* Create an implementation plan to apply the action plans in a prioritized manner
* Develop a contingency plan for the business
* Develop action plans to be used to close the gap between actual and desired performance
* Perform gap analysis and determine measurable difference between future vision and today's performance
* Gather and analyze business enterprise and financial data to design a specific performance audit
* Determine direction of the business by visualizing the future and describing what it looks like
* Identify quality or attribute that the business possesses that makes it different from others
* Identify and prioritize the driving forces in the business
* Participate with the planning team in writing a general mission statement for the business
* Examine values, operating philosophy and determine the stakeholders
* Develop a planning team; set time lines and determine who will develop necessary data
(3 C: 0 lect/pres, 0 lab, 3 other)

FBMT 2934 - Fundamental of Financial Management/Business Plan Emphasis
This course will provide practical application of the business plan. Application skills will be practiced and applied as the student's business plan is prepared and implemented.
Student Learning Outcomes:
* Use the analysis information to determine the business cash needs for the upcoming production year
* Complete the analysis of their business
* Revise and rework their plan after the completion of the annual analysis
* Recognize the need to monitor and re-evaluate the plan on a regular basis
* Use the business plan in a manner that will allow for decision making in a correct business sense
* Determine the strengths and weaknesses of their business
* Evaluate their vision statement and revise as necessary for the continuation of their business
* Evaluate their mission statement and revise as necessary
* Determine what changes to make in their business in order to better compete in today's market place
* Develop a business plan
(3 C: 0 lect/pres, 0 lab, 3 other)

FBMT 2935 - Applications of Financial Management/Business Plans
This course will provide the necessary instruction to put together and implement a business plan for the farm business.
Student Learning Outcomes:
* Determine what the goals of the business and family are for the future
* Recognize the need to update and refine plan on a regular basis
* Implement their personal business plan
* Create a business plan for their business
* Determine the strengths and weaknesses of their business
* Develop a vision statement for the continuation of their business
* Develop a mission statement for their business
* Determine the elements of their business that need to be included in their plan
* Recognize what is needed to create a business plan
(3 C: 0 lect/pres, 0 lab, 3 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 1200 - Personal Money Management
This course provides instruction in financial management involving maintaining financial records (balance sheet and income statement), budgeting, banking services, credit card use, major expenditure decisions, income and asset protection, and investment planning.
Student Learning Outcomes:
* Explain the concept of financial planning, its components, and its benefits
* Compare and contrast installment and non-installment credit including the cost of credit and the reasons for and against credit
* Discuss the principles of wise purchasing (costs, decision-making concerns, etc.) as it applies to vehicles, homes, and other major purchases
* Describe and discuss the following topics: reasons for investing, the variety of investments available, major factors that affect the return and portfolio management for long-term investors
(3 C: 3 lect/pres, 0 lab, 0 other)

FNCR 1220 - Principles of Banking
A history of banking and the current banking industry is examined. The focus centers on the main functions of banking and the products and services offered by the banking industry.
Student Learning Outcomes:
* Describe the three functions of banking and the customer and financial services provided by banks
* Describe the problems of early banking and how (through legislation) the problems were resolved
* Describe the structure of the Federal Reserve System and how it works with regard to fiscal and monetary policies
* Define and discuss the deposit, payment, and credit functions of banking
* Identify the four basic categories of loans and explain the credit analysis process for individual and business loans
* Define credit risk, market risk, spacing of maturities, and diversification of investments
* Discuss marketing research in meeting the needs of banking customers
* Describe the financial planning and budgeting process, and the importance of accurate accounting data
* Describe how banking operations have changed as technology and customer expectations have changed
(3 C: 3 lect/pres, 0 lab, 0 other)

FNCR 1250 - Credit Law
This course reviews our legal system and contract law covered in BUSM 1275. Focus is then placed on laws dealing more specifically with credit extension, reporting, billing, and collections; bank loan documentation, negotiable instru-

ments, and bankruptcy; real estate, employment, insurance and probate.
Student Learning Outcomes:
* Explain the affect of property laws
* Explain the purpose of probate law
* Demonstrate knowledge of negotiable instruments
* Explain insurance contract content
* Identify proper documentation for secured credit transactions
* Explain the bankruptcy process
* Explain legal rights and obligations of employers and employees
* Explain contract obligations based on the formation of a business
(3 C: 3 lect/pres, 0 lab, 0 other)

FNCR 1260 - Risk Management and Commercial Real Estate
Risk management and commercial real estate will prepare students to understand, evaluate and take action on all risks with the goal of increasing the probability of success and reducing the likelihood of failure. This course examines those two topics including assessing business risks and the tools used as part of a risk management plan designed to eliminate, minimize and/or transfer those risks. The commercial real estate topic includes terminology, the advantages and disadvantages of buying versus leasing, preferred leasing contract terms, and the restrictions of zoning laws.
Student Learning Outcomes:
* Research and understand the legal environment surrounding risk management and commercial real estate to ensure compliance at the local, state and federal level.
* Identify common business risks to create a risk management plan.
* Comprehend the role of insurance and apply to risk management strategies.
* Research and comprehend the role of mitigation in credit underwriting and accounts receivable management.
* Apply appropriate risk management tools to a variety of business scenarios.
* Develop a risk management plan.
* Demonstrate knowledge and application of commercial real estate terminology.
* Explain the advantages and disadvantages of leasing/buying commercial real estate.
* Determine the preferable content when negotiating the terms of a commercial lease.
* Explain the impact of zoning laws and restrictions on commercial real estate.
(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 also study procedures involved in documenting, servicing, managing, pricing and marketing flows. Practical examples of loan costs and pricing are provided along with discussion of different loan products, delivery channels, marketing, and sales.
Student Learning Outcomes:
* Describe the evolution of consumer credit in the United States and trace the development of current lending practices and attitudes
* Describe key laws or regulations affecting consumer lending
* List characteristics, benefits, and disadvantages of direct lending
* Explain the advantages and disadvantages of indirect lending from the bank's, the dealer's, and the consumer's perspective
* State the objectives of the loan application generating process and give 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 will be available to students who have successfully completed 90% of the program requirements. This is a capstone course for the program providing students with an opportunity to demonstrate mastery of program outcomes needed for the internship as determined by the student's internship site supervisor.
Student Learning Outcomes:
* Maintain satisfactory attendance on the job
* Perform job skills and tasks satisfactorily
* Display honesty and courtesy
* Communicate effectively with associates and customers
* Conform to all rules and regulations of employer and industry
* Maintain confidentiality of all business transacted with customers
* Provide required feedback including written evaluations of the student's progress completed by the student and employer at the expiration of the internship period
(3 C: 0 lect/pres, 0 lab, 3 other)

GBEH 1100 - Human Relations
This is a practical 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 and 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 those 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.
* Understand issues of diversity and social justice, especially as these affect the workplace.
* Apply ethical standards to personal and occupational situations.
* Apply critical thinking skills to achieve clarity, accuracy, precision, depth, and fair-mindedness in reading, speaking, writing, and listening in the Human Relations discipline.
* 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.
* Understand 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 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)

GBUS 1328 - Professional Development III
This course will help the student use individual and team skills in various meetings and community activities. The Spring or Fall Home Shows, Parade of Homes, and business tours would be included.
Student Learning Outcomes:
* Participate in monthly meetings at SCTCC, Parade of Homes, Home Shows, and two local businesses
Prerequisite(s): GBUS1320, GBUS1324 (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. A survey of the physical, cultural, economic and political features of the world's geographic regions. Identification of world's countries and major cities.
Student Learning Outcomes:
* Acquire an increased awareness and knowledge of the interconnectivity of the world
* Gain background for analyzing and comparing cultural elements
* Acquire geographic information from maps, globes, charts and other graphic material
* Increase spatial analysis skills from the use of maps, globes, charts and other graphic material
* Understand key concepts, generalizations and methods of inquiry appropriate to the study of geography
* Distinguish worldwide spatial distributions of landforms, climate, natural resources, demographic, cultural, economic and political attributes
* Understand the relationships between human characteristics and locations
* Be familiar with the locations of countries, major cities, landforms, climate types and cultures
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(4 C: 3 lect/pres, 1 lab, 0 other)

GERO 1300 - Introduction to Gerontology
Meets MN Transfer Curriculum Goal Areas 5 and 7 - 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): READ0304 and ENGL 0304 or Appropriate Accuplacer 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
* Layout sheetmetal elbows
* Assemble sheetmetal duct work
* Operate squaring shears and sheetmetal break
(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 and the heated air distribution sections of a forced air furnace
* Check and set the proper pressures for L.P. Natural gas and fuel oil coming into furnaces and at the burners
* Identify and test the operation of all line and low-voltage components of a residential forced air-heating systems
* Properly test and set the efficiency of a residential forced air-heating system
* Test for CO in residential forced air-heating systems
* Calculate sensible heat in BTU's and CFM's
(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 you through the safety and operative controls in residential heating and a/c. You will learn how they operate, what they control, and what the controls are protecting and how they are protecting the unit, device or structure.
Student Learning Outcomes:
* Define ohms, volts, and amps and show proper use of a VOM
* Define series and parallel circuits
* Read and draw basic schematic diagram of a heating and air conditioning system
* Understand the function and operation of electrical components used in residential heating and a/c units
(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 conditioning. 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 you to diagnose malfunctions in residential heating and A/C systems by learning the proper troubleshooting techniques, repairing or replacing defective components.
Student Learning Outcomes:
* Diagnose a/c systems for proper operation of the electrical system
* Diagnose a/c 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
* Test and replace defective components in residential heating and a/c systems
Prerequisite(s): HART1514, HART1518
(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:
* Understand 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
* Relate 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): HART2510, HART2522, HART2506, 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, HART2522, 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, HART2522, 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): HART1522, HART1526, HART1530, HART1534, HART1506
(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): HART2506, HART2510, HART2522, HART2530
(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): HART1534, HART1506, HART1522, HART1526, HART1530
(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, HART2522, 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 7 - 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.
READ0304 and ENGL 0304 or Appropriate Accuplacer 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)

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): READ0304 and ENGL 0304 or Appropriate Accuplacer 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): READ0304 and ENGL 0304 or Appropriate Accuplacer 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 - 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): READ0304 and ENGL 0304 or Appropriate Accuplacer 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 is 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

HIST 1340 - Contemporary World History
Meets MN Transfer Goals 5 and 8 - History and the Social and Behavioral Sciences and Global Perspective. This course provides an historical analysis of the contemporary world from the end of World War II until the present. Topics will include the consequences of the war, the Cold War, economic developments, ideologies, major leaders, cultural patterns, neo-imperialism, decolonization, U.S. foreign policies, human rights, the fall of European Communism, major military conflicts, and ethnic violence.
Student Learning Outcomes:
* Acquire basic knowledge and understanding of global history since 1945, including the topics in the course description
* Learn more about current events, political controversies, and international relations
* Gain appreciation for the ways the study of recent past is related to the contemporary situation
* Acquire a basic understanding of the discipline of history and historical knowledge
* Gain increased curiosity about contemporary politics and culture
* Develop enhanced college-level skills in analysis, writing, research and oral presentations
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 1209 - HIT Practicum
This course is designed to provide students a variety of experiences and exposures to the healthcare field. The course affords the students an opportunity to virtually tour healthcare facilities. Course includes interactions with healthcare professionals. Membership in professional organizations pertinent to the HIM field will be reinforced. A portfolio will be created to assist the student in finding an internship position. Course will investigate possible avenues to explore when seeking internship positions or future careers. Project within the coursework is introduction to document imaging and storage.
Student Learning Outcomes:
* Tour a healthcare facility
* Interview an HIM Professional and bring the information back to the class
* Investigate membership in a professional organization pertinent to HIM field
* Create a portfolio of professional and academic involvement
* Explore avenues utilized when seeking internship or future career positions
* Be involved in a project of document imaging and storage
(1 C: 1 lect/pres, 0 lab, 0 other)

HITM 1215 - 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, classification systems, indexes and registries. Students will be introduced to reimbursement practices, regulatory requirements, electronic health records (EHR) and personal health records (PHR). Students will explore this history, organization, and various department functions associated with managing health information.
Student Learning Outcomes:
* Summarize the development of health information management as a profession and benefits of professional membership.
* Identify and describe health care regulators, both voluntary and mandatory, and the regulations/standards related to health information.
* Explain the uses and values of health records in paper or electronic format.
* Distinguish among the content of health records in hospitals, ambulatory care, mental health, long term care, hospice, home care and other facilities.
* Describe and apply various methods used for filing, storage, and retention through the use of document scanning experience.
* Differentiate among quantitative, qualitative, and statistical analysis of health records.
* Perform case abstracting on patient records and construct MPI of hospital records.
* Identify various graphical tools for data presentation.
* Explain usability and accessibility of health information by patients, including current trends and future challenges.
* Explain current trends and future challenges in health information exchange.
(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 1225 - Introduction to Health Information Technology
This course will introduce the student to health information technology both as work-based, task-oriented function and as part of a larger profession of health information management. The course will identify content and structure of health information; reporting of health information for reimbursement and classification, overview of legal health record and importance of professional development. The course also introduces EHR and PHR.
Student Learning Outcomes:
* Describe the development of the health information management profession and the benefits of membership in a professional organization
* Define the major components of the health care delivery system
* Identify and describe health care regulators, both voluntary and mandatory, and the regulations/standards related to health information
* Identify the uses and values of the health record whether paper-based or electronic format
* Describe the content of the health record in hospitals, ambulatory care, mental health, long term care, hospice, and home care
* Describe the various methods used for filing, storage, and retention
* Differentiate between administrative and clinical data in health records
* Perform quantitative, qualitative, and statistical analysis on health records
* Design a health record form adhering to design rules for data collection forms
* Perform case abstracting on patient records to include pertinent data sets, and construct MPI of hospital records
* Differentiate roles of various providers and disciplines throughout the continuum of healthcare and respond to their information needs
(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 1226 - CPT Coding
The course introduces the basic principles, guidelines, and conventions of CPT coding. Coursework is organized by body system for application of appropriate CPT codes and reinforces knowledge of anatomy and medical terminology. Coursework includes classification and indexing of procedures and evaluation/management coding for the purposes of standardization, retrieval, and statistical analyses. 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:
* Identify the symbols used in the CPT codebook with 100% accuracy.
* Interpret and apply the information in section guidelines of the CPT codebook with a minimum of 80% accuracy.
* Classify E/M visit information and apply appropriate E/M visit codes based on the E/M guidelines with a minimum of 80% accuracy.
* Describe the history of the CPT classification system with 95% accuracy.
* Evaluate surgical clinical information for each body system and select the appropriate CPT code based on the surgical guidelines with a minimum of 80% accuracy.
* Evaluate radiology visit information and select the appropriate CPT code based on the radiology guidelines with a minimum of 80% accuracy.

* Evaluate anesthesia clinical information and select the appropriate CPT code based on the anesthesia guidelines with a minimum of 80% accuracy.
* Evaluate clinical information and select the appropriate Medicine CPT code based on the medicine guidelines with a minimum of 80% accuracy.
* Argue the selection of CPT code selection upon critical evaluation of the clinical information.
Corequisite(s): HITM1228
(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 1227 - ICD-CM Coding
This course covers the basics of coding with ICD coding system. The course introduces the basic principles, guidelines, and conventions of ICD coding. Coursework includes classification and indexing of diagnoses and procedures for the purposes of standardization, retrieval, and statistical analysis. Coursework will include application of coding principles to actual patient health records and textbook case studies. Students will see encoding software in coding scenarios across all major specialties.
Student Learning Outcomes:
* Describe the history and future of the ICD classification system and define the Uniform Hospital Discharge Data Set and Prospective Payment System with 95% accuracy
* Evaluate diagnoses and select appropriate ICD codes using the index to diseases and tabular list with 80% accuracy for infectious and parasitic diseases, neoplasms, all major body systems, symptoms, signs, and ill-defined conditions, injury and poisonings
* Evaluate all diagnoses for utilization of E and V codes and select the appropriate ICD code(s) using the index to diseases and tabular list with 80% accuracy
* Apply knowledge of medical terminology, anatomy and physiology of the human body while evaluating each ICD code
* Identify significant co-existing medical conditions and select the appropriate ICD code(s) using the index to diseases and tabular list with 80% accuracy
* Use coding resources, including coding software to argue the selection of ICD code upon critical evaluation of the diagnostic information and define the selection based on medical necessity (I.A.2,1.C.8,IV.A.3)
(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 1228 - Administrative Medical Terminology
This is a basic medical vocabulary building course that introduces terms related to the various body systems, including directional, anatomy and procedure terms. 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 abbreviations as relevant to the body systems.
(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 1229 - Administrative Pharmacology
This course will introduce basic pharmacology concepts, such as drug terminology, drug categories, abbreviations, drug effects, dosages and how to use drug references. The course discusses commonly prescribed drugs and look-alike/sound alike drug names. Medications used to treat specific diseases of the body will be identified.
Student Learning Outcomes:
* Explain the roles of the healthcare personnel related to pharmacology.
* 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.
* Define pharmacology prescription abbreviations.
* Define drug measurements as related to doses of medications.
* Discuss medications used to treat disorders of various body systems and those used to treat mental illnesses.
* Define antineoplastic medications and the difference between curative and palliative uses of chemotherapeutic agents.
* Discuss illegal drugs and prescription medications that may be misused or abused.
* Review the impact of over-the-counter nutritional supplements and their interactions with prescribed medications.
* Apply pharmacology knowledge to define medications related to patient problems, disorders and/or diagnoses.
(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 1235 - ICD-PCS Coding
This course covers the basics of coding with the ICD-PCS system. It introduces basic principle and guidelines of ICD-PCS coding. Coursework includes classification and indexing of procedures for the purpose of standardization, retrieval, and statistical analysis. Coursework will include application of coding principles to actual case scenarios, including specialty healthcare settings. Students will use encoding software within this course.
Student Learning Outcomes:
* Apply ICD-PCS official coding guidelines to coding scenarios.
* Identify necessary documentation required to code ICD-PCS.
* Identify specific coding requirements for specialty healthcare settings, including medical/surgical, obstetrics, osteopathic, chiropractic, nuclear medicine, rehabilitation, and mental health.
* Analyze the impact of ICD-PCS on data management and related processes.
* Apply knowledge of medical terminology and anatomy and physiology of the human body while evaluating ICD-PCS code selection.
* Use coding resources, including coding software, to argue the selection of ICD-PCS code upon critical evaluation of the diagnostic and operative information.
(2 C: 2 lect/pres, 0 lab, 0 other)

HITM 1240 - Computerized Health Information
Course covers the basic concepts of an information system and development of life cycle. Discussion of database and data warehouses and their relationship to decision making will be undertaken. Immersion into electronic health records from the aspect of electronic document management systems to comprehensive systems which integrate clinical data from all potential source applications. Standardized healthcare data sets and the data needs for an electronic health record will be reviewed. Security measures to protect organization-wide information systems, measures to protect data integrity and validity using software or hardware technology, contingency planning and data recovery procedures will be introduced. The concepts of integration of computer systems, testing, evaluation and support for organization-wide information systems will be discussed. Within Medisoft, the students will experience an electronic health record, including scheduling appointments and billing applications. Students will experience working in project teams to adopt an EHR for a medical facility.
Student Learning Outcomes:
explain how the Health Insurance Portability and Accountability Act of 1996 (HIPAA) Electronic Transaction and Code Sets standards relate to insurance claims
* Identify the initiatives and framework of the electronic health record, including technologies such as databases, data exchange standards, data retrieval, data capture, clinical decision support, networks and storage technology (IV.C.4)
* Use software application to build database employing the elements of data security and data integrity when creating database (IV.D.1, IV.D.2)
* Demonstrate knowledge of inpatient clinical information systems, management support systems, and outpatient information systems
* Discuss the aspects of standardized healthcare data sets and standards in the electronic environment
* Demonstrate a conceptual understanding of data warehousing, data integrity and validity as applicable to software and hardware technology
* Participate in the planning, design, selection, implementation, integration, testing, evaluation, and support for organization-wide information systems (V.E.1)
* Investigate the use of audit trails in EHRs (IV.D.4)
* Investigate the PHR (personal health record) and its integration into EHRs
* Experience an EHR environment by working within Medisoft, be able to schedule patients, enter charge transaction and payments based on the charge-master, and create/edit insurance claims, patient statements, collection letters and

collection reports (I.A.3,III.B.6)
(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. Cell metabolism and reproduction will be investigated. The following body systems will be studied: Integumentary, skeletal, articular, muscular, nervous, endocrine, blood, cardiovascular, lymphatic, digestive, respiratory, urinary and reproductive.
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
* Differentiate between normal functions and disease of each system of the body
* Explore the effects of aging on each system of the body
* Apply knowledge and critical thinking skills to case studies of each body system
Prerequisite(s): HITM1228
(4 C: 4 lect/pres, 0 lab, 0 other)

HITM 1250 - Data and Software Applications for HIT
The course provides students with health information applications using Microsoft Word, Excel, and Access. Students will construct and analyze data using Excel function to include data sorting filtering, pivot tables, data validation, reports by subtotals, and other methods to extract information from data. Data abstraction will include pivot table description of post-procedural infections versus specific procedures to include bypass, resections, biopsies and other health care procedures. Students will differentiate among the various graphic functions to depict data efficiently and effectively. Student will use Microsoft Access to build table relationships among patient and physician data.
Student Learning Outcomes:
* Classify data and information standards, including standards for hospital patient information, emergency room standards, ambulatory care standards and other standards required for patient information.
* Summarize data using data capture tools and techniques including sorting, reports by subtotals and pivot tables. Students will summarize physician, diagnosis and procedure characteristics.
* Convert summarized data and display using appropriate graphic representations.
* Apply appropriate data stewardship and data governance to data and information.
* Demonstrate the use of data dictionary elements using Microsoft Access.
* Use software applications to build databases employing the elements of data standards, security and integrity when creating databases.
* Demonstrate a conceptual and practical understanding of data warehousing and data validity as applicable to software and hardware.
* Abstract data from secondary databases and critically evaluate abstracted data as to relevance and significance of the data.
(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 2204 - Administrative Pathophysiology
This course will provide students with the basic concepts related to diseases and disorders of the human body. Focus will be on the nature, causation, diagnostic procedures and treatment of common diseases relating to infection and genetics in body systems. Knowledge of pathophysiology is crucial as the student progresses to advanced coding classes.
Student Learning Outcomes:
* Investigate the mechanism of diseases.
* Determine how and why alterations in body structure and function lead to the signs and symptoms of disease.
* Determine the affects the immune system has in the disease process.
* Apply knowledge to diagnose diseases based on symptoms.
* Identify the various risk factors contributing to diseases.
* Discriminate between the etiology and pathology associated with common diseases.
* Review diagnostic tests for disease processes.
* Compare treatment modalities, including surgical intervention, immunotherapy, and radiological techniques for specific conditions.
* Apply medical terminology to diseases, injuries, and abnormalities of the human body.
* Recognize the latest treatments for diseases and disorders.
* Design a family tree to further understand how genetics play a role in many common disorders
* Research and present findings on the etiology, signs/symptoms, risk factors, diagnostic tests, statistics, treatment and prognosis of a select disease.
Prerequisite(s): HITM1244
(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 2209 - HIT Professional Practice Experience I
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 is the first of two capstone courses for this program, and should be completed after completing the first year of the Health Information Technology program.
Student Learning Outcomes:
* Create a cover letter, resume and thank you letter specific to internship.
* Apply soft skill sets with a balance of confidence and humility.
* Demonstrate networking skills when interacting with health information professionals.
* Demonstrate accurate Health Information Technology functions.
* Demonstrate responsibility for HIT job functions, computer knowledge, and professional behavior while at the Professional Practice Experience (PPE) facility.
* Maintain the accuracy and completeness of the patient record under PPE supervision.
* 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 most HIT functions under PPE supervision.
(2 C: 0 lect/pres, 0 lab, 2 other)

HITM 2210 - Medical Billing and Reimbursement
This course provides a study of numerous health insurance plans, reimbursement methodologies, and compliance strategies. Students will adhere to current regulations and guidelines for coding assignment, claim submission and denial management. Students will also align clinical classification documentation with claim submissions.
Student Learning Outcomes:
* Distinguish how different prospective payment systems operate.
* Compare the purpose and benefits of different third party payers, including government-sponsored health programs.
* Differentiate between types of physician fees and reimbursement methods.
* Analyze inpatient and outpatient prospective payment systems.
* Demonstrate ability to correctly calculate third party/patient payments according to deductible, coinsurance, etc.
* Evaluate the accuracy of diagnostic/procedural groupings.
* Utilize current coding and reimbursement guidelines.
* Identify procedures for obtaining patient demographic information, insurance verification, authorizations and collecting time-of-service payments.
* Apply the uses of classification systems, including the use of classification systems in reimbursement monitoring and reporting.
* Demonstrate ability to correctly complete various Medical Insurance Billing forms.
(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 2211 - HIT Professional Practice Experience II
This course prepares students for entry into the health information management field, offering students interaction with the Professional Practice Experience (PPE) supervisor and staff in the Health Information department during the practice experience. This is the second of two capstone courses for this program, and should be completed during their second year in the Health Information

Technology program.
Student Learning Outcomes:
* Apply soft skill sets with a balance of confidence and humility.
* Demonstrate responsibility for HIT job functions, computer knowledge, and professional behavior while at the Professional Practice Experience (PPE) facility.
* Maintain the accuracy and completeness of the patient record under PPE supervision.
* 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 most HIT functions under PPE supervision.
(1 C: 0 lect/pres, 0 lab, 1 other)

HITM 2212 - Quality Improvement and Healthcare Statistics
This course covers the components of quality improvement models using practical tools for problem solving, decision making, time management, and implementation. Activities include review and evaluation of healthcare services with attention to utilization review and risk management. This course also covers collecting, analyzing, interpreting, and presenting numerical data relating to healthcare services.
Student Learning Outcomes:
* Define differences in performance improvement models.
* Compare performance improvement standards from various healthcare organizations.
* Define a sentinel event vs. near-miss and their impact on risk management,
* Discuss the importance of accrediting bodies.
* Explain critical care pathways and their impact on quality healthcare.
* Summarize the impact of quality outcomes on cost-effective healthcare.
* Discuss and apply the selection of data collection tools.
* Create a storyboard to portray data and outcomes of a performance improvement study.
* Compute and apply commonly-used healthcare statistics.
* Define how healthcare statistics are used in connection with healthcare quality outcomes.
* Define minimum data set criteria and its impact on quality of care.
* Explain basic research principles, including IRB policies and procedures.
(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 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, 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:
* Describe management discipline, trends in managerial models, change drivers and roles of a manager
* Investigate strategic management processes as applicable to the HIM profession
* Describe the functions of leadership with stages and impact of organizational change
* Summarize steps of systems analysis and design process
* Develop policies, procedures, and identify areas of improvement based on HIM functions (I.A.3)
* Identify key activities associated with human resource management
* Understand the continuum of employee training and prepare training/development plan relative to HIM department
* Describe financial management functions of HIM professionals, including chargemaster, budgets, and budget reconciliation
* Describe and apply the elements of project management, including the use of software for data collection, data storage and data reporting (IV.A.1)
(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 2220 - Legal Aspects of Health Information
This course covers the fundamental aspects of legalities within the healthcare settings. Topics of study include patient/physician relationship, professional liability and medical malpractice, duties of the physician, confidentiality, and HIPAA. The course discusses contracts, consent forms, Medical Practice Acts, Uniform Anatomical Gift Act, and other statues related to the healthcare field. The course introduces professional approaches to ethical and bioethical issues, including genetic engineering, quality of life, and choices in life and death. Models for examining ethical dilemmas are explored.
Student Learning Outcomes:
* Identify the different types of courts in the legal system
* Explain the trial process and differentiate between civil and criminal law
* Describe the difference between licensure and certification
* Distinguish appropriate conduct for healthcare personnel
* Apply medical ethics as relevant to patients, doctors, and the sustaining relationship (III.B.7)
* Summarize Patient's Bill of Rights
* Explain the difference between implied consent and informed consent
* Restate the aspects of professional liability and medical malpractice
* Explain Good Samaritan Laws
* Discuss and apply federal regulations affecting the medical profession
* Define and discuss the legal components of a medical record vs. legal record
* Apply ways to protect patient confidentiality
* Describe and apply the ethical-decision making model when making difficult ethical decisions
* Analyze ethical issues relating to life as in genetic testing, research, sterilization and contraception
* Identify the five stages of dying as described by Dr. Kubler-Ross
* Describe HIPAA and the penalties for noncompliance
Corequisite(s): HITM1225 (3 C: 3 lect/pres, 0 lab, 0 other)

HITM 2224 - Advanced Medical Coding
In this course, students continue using the principles and guidelines of CPT and ICD-10-CM coding to correctly code healthcare case scenarios. Students integrate the coding knowledge from CPT and ICD-10-CM coding to assign both diagnostic and procedural codes from clinical source documents. The course provides complex cases to allow the student to coordinate the various classification systems needed to code visits to outpatient settings of clinics and hospital outpatient departments across all major specialties. Students will use an electronic application (encoder application software) as an aid in the selection of appropriate codes. The course will ready the student for the coding portion of the certification process.
Student Learning Outcomes:
* Apply classification system codes to outpatient services, procedures, and visits.
* Abstract information from clinical documentation to apply appropriate evaluation and management codes for these services.
* Extrapolate pertinent information from clinical documentation relevant to assigning appropriate diagnostic and procedural medical codes.
* Apply medical terminology pertaining to disease, injuries and abnormalities of the human body.
* Discriminate between third party payer differences and apply coding guidelines to analyze and rework claim denials.
* Argue the selection of medical codes upon critical evaluation of the diagnostic information.
* Apply appropriate modifiers to the code selection.
* Verify the completeness of data and data sources for the billing process.
* Gain experience in the use of automated encoder and grouper software.
Prerequisite(s): HITM1226, HITM1227, HITM1244
(3 C: 3 lect/pres, 0 lab, 0 other)

HITM 2244 - HIT Comprehensive Review
The course will provide study tips, comprehensive list of useful resources, review questions within the course content areas, and practice examination questions.
Student Learning Outcomes:
* Prepare students for the comprehensive examination or the AHIMA (RHIT) examination
* Take a comprehensive examination to assess student comprehensive learning in the HIT program
(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 OBRA laws and Minnesota Department of Health requirements are met in this course.
Student Learning Outcomes:
* The student will be able to summarize acceptable behavior which complies with the Resident Bill of Rights, Vulnerable Adult Act, ethics and etiquette.
* The student will be able to demonstrate effective communication and observation skills through conversation, active listening and gathering of facts related to residents care.
* The student will be able to recognize and demonstrate appropriate resident unit order to meet safety needs of the resident and staff.
* The student will be able to examine the importance of adequate food and fluid balance with elimination.
* The student will demonstrate safe care of the resident when meeting their basics needs during activities of daily living (ADLs) which will include special populations.
Prerequisite(s): READ0304 or Appropriate Accuplacer Score.
(3 C: 1 lect/pres, 2 lab, 0 other)

HLTH 1404 - Home Health Aide
This course is intended to prepare Nursing Assistants as Home Health Aides. The Federal and State OBRA Laws and MN Department of Health requirements are met in this course.
Student Learning Outcomes:
* Focus on the Home Health Aide as an important team member providing a needed service for the community
* Demonstrate accurate documentation of subjective and objective data obtained in the home setting
* Relate how illness affects the family as a whole, I.E. children, hospice, and special populations
* Examine cultural diversity of home care clients and its effect on health care provided
(1 C: 1 lect/pres, 0 lab, 0 other)

HLTH 1440 - Medical Terminology
This course presents a study of basic medical terminology. Prefixes, suffixes, word roots, combining forms, special endings, plural forms, symbols, and abbreviations will be covered. Emphasis is placed on spelling, definition, usage, and pronunciation. Students will learn the rules for separating medical terms into their word parts.
Student Learning Outcomes:
* Define and pronounce medical terms
* Identify medical prefixes/root words/suffixes
* Identify specialty terms and health professionals
* Identify medical, diagnostic and laboratory abbreviations
* Recognize correct spelling and utilize medical dictionary
Prerequisite(s): READ0304 or Appropriate Accuplacer Score.
(1 C: 1 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 total wellness program.
Student Learning Outcomes:
* Analyze wellness and fitness and describe parameters that comprise good physical health.
* Explain why cardiovascular (CV) endurance is the most important component of fitness and how the main energy systems contribute to various forms of physical exertion.
* Design a diet that conforms to healthy lifestyle principles.
* Discuss major lifestyle behaviors that are associated with heart disease and how to reduce personal risk.
* Identify the risk factors and warning signs for various forms of cancer, diabetes, and osteoporosis.
* Discover how the body responds to stress, identify potential stressors and establish strategies to reduce stress.
* Design and apply a personal program 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 1315 - Sports Related First Aid and CPR/AED
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.
Student Learning Outcomes:
* Identify ways to prevent injury and/or illness in an athletic setting.
* Accurately assess sports related emergencies and respond appropriately.
* Effectively administer CPR and choking intervention.
* Provide basic care for an athletic injury or sudden illness.
* Communicate effectively in an emergency situation.
* Demonstrate the correct use of AEDs.
* Earn certification for American Heart Association-First Aid.
* Earn certification for the American Heart Association CPR and AED.
(2 C: 2 lect/pres, 0 lab, 0 other)

HPER 1320 - Prevention and Care of Athletic Injuries
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 and spine stabilization will be demonstrated.
Student Learning Outcome:
* 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.
* Assess and manage the healing process of athletic injuries.
* Recognize emergency and environmental conditions.
(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 and apply 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.

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 management
* 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 1335 - Football Coaching Theory and Skills Improvement
This course is designed to introduce the basic fundamentals of football. Students will be taught the rules, strategies and teaching points for proper football techniques.
Student Learning Outcomes:
* Identification and application of basic football fundamentals
* Demonstrate basic skills and strategies of the game
* Distinguish between contrasting styles of play
* Construct a specific training schedule related to football
* Develop and illustrate offensive and defensive strategic diagrams
* Communicate and describe specific football techniques
(2 C: 2 lect/pres, 0 lab, 0 other)

HPER 1340 - Volleyball Coaching Theory and Skills
This course is designed to introduce the basic fundamentals of volleyball. Student will learn the rules, strategies and proper etiquette as well as an appreciation for a lifetime activity.
Student Learning Outcomes:
* Apply basic volleyball fundamentals
* Demonstrate basic skills of the game
* Illustrate basic offensive and defensive strategies
* Apply knowledge of scoring and officiating
* Construct and conduct a practice plan that demonstrates volleyball knowledge and skills
(2 C: 2 lect/pres, 0 lab, 0 other)

HPER 1345 - Basketball Coaching Theory and Skills Improvement
This course is designed to introduce the basic fundamentals of basketball. Students will be taught the rules, strategies and teaching points for proper basketball techniques, as well as an appreciation for a lifetime activity.
Student Learning Outcomes:
* Identification and application of basic basketball fundamentals
* Demonstrate basic skills and strategies of the game
* Distinguish between contrasting styles of play
* Construct a specific training schedule related to basketball
* Develop and illustrate offensive and defensive strategic diagrams
* Describe and explain specific basketball techniques
(2 C: 2 lect/pres, 0 lab, 0 other)

HPER 1350 - Self Defense I
Participants will learn theories and techniques of self-defense. Content focuses on methods of recognizing and avoiding dangers, as well as, the acquisition of skills and strategies of an effective physical self-defense.
Student Learning Outcomes:
* Identify risk reduction opportunities and comprehend surrounding awareness skills to avoid having to use physical self defense
* Demonstrate proper physical defense techniques and know when to use them
* Applies safety awareness in home and auto security
* Differentiates sexual assault offenses, date rape and other offenses and knows community resources designed to assist and/or counsel victims
* Distinguishes the difference between domestic violence and healthy relationships
* Relates and analyzes awareness within current events and the latest in methods and techniques
(1 C: 0 lect/pres, 1 lab, 0 other)

HPER 1355 - Baseball Coaching Theory and Skills Improvement
This course is designed to give students the skills to be a successful baseball coach. Students will learn all aspects of the game of baseball, specifically pertaining to the organization and management of a baseball program at any level. Topics will include fundamentals of all aspects of the game, game and practice management, and strength training and conditioning specific to baseball.
Student Learning Outcomes:
* Describe proper fundamentals of each aspect of the game of baseball.
* Describe the importance and mechanics of baseball specific strength training and conditioning.
* Identify proper fundamentals of each aspect of the game of baseball.
* Analyze and breakdown both offensive and defensive principles.
* Prepare and apply practice plans.
* Prepare and apply game day duties.
* Collect information about new trends in baseball.
* Creation of students own playbook.
(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 strength training development and also includes cardiovascular development through continuous aerobic activity for overall fitness.
Student Learning Outcomes:
* Explain the concepts of weight training
* Demonstrate the ability to take resting heart rate, determine work out intensity and body composition
* Improve body composition
* Improve muscular development and cardiovascular fitness through the manipulation of volume and intensity
* Demonstrate an understanding of the need for physical fitness throughout life
(1 C: 1 lect/pres, 0 lab, 0 other)

HPER 1365 - Softball Coaching Theory and Skills Improvement
This course will focus on the theory and improvement of skill development, playing strategy, scoring and rules related to softball. Participants will become proficient in the basic fundamentals of softball.
Student Learning Outcomes:
* Interpret rules applicable to participation in softball.
* Demonstrate the proper technique of throwing, catching, and batting a softball.
* Explain strategies and terminology associated with softball.
* Create values of teamwork and communication skills related to softball.
* Develop skills to participate in softball as a life- long activity.
(2 C: 2 lect/pres, 0 lab, 0 other)

HPWT 2502 - Reverse Osmosis Chemistry
Reverse Osmosis (OR) Chemistry applies chemical concepts to water and membrane technologies. It relates atomic theory to water contaminants so as to develop a thorough understanding as to why particular contaminants behave the way they do. It includes the means by which those contaminants are measured or characterized. It then applies these principles to reverse osmosis membrane technology in order to recognize how the water characteristics affect the performance of the membrane.
Student Learning Outcomes:
* Realize the origins of water contaminants
* Understand the relationship between the atomic structure of a water contaminant and its behavior
* Apply common methods of measurement for characterizing a water source
* Use the Periodic Table to predict contaminant behavior
* Understand the unique characteristics of water as they relate to contaminant behavior
* Correctly use and convert concentrations commonly used in water treatment
* Recognize how pH and alkalinity affect the characteristics of a water source
* Understand how chemical oxidation and reduction apply to water treatment
* Identify operational variables that affect reverse osmosis (RO) membrane performance
* Recognize the relative advantages of the common RO membrane types
(2 C: 2 lect/pres, 0 lab, 0 other)

HPWT 2504 - Reverse Osmosis Principles
Reverse Osmosis (RO) principles develops an understanding of the components and issues involved in an operational RO system. It covers the issues involved in the mechanical configuration of an RO membrane system. It applies design variables, discusses monitoring variables, and demonstrates how to adjust variables in a working RO system. It also illustrates some of the important RO maintenance functions, as well as some critical RO performance concerns.
Student Learning Outcomes:
* Give the advantages of different reverse osmosis (RO) membrane configurations relative to their potential applications
* Understand the role played by the different components in an RO system
* Recognize how staging affects RO permeate recovery
* Trace the RO flow streams and the relative ion concentrations within the system
* Name the common RO maintenance concerns and how they can be prevented
* Recognize the effect of throttle valves on RO flow and performance characteristics
* Realize the differences in configuration between two-pass and single-pass RO systems
* Understand the principles of how pumps convert electrical energy into pressure
* Identify the operating variables for an RO system
* Relate the 3 RO design variables to the potential for fouling or scale formation
* Explain how fouling or scale formation occurs and how it affects system performance
* List the common causes of membrane deterioration and how they can be prevented
(2 C: 2 lect/pres, 0 lab, 0 other)

HPWT 2506 - Reverse Osmosis (RO) Monitoring
Reverse Osmosis (RO) Monitoring provides the tools necessary for the detailed tracking of the performance of a reverse osmosis (RO) system. It includes common methods of analysis for key water contaminants. It develops an understanding of the RO operating and performance variables, including how they are calculated and applied. It completes with methods that can be used to break down and characterize RO system performance as a means of monitoring or of analyzing system problems.
Student Learning Outcomes:
* Use methods common for predicting reverse osmosis (RO) membrane fouling potential
* Determine a contaminant concentration using titration and colorimetric methods
* Recognize the importance of specific contaminants with respect to concerns of fouling or scale formation
* Employ methods for verifying scale inhibitor injection concentrations
* Explain pressure from a molecular perspective and describe how it is measured
* Record the key RO operating variables with accuracy and precision
* Calculate the normalized RO system performance variables
* Verify instrument values and calibrations
* Employ methods for breaking down and characterizing RO system performance
* Apply methods for analyzing RO system problems
(2 C: 2 lect/pres, 0 lab, 0 other)

HPWT 2508 - Reverse Osmosis (RO) Cleaning
Reverse Osmosis (RO) Cleaning develops an understanding of the chemical nature of cleaning solutions so as to correctly apply them in maximizing RO membrane cleaning effectiveness. It explains how the different cleaning agents work in the removal of common membrane foulants and scale. It then offers methods for correctly cleaning an RO membrane system and evaluating the effectiveness of a cleaning.
Student Learning Outcomes:
* Understand the role played by surfactants, chelating agents, and pH in cleaning particular foulants and scale
* Learn methods for the removal of iron, manganese, biofilm, oil, grease, and carbonate, sulfate, and silica scale
* Predict the optimum time to clean a reverse osmosis (RO) membrane system
* Recognize the importance of cleaning solution volume and how to determine it
* Correctly perform an RO cleaning using optimum pressures, flow rates and temperature
* Record the cleaning data necessary to evaluate cleaning procedures
* Apply procedures for safely returning an RO system to service after a cleaning
* Understand the issues involved in designing an RO cleaning system
* Recognize the importance of mixing, temperature control, and filtration in RO cleaning
* Determine in advance the optimum cleaning solution for a fouled/scaled RO system
(2 C: 2 lect/pres, 0 lab, 0 other)

HPWT 2510 - Reverse Osmosis (RO) Pretreatment
Reverse Osmosis (RO) Pretreatment details the equipment requirements upstream of a reverse osmosis (RO) system so as to minimize the RO maintenance requirements and increase the longevity of the membrane elements. It begins with the treatment provided by many municipal water treatment facilities and expands this into the requirements more specific for RO systems. This covers media filtration for removal of suspended solids, acid and scale inhibitor injection, or softening, for control of scale formation, and the removal of biocides that might be incompatible with the RO membrane.
Student Learning Outcomes:
* Understand the effect of the particular municipal water treatment on the needs of the industrial reverse osmosis (RO) pretreatment system
* List the reasons for RO pretreatment and the consequences for its inadequacies
* Recognize critical design features required in RO pretreatment heat exchangers
* Provide ways for reducing the potential for Ro fouling due to suspended solids
* Calculate the potential for scale formation in an RO system with/without control methods
* Give the advantages and disadvantages of acid injection, scale inhibitor injection, and softening when used to prevent scale formation in an RO system
* Correctly set up an injection system for a given dosage
* Give the advantages and disadvantages of activated carbon filtration
* Describe how to economically use cartridge filters in an RO pretreatment system
(2 C: 2 lect/pres, 0 lab, 0 other)

HPWT 2512 - Reverse Osmosis (RO) Biological Control
Reverse Osmosis (RO) Biological Control investigates the nature of biological activity so as to better understand how it can be effectively controlled in a reverse osmosis (RO) system. It discusses the needs that bacteria have for their survival and how their reproduction can foul an RO system. It covers the different methods available for killing and controlling bacteria and how these methods can be applied to an RO system.
Student Learning Outcomes:
* Understand how bacteria are able to survive and propagate in different environments
* Recognize the importance in preventing the formation of mature biofilm either upstream or within an RO system
* Realize how different biocides affect the needs of bacteria in their method of controlling or killing them
* Give the advantages and disadvantages of using the different particular biocides
* Understand how certain wavelengths of ultraviolet light can affect bacteria
* Correctly apply UV light systems for biological control
* Give methods for dealing with the remnants of mature upstream biofilm
* Apply different methods for biological control of an RO system
* Set up an RO system for an extended shutdown
(2 C: 2 lect/pres, 0 lab, 0 other)

HPWT 2514 - Reverse Osmosis (RO) System Design
Reverse Osmosis (RO) System Design applies water quality information to the design of a reverse osmosis (RO) system that is based on meeting the requirements of the membrane element manufacturers. It covers the options available when designing a new system, including design methods for reducing the fouling or scale formation potential of the system. It also includes methods for designing a two-pass RO system, for projecting RO permeate quality, and for estimating the RO system operating and capital equipment costs.
Student Learning Outcomes:
* List the qualities of a water source that will affect a reverse osmosis (RO) design
* Recognize the importance of expected permeate quality in the design of an RO
* Calculate scale formation potential for the concentrate stream of an RO system
* Select an optimum RO permeate recovery based on desired permeate quality and the potential for scale formation
* Choose the best membrane, element and housing size for an application

* Correctly stage and optimize spiral-wound membrane elements for an application
* Size a high pressure pump based calculated pressure requirements for an RO design
* Understand the issues related to the RO frame and pipe manifolding characteristics
* Size a workable throttle valve for the feed pressure, concentrate, or recycle streams
* Choose the necessary instrumentation for an RO system
* Design a two-pass RO system
* Project permeate quality for an RO system when given a feed water analysis
* Estimate equipment and operating costs for a new RO system
(2 C: 2 lect/pres, 0 lab, 0 other)

HPWT 2516 - Reverse Osmosis (RO) System Analysis
Reverse Osmosis (RO) System Analysis provides methods for logically determining the likely cause of a problem in reverse osmosis (RO) performance. It includes methods for isolating the location of the problem within the RO system as a means of gaining insight into the problem. It includes common system performance problems as they relate to the location of the problem. It also covers methods for verifying the suspected problem.
Student Learning Outcomes:
* Recognize the importance of verifying instrument readings when a reverse osmosis (RO) problem is first suspected
* Outline a method for investigating the cause of a reverse osmosis (RO) problem
* List common problems as they specifically relate to lead-end, tail-end, isolated, or uniform RO membrane deterioration, or to the same isolated feed-to-concentrate pressure drop
* Give common reasons for failure to restore permeate flow rate after cleaning
* Provide method for analyzing membrane foulants
(2 C: 2 lect/pres, 0 lab, 0 other)

HPWT 2518 - Ion Exchange (IX) Principles
Ion Exchange (IX) Principles applies concepts of water chemistry and chemical equilibrium to the development of a detailed understanding of the ion exchange process. It covers the nature of ion exchange resins, and how they are used in single-bed, two-bed, and mixed-bed systems in the creation of high purity water. It includes information on how to monitor and optimize the performance of ion exchange systems.
Student Learning Outcomes:
* Relate the chemical nature of dissolved salts to their behavior as ions present in water
* Work with ionic concentrations that are useful in calculating ion exchange capacities
* Recognize the importance of water pH as it impacts ion exchange bed performance
* Identify the chemical functional groups responsible for the characteristics of different ion exchange resins
* Understand the importance of ion exchange resin bead mechanical characteristics as they impact resin bed performance
* Give the relative advantages of different methods used to regenerate resin beds
* Determine the best type of ion exchange system for an application
* List the steps used to regenerate an ion exchange bed and the purpose served by each
* Provide methods for manipulating resin equilibriums as a means of obtaining better effluent quality
* Understand the options available for dealing with organic and inorganic resin fouling
(2 C: 2 lect/pres, 0 lab, 0 other)

HPWT 2520 - Electrodialysis Reversal (EDR) and Electrodeionization (EDI)
Electrodialysis Reversal (EDR) and Electrodeionization (EDI) Principles relates concepts of ionic conductivity and electricity to electrochemistry, as it applies to electrodialysis reversal (EDR), and then builds on this knowledge to explain electrodeionization (EDI). It discusses how ion exchange membrane sheets and electricity can be used to move ions out of a feed water stream into a concentrate stream in the EDR process. Scale control is performed by switching electrode polarity and reversing the movement of ions. Ion exchange resin beads can be added within certain chambers of the device as a means of continuously achieving even higher purity effluent water in the EDI process.
Student Learning Outcomes:
* Understand the relationship between ionic concentrations, total dissolved solids (TDS), water conductivity and resistivity
* Explain how charge can be transferred through water using concepts of electric potential/voltage, water electrolysis, and ionic conductivity
* Quantify the ionic movement processes using Faraday's Law when given a quantity if cells/cell parts in an electodialysis reversal (EDR) stack
* Identify the streams within an EDR or electodeionization (EDI) system
* Quantify the effect of concentrate concentration of EDR and EDI system efficiencies
* Explain the effect of reversing electrode polarity on organic/inorganic fouling
* Understand how water splitting can be a disadvantage in EDR systems and an advantage in EDI systems
* Relate water splitting to pH polarization and the ability to achieve maximum effluent EDI quality
* Calculate resistance, voltage, and efficiency for a given EDR/EDI system
* Correctly start up and adjust flow rates and voltage/current for an EDR/EDI system
* Monitor EDR/EDI systems so as to know when maintenance is required
* Clean and sanitize an EDI system
(2 C: 2 lect/pres, 0 lab, 0 other)

HPWT 2522 - Ion Exchange (IX) System Design
Ion Exchange (IX) System Design provides methods for designing ion exchange systems and predicting their performance. It covers how to relate incoming water quality to design variables, how to choose resin types, and size tanks. It also covers regeneration system design and flow rate calculations. It finishes with topics related to the application of ion exchange units to high purity water systems.
Student Learning Outcomes:
* Use a water analysis in designing an ion exchange system and predicting its performance
* Understand the differences and advantages offered by varying resin types
* Apply bed performance issues in sizing an ion exchange tank
* Understand the issues involved in designing tank laterals and their importance
* Set up the flow rates and times required for regeneration an ion exchange system
* Recognize the issues involved in designing a regeneration system
* Choose and locate the instruments correctly for monitoring system performance
* Design a high purity water system using ion exchange components
* Recognize which regenerant water streams can be recycled and to where
(2 C: 2 lect/pres, 0 lab, 0 other)

HPWT 2524 - Ion Exchange (IX) System Analysis
Ion Exchange (IX) System Analysis provides methods for determining if there is a problem with the performance of an ion exchange bed and for finding out what the problem is. It discusses the symptoms of common ion exchange problems. It details how water and resin analyses can be used to monitor and identify problems. Finally, it discusses how to fix common problems and avoid their occurrence.
Student Learning Outcomes:
* List the common reasons for ion exchange performance problems as they relate to their particular symptoms
* Sample high purity water with minimal contaminant introduction
* Understand how to apply and interpret high purity water analyses
* Pull resin samples that truly represent the bed constituents
* Correctly interpret resin analyses
* Replace a resin bed and be able to deal with problems that are common with new resins
* Brine an organically fouled resin bed
* Deal with fouling of resins by iron or scale
* Investigate IX problems with distribution/laterals
* Maximize removal of trace contaminants that are poorly ionized
(2 C: 2 lect/pres, 0 lab, 0 other)

HPWT 2526 - Deionized (DI) Water Principles
Deionized (DI) Water Principles develops an understanding of the nature of deionized (DI) water as a process chemical, how it is created, and how it is used. It includes a discussion of the various DI water requirements from different indus-

tries, and the methods used to achieve those qualities. It covers many of the challenges of DI water systems and the methods used to deal with those challenges.
Student Learning Outcomes:
* Understand why deionized (DI) water is useful in different applications
* Recognize the difficulty in creating and maintaining DI water
* Realize the differences in DI water priorities for the different industries
* List the functions served by each of the DI water system subsystems
* Understand the challenges in the membrane filtration of DI water
* Give materials of system construction that would be appropriate for an application
* Explain the concerns about using storage tanks in DI water systems
* Describe the methods available for biological control in DI water systems
(2 C: 2 lect/pres, 0 lab, 0 other)

HPWT 2528 - Deionized (DI) Water System Design
Deionized (DI) Water System Design explains the options available when designing a water treatment system as they are affected by the feed water quality and the desired deionized (DI) water quality. It details with the roles played by different types of water treatment equipment in their contribution to the production of a high purity water. It covers the sizing of flow rates and equipment. It also discusses the design of reclaim DI water systems and distribution piping systems.
Student Learning Outcomes:
* Recognize the effect of feed water quality in deionized (DI) water system design
* Relate desired final water quality to the DI system design
* Size flow rates and storage tanks used in DI subsystems
* Understand the relative advantages of the different types of equipment that could be used in each module of the DI system
* Design a reclaim system that minimizes the possibility of system upsets
* Choose when a serpentine or a ladder distribution piping system is most appropriate
* Size the piping to be used in a distribution system
* Understand the importance of instrumentation in a DI system
(2 C: 2 lect/pres, 0 lab, 0 other)

HPWT 2530 - Deionized (DI) Water System Analysis
Deionized (DI) Water System Analysis stresses the use of scheduled and documented instrument calibration in combination with the establishment of a contaminant history throughout a deionized (DI) water system, which can later be used to isolate DI water-related problems. It relates analytical techniques to common DI water equipment problems, and explains how specialized techniques can be used to identify a contaminant. It includes a method of correlating water quality trends with other process changes and isolating the problem with its DI system origination.
Student Learning Outcomes:
* Recognize the importance of scheduled instrument calibrations
* Apply particular measurements to the identification of DI equipment concerns and to the regular monitoring of equipment performance
* Recognize the importance of establishing a measurement history for a DI water system
* List the common reasons for declining DI water quality
* Correlate DI water quality trends with other process variables
* Apply specialized instrumentation for the identification of contaminants
* Correctly install/remove an SEM filter
* Understand the statistical significance of analytical measurements
* Isolate a contaminant source to a DI system component
(2 C: 2 lect/pres, 0 lab, 0 other)

HPWT 2532 - Deionized (DI) Water Maintenance
Deionized (DI) Water Maintenance describes how the various on-line, on-site and off-site analysis can be used to monitor the performance of a DI water system as a basis for determining its maintenance requirements. It explains the purpose and limitations of some common analytical techniques, and special concerns related to analyzing DI water. It covers the proper methods for changing our cartridge filters and verifying their integrity. It also covers methods for sanitizing piping systems.
Student Learning Outcomes:
* Give the purpose and limitations of the analytical methods available for deionized water
* Accurately perform a bacteria culture using the membrane filtration method
* Understand the functioning and value of the various methods of on-line measurement
* Properly pull a water sample for off-site analysis
* Determine which common analytical technique would be appropriate for a particular type of contaminant
* Change out a cartridge filter housing with minimal contamination
* Apply three of the methods available for testing the integrity of cartridge filters
* Give the advantages and disadvantages of commonly used piping sanitization chemicals
* Properly prepare for and perform a thorough distribution system sanitization
(2 C: 2 lect/pres, 0 lab, 0 other)

HUMN 1300 - Introduction to the Humanities
Meets MN Transfer Goal Area 6 - Humanities. Introduction to Humanities allows students to explore, celebrate, and experience the human need to create thought, visual and performing art, literature, and architecture.
Student Learning Outcomes:
* Develop and communicate a basic understanding of the disciplines included in the humanities
* Develop and communicate an understanding of the human need to create
* Hone critical opinions of creative works of visual and performing artists, writers, and thinkers
* Examine the creative impulse documented in biographies and/or autobiographies of selected artists, composers, architects, writers and/or philosophers
* Create and present original works including but not limited to, photography, collage building, sculpture, architectural design, musical composition, poetry and fiction writing
* Document and analyze decisions made during the creative process
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

HUMN 1320 - Holocaust and Genocide Studies
Meets MN Transfer Goals 6 and 9 - Humanities and Ethical and Civic Responsibility. This course provides a broad introduction to Holocaust and contemporary genocide studies. Students will read, discuss, and analyze various types of Holocaust and other contemporary genocide literature, as well as, the relevant historical events and perspectives, which surround the Holocaust and other contemporary genocides. The contemporary genocides studied will vary.
Student Learning Outcomes:
* Define Holocaust and Genocide
* Identify historical events and people surrounding the Holocaust and other contemporary genocides
* Compare and contrast the Holocaust and other genocides studied
* Explore Holocaust and genocide literature
* Identify themes in Holocaust and genocide literature
* Examine themes in specific literary pieces of Holocaust and genocide literature
* Relate themes to mind-set of hate
* Apply critical thinking skills to achieve clarity, accuracy, precision, depth, and fair-mindedness in reading, speaking, writing, and listening
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

HUMN 1340 - Middle Eastern Cultures
Meets MN Transfer Curriculum Goal Areas 6 and 8 - 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

HUMN 2350 - Film and American Culture
Meets MN Transfer Curriculum Goal Area 6 - This course examines how the Hollywood film industry has affected American 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:
* Demonstrate a working knowledge of American film history within an historical and social context.
* Develop cinematic literacy via film critiques, analyses and discussions.
* Describe how the technology of movies has influenced the American film industry.
* Explain Hollywood film industry's place in American popular culture.
* Analyze the role of genre in American film history, and the relationship between genre and American 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): READ0304 and ENGL 0304 or Appropriate Accuplacer 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(1 C: 1 lect/pres, 0 lab, 0 other)

ICVT 1402 - Cardiovascular Anatomy and Physiology
A study of the anatomy, physiology, and structural relationships of the human heart and vascular system. Focus on hemodynamics and electrocardiography.
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
* Given a diagram of an EKG complex, identify the waves, intervals, and segments, and describe their significance
* Given EKG rhythm strips, identify the arrhythmias and describe their significance
Prerequisite(s): BLGY2310
(4 C: 3 lect/pres, 1 lab, 0 other)

ICVT 1422 - Cardiovascular Instrumentation
A study of concepts that serve as the foundation for the cardiovascular technology field. Topics include basic electricity and electrical safety, physiological monitoring instrumentation, x-ray tubes and bio-effects of radiation.
Student Learning Outcomes:
* Define selected terms related to the cardiac field.
* Demonstrate an understanding of basic electricity and electrical safety.
* Describe the function and parts of the fluid filled physiologic monitoring transducer system.
* Identify the parts and function of the Wheatstone bridge, from the diagram given.
* Differentiate between physics principles of positive/negative hydrostatic pressure head.
* Identify the various parts of a cathode ray tube, from the diagram given.
* Describe the function and identify the various parts of the x-ray tube.
* Describe the function and identify the various parts of the image intensifier.
* Describe the origin of scatter radiation and methods used to control scatter radiation.
* List the bio-effects of radiation exposure and techniques for reducing radiation exposure
(3 C: 3 lect/pres, 0 lab, 0 other)

ICVT 1423 - Catheterization Lab Fundamentals I
This course focuses on the cath lab procedures, scrub and circulate, equipment set-up, hemodynamic monitoring, and the coronary angiography procedure itself.
Student Learning Outcomes:
* Define selected terms related to cath lab procedures, hemodynamic monitoring, and coronary angiography.
* Analyze hemodynamic data and calculate Fick Cardiac Outputs and associated parameters.
* Compare and select appropriate catheter for stated procedure.
* 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 on the normal adult patient.
Corequisite(s): ICVT1443 Prerequisite(s): ICVT1422
(2 C: 2 lect/pres, 0 lab, 0 other)

ICVT 1441 - Introduction to Clinics
Topics address patient scheduling, patient preparation, patient medical histories, vital signs, universal precautions, and basic ethical theory and concepts. Lecture and simulated laboratory experience prepares the student to perform patient care utilizing critical thinking and clinical skills.
Student Learning Outcomes:
* Identify current standards for safety and infection control as established by OSHA, CDC, and other agencies.
* Compare and contrast the links of the chain of infection and their role in disease process.
* Describe the correct patient-tansfer methods utilizing proper body mechanics.
* Understand and demonstrate how to measure vital signs.
* Demonstrate and 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 and implement patient confidentiality
(3 C: 3 lect/pres, 0 lab, 0 other)

ICVT 1443 - Cardiovascular Clinic I
Introduction to the aspects of cardiac cath lab in a hospital or simulated clinical laboratory setting. Emphasis placed on instrumentation, entry-level scrub/circu-

late, and lab set-up.
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 sterile table for routine cardiac cath procedure
* Assist in performing right heart cardiac cath procedures in the simulated cath lab setting
* Assist in performing left heart cardiac cath procedures, including coronaries, in a simulated cath lab setting
Prerequisite(s): ICVT1422
(5 C: 0 lect/pres, 5 lab, 0 other)

ICVT 2405 - Cardiovascular Pathology
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.
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 selected 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
Prerequisite(s): ICVT1402
(3 C: 3 lect/pres, 0 lab, 0 other)

ICVT 2426 - Catheterization Lab Fundamentals II
A continuation of Catheterization Lab Fundamentals I with emphasis on pharmacology, advanced cardiovascular diagnostic and therapeutic procedures, percutaneous coronary intervention procedures, and cardiac surgical procedures.
Student Learning Outcomes:
* Define selected terms related to percutaneous coronary interventions, and cardiac surgical procedures
* Compare and select appropriate interventional catheter for stated procedure
* Describe the C/V Tech's role in angioplasty/stent placement and other interventional procedures
* Describe the proper use of cardiac medications during a cardiac cath procedure
* Describe the C/V Tech's role in electro-physiology studies, temporary and permanent pacemaker procedures
* Discuss the use and function of an intra-aortic balloon pump
Corequisite(s): ICVT2446
Prerequisite(s): ICVT1423, USCV1400, ICVT1402
(4 C: 4 lect/pres, 0 lab, 0 other)

ICVT 2446 - Cardiovascular Clinical II
Practical training with focus on completing and becoming proficient in all duties of the cardiovascular technologist in the cath lab, to include diagnostic and interventional procedures, in both scrub/circulate and hemodynamic monitoring capacities.
Student Learning Outcomes:
* Record and process abnormal hemodynamic data for interpretation in the simulated or clinical cath lab setting
* Analyze and interpret advanced measurements and calculations derived from cardiac cath to quantify the severity of various cardiac pathologies
* Prepare catheters on a sterile field for interventional cardiac cath procedure
* Assist in performing balloon angioplasty/stent placement procedures in the simulated or clinical cath lab setting
* Demonstrate proper set-up of an intra-aortic balloon pump (IABP)
* Evaluate IABP settings for proper timing, inflation time and deflation time
Prerequisite(s): ICVT1443, USCV1400
(5 C: 0 lect/pres, 5 lab, 0 other)

ICVT 2450 - Applied Clinical Internship
Advanced and intense internship in a hospital or clinic setting. Specific detailed learning objectives are developed for each course by the college facility. Students will broaden and perfect their skills through hands-on participation. Students will be able to carry out everyday duties of the technologist when their clinical experience is complete.
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 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
Prerequisite(s): ICVT2426, 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 1155 - Student Success Seminar
The intent of the course is to acquaint students with higher education and assist them in reaching their educational objectives. Students will demonstrate self-management skills and identify strategies and resources that can aid in their academic success, personal development, and goal identification and attainment. Students will be empowered to take ownership and control of their academic and personal life outcomes.
Student Learning Outcomes:
* Create an individual definition of success and a working plan for achieving it.
* Identify effective learning strategies to increase preparedness for tests, improve test-taking skills, and increase information retention.
* Demonstrate short-term, mid-term, and long-term personal and academic goal-

setting and the ability to reflect upon and adapt as needed.
* Demonstrate time management by assessing and prioritizing commitments to maximize college success.
* Identify and investigate academic programs of interest and plan and track academic progress.
* Identify and manage external and internal distractions in an effort to improve concentration.
* Identify and implement effective strategies for health and wellness and stress management.
* Identify general career aptitudes, values, and interests via completion of a variety of career assessment instruments.
* Demonstrate effective oral and written communication skills through written assignments, discussion, group work, and oral presentation.
* Locate and use support services and resources such as the library, CAS, TRiO, academic advisors, counselors, disability services, and career services.
Prerequisite(s): READ0300 and ENGL 0300 or Appropriate Accuplacer Score.
(2 C: 2 lect/pres, 0 lab, 0 other)

LEGL 1203 - Legal Research and Writing
This course will provide a comprehensive working knowledge of and an understanding of the research materials, research tools, research strategies and other skills necessary to write legal memoranda in order to assist attorneys to write briefs and other legal research-based documents. Students will be instructed to use a law library to locate and use both primary and secondary research data, to use Westlaw or Lexus Nexus legal research sources to solve legal problems, including federal and state cases, digests, statutes, regulations, treatises, encyclopedias, law reviews, citators and practice works.
Student Learning Outcomes:
* Identify and define the terminology associated with legal research
* Recognize, identify, locate, and apply primary and secondary legal sources
* Acquire Westlaw certification
* Identify the steps necessary to research a legal issue by retrieving relevant primary and secondary print and electronic sources of law
* Apply research and library skills to data collection and research methodology; demonstrate competencies in using research tools
* Find and interpret the various federal and state cases, digests, statutes, regulations, treatises, encyclopedias, law reviews, citators and practice works
* Demonstrate the ability to apply cases to legal writing; use mandatory and persuasive authority to validate written legal documents
* Demonstrate the ability to brief cases
* Demonstrate correct use of legal citation
* Draft legal documents using correct terminology, English grammar, and rules of writing
* Compose in a clear and concise legal memorandum and other research documents
Prerequisite(s): ENGL1302 (4 C: 3 lect/pres, 1 lab, 0 other)

LEGL 1204 - Administrative Legal Transcription
Students will use computers to digitally transcribe and prepare legal correspondence and legal documents from digitized dictation; they will also use tape transcription methods. Students will become familiar with documents and correspondence common to specific legal proceedings, and will learn specialized rules of punctuation and standards for preparing legal documents. They will transcribe court documents containing extensive citations. They will become familiar with and use legal terminology in their transcriptions. Emphasis will be on formatting legal documents, correct use of citations, proofreading, correcting errors, accuracy and speed.
Student Learning Outcomes:
* Demonstrate job entry-level skills to accurately transcribe and format documents routinely prepared in a law office
* Spell and define legal terminology and use correctly in legal documents
* Apply rules of legal citations in legal documents
* Apply rules of grammar, punctuation, and spelling to produce mailable documents from transcription
* Proofread legal documents for content, spelling, punctuation, and format and revise documents in as short a time as possible
* Follow dictation instructions
* Develop accuracy and speed during legal transcription
* Apply basic legal transcription guidelines
* Compile a portfolio of transcribed documents suitable for presentation to a prospective employer and used as a legal document template resource book
Prerequisite(s): ADMS1207 or LEGL1206
(3 C: 2 lect/pres, 1 lab, 0 other)

LEGL 1206 - Paralegal Basic Law I
This course presents the fundamentals of paralegal skills needed to succeed in the workplace; elements of sources of American law; the course system; introduction to tort law; products liability; consumer law; contracts; insurance law; real property; alternative dispute resolution; constitutional law; and Supreme Court opinions.
Student Learning Outcomes:
* Explain the duties and responsibilities of a paralegal
* Describe the general organization of the federal and state court system
* Comprehend the basic process and procedures of civil law
* Examine and define statutory law, administrative law, tort law, insurance law, contract law
* Demonstrate a basic understanding of constitutional law
* Demonstrate a basic understanding of case law
* Apply legal writing form and substance rules
* Demonstrate a basic understanding of Westlaw
(3 C: 3 lect/pres, 0 lab, 0 other)

LEGL 1208 - Administrative Legal Office Procedures
This course is an overview of law office procedures including docket control, tickler files, records management, billing, law office management fundamentals, communication skills, filing, and machine transcription. Ethical considerations in the law office and an introduction to the preparation of legal documents are emphasized.
Student Learning Outcomes:
* Describe the general organization of a legal office as well as the rules and functions of the law office personnel
* Explain the objectives and process of law office management, including interview and evaluation, compensation, and management skills
* Define features of timekeeping, billing, financial management and client funds trust accounts
* Examine the importance of ethical and moral decisions and the implications and consequences of these decisions as it relates to everyone who works in the legal field
* Demonstrate an understanding of the many administrative functions performed by the legal administrative assistant/paralegal in the legal office such as telephone techniques and etiquette, processing, notating and logging incoming and outgoing mail, time and billing, and docket control
* Apply the twelve basic filing rules and procedures by filing cards and miniature correspondence containing names of individuals, businesses, and organization
* Apply formatting and punctuation rules for preparing correspondence, court papers and legal documents
* Transcribe court documents and correspondence
* Introduce students to various forms of management systems within law offices, including personnel communications and attorney/paralegal/legal administrative assistant relationships (3 C: 3 lect/pres, 0 lab, 0 other

LEGL 1210 - Ethics for Legal Professionals
The course includes a review of canons, codes, and the Rules of Professional Conduct; moral and legal responsibilities that a member of the legal profession owes to the public, the court, clients, and other professional colleagues. The student will be able to relate the information learned in this course in an employment setting that would reduce the possibility of committing an ethical violation.
Student Learning Outcomes:
* Identify the rules of law of professional ethics which apply to attorneys and paralegals
* Describe the need for paralegals to follow the rules of ethics and law regarding unauthorized practice of law
* Identify the types of legal fees and ethical restrictions on billing and fees
* Explain the ethical restrictions on solicitation of legal work
* Describe an understanding of procedures required to protect confidentiality
* Recognize potential conflicts and everyday ethical dilemmas faced by paralegals
(2 C: 2 lect/pres, 0 lab, 0 other)

LEGL 1215 - Paralegal Basic Law II
This course presents an introduction to civil litigation; conducting interviews and investigation; trial procedures; criminal law and procedures; constitutional law; Supreme Court opinions, and legal research.
Student Learning Outcomes:
* Describe the process and procedure of civil litigation
* Demonstrate a basic knowledge of criminal law and procedures
* Recognize key aspects of constitutional law
* Cite and discuss case law examples in wills and probate, family, bankruptcy, business and environmental law
* Demonstrate an introductory understanding of legal research
* Demonstrate basic application of Westlaw, Sherpardizing, and Key Cite
(3 C: 3 lect/pres, 0 lab, 0 other)

LEGL 2204 - Family Law
The purpose of the family law course is to give legal assistants a better understanding of domestic relations law and show students how those laws governing family situations are applied. The content of the course includes formation of the marital relationship, dissolution, child custody and support, adoption, abortion, paternity, domestic violence, child neglect, and surrogacy.
Student Learning Outcomes:
* Define the skills necessary to become an effective paralegal in an office that handles domestic relations cases
* Analyze and interpret the domestic relations statutes and case law in Minnesota
* Analyze and discuss the fundamental principles underlying the marital relationship
* Define the parent/child relationship, and the law of child custody
* Define child support calculations and evaluate the rules and regulations regarding child support and child care
* Demonstrate powers of reasoning and problem solving
* Examine and practice client interviewing skills to gather information
* List the procedural steps involved in a domestic relations case
* Identify the court and social systems that administer the state's statutes concerning the family
* Employ research and writing skills to create domestic relations documents
* Examine, explain and discuss how paralegals fit into the family law practice
* Analyze and discriminate how to be sensitive to the client's distress when she/he seeks legal help for a family problem
Prerequisite(s): LEGL1201, LEGL1202, ENGL1302
(3 C: 3 lect/pres, 0 lab, 0 other)

LEGL 2205 - Wills, Trusts and Estate Administration
This course will introduce students to the concepts, forms and procedures necessary for estate planning and drafting of wills and trusts, and the process of conducting an informal probate of a will. Topics studied will include analysis of relevant statutes; examination of the components of wills and trusts; probate of wills; probate of wills; durable powers of attorney; intrafamily gifts; charitable transfers; living wills; and health care proxies.
Student Learning Outcomes:
* Demonstrate an understanding of basic substantive law of wills, trusts and estates
* Identify, define, and apply the terminology associated with wills, trusts, and estate planning
* Demonstrate an understanding of the rules of transfer of property upon death and the rules of transfer of property by intestate statutes and by will provision
* Demonstrate an understanding of the nature and function of wills and trusts and the purpose and overall process of estate administration
* Construct a simple will and a simple trust
* Compare and contrast formal and informal probate of wills and prepare an informal probate
* Demonstrate an understanding of the uses and procedures for durable powers of attorney, intrafamily gifts, charitable transfers, living wills and health care proxies
* Apply document drafting skills using correct terminology, English grammar, and rules of writing
* Identify, understand, and explain the ethical employment responsibilities of practicing legal assistants in the field of wills, trusts, and estate administration
Prerequisite(s): ENGL1302, LEGL1203
(3 C: 3 lect/pres, 0 lab, 0 other)

LEGL 2206 - Real Estate
This course is an introduction to real estate law. Topics of study include property rights, principles of land ownership, sale, contracts, liens, mortgage financing, mortgages or deeds of trust, deeds, recording, settlement concepts, condominiums and cooperatives, leasing and other property concepts. The student will be familiar with the processing of a real estate transaction from beginning through closing and post closing procedures.
Student Learning Outcomes:
* Demonstrate an understanding of basic substantive and procedural laws that govern real estate law
* Identify, define and apply the terminology associated with real estate law
* Distinguish and explain the four types of concurrent ownership; the difference between individual and community property, private encumbrances, and uses of an easement
* Explain the requirements of a valid real estate contract and the remedies for default under a real estate contract and prepare a real estate contract for the sale and purchase of a home and commercial real property
* Identify type of deeds used in modern real estate practice; explain the basic requirements of a valid deed and prepare a deed
* Understand the basic provisions contained in a promissory note and a guaranty and prepare a promissory note and a guaranty
* Understand and review a title examination report; identify title problems that are not insured by a title insurance policy, and prepare a title insurance commitment
* Prepare a closing checklist for the purchaser and the seller
* Understand the legal procedures required for the closing of a sale of real property
* Understand the condominium, cooperative, and time-sharing forms of property ownership, and the related legal documents
* Read and understand three types of land descriptions and prepare a legal description from a land survey
* Identify key provisions of a commercial lease
* Define the various methods to compute rent under a commercial lease
* Identify, understand and explain the ethical employment responsibilities of practicing legal assistants in the field of real estate law
Prerequisite(s): ENGL1302, LEGL1203
(3 C: 3 lect/pres, 0 lab, 0 other)

LEGL 2207 - Litigation
This course will provide a comprehensive working knowledge and understanding of the principles of civil litigation in federal and state courts. Topics studied will include cases of action and defenses, introduction to rules of procedure and discovery, and ethical responsibilities. Pretrial practice, including discovery, pretrial motions, and trial preparations will be covered, together with the basics of a civil trial, post-trial motions, appeal and alternative dispute resolution. Electronic discovery and e-filing will also be studied. The principles learned will be applied to practical case studies.
Student Learning Outcomes:
* Describe, access and discuss the role of the paralegal on the litigation team, in court, and during the stages in the civil litigation process
* Use substantive and procedural law in the litigation context
* Recognize, identify, and locate both the federal and state rules of evidence and civil procedure and develop an understanding of the importance and application of those rules
* Create forms, checklists, pleadings, documents, motions and other materials relevant to the litigation process
* Recognize, identify, and demonstrate the procedures involved in interviewing clients and witnesses, filing court documents, assisting in discovery, serving papers, and assisting at trial and other litigation processes
* Complete the electronic discovery process and electronic filing tutorial
* Define, compare and contrast alternative dispute resolution methods
* Identify, define, and apply the terminology associated with litigation
* Apply document drafting skills using correct terminology, English grammar, and rules of writing
* Examine the ethical and professional responsibilities of the lawyer and the paralegal in civil litigation
Prerequisite(s): ENGL1302, LEGL1203
(3 C: 3 lect/pres, 0 lab, 0 other)

LEGL 2208 - Corporate Law
This course will cover the formation, operation, and dissolution of various kinds of business corporations including: sole proprietorships, corporations, partnerships, the law of agency and employment agreements. Minnesota corporations will specifically be examined. This course will also include in-depth analysis of contract law, including common law and Uniform Commercial Code; elements of a contract; performance; status of frauds; and contract interpretation. Students will learn the fundamental principles of law and how to prepare documents necessary to each topic. In addition, this course examines the ethical considerations relating to business and contract law practice.
Student Learning Outcomes:
* Demonstrate an understanding of the law pertaining to business organizations
* Locate, evaluate and apply relevant sources of law to the formation of business organizations
* Understand and evaluate the business application of the basic principles of business formation, including sole proprietorships, partnerships, general, limited and professional partnerships and corporations
* Research and analyze statutory requirements for drafting partnership agreements, filing fictitious name certificates and the relevant steps for incorporation
* Demonstrate knowledge of those elements necessary to contract formation
* Understand problems encountered in contract performance, including discharge of performance and resulting damages and remedies for breach of contract
* Demonstrate the ability to apply Uniform Commercial Code provisions to contract formations and disputes
* Examine Minnesota business law and procedures relating to formation of business organizations
* Demonstrate the ability to draft contract provisions
* Apply document drafting skills using correct terminology, English grammar, and rules of writing
* Identify, understand and explain the ethical employment responsibilities of practicing legal assistants in the fields of business organizations and contract law
* Examine the ethical and professional responsibilities of the lawyer and the paralegal in civil litigation
Prerequisite(s): ENGL1302, LEGL1203
(3 C: 3 lect/pres, 0 lab, 0 other)

LEGL 2209 - Paralegal Internship
This is a cooperative work-study program that will be available to students who have demonstrated readiness and willingness to work in an on-the-job situation. The experience will be a training culmination and an opportunity to apply the skills learned from their coursework. The student will work under the supervision of an attorney or experienced paralegal in day-to-day, on-site office work. The student's internship hours will vary at the internship site, which may be a private or public law office, corporate or government legal department, or other appropriate law-related setting.
Student Learning Outcomes:
* Gain hands-on experience in a law office or other appropriate law-related work environment
* Apply and expand skills learned in course work in the work environment
* Apply ethical and professional work standards and values relating to client confidentiality, conflicts of interest, and the unauthorized practice of law
* Demonstrate continuous improvement of professional-level skills in legal-related matters, including oral and written communications, terminology, English grammar, and rules of writing
* Demonstrate behaviors and work habits that ensure a successful work experience, including effective and productive workplace interaction with supervisors, co-workers, clients, and professionals outside of the internship office
* Formulate a firm understanding of law-related office organizations and their internal systems
* Apply problem-solving and decision-making skills to work-related tasks and assignments
* Obtain a professional reference and recommendation for future employment
* Complete all required documentation, evaluations and reports related to the internship experience
(2-4 C: 0 lect/pres, 0 lab, 2-4 other)

LEGL 2210 - Legal Administrative Assistant Internship
This is a cooperative work-study program that will be available to students who have demonstrated readiness and willingness to work in an on-the-job situation. The experience will be a training culmination and an opportunity to apply the skills learned from their coursework. The student will work under the supervision of an attorney, paralegal or other legal professional in day-to-day, on-site office work. The student's internship hours will vary at the internship site, which may be a private or public law office, corporate or government legal department, or other appropriate work site.
Student Learning Outcomes:
* Gain hands-on experience in a law office or other appropriate law-related work environment
* Apply and expand skills learned in course work in the work environment
* Apply ethical and professional work standards and values related to client confidentiality, conflicts of interest, and the unauthorized practice of law
* Demonstrate continuous improvement of professional-level skills in all legal-related matters, including oral and written communications, terminology, English grammar, and rules of writing
* Demonstrate behaviors and work habits that ensure a successful work experience, including effective and productive workplace interaction with supervisors, co-workers, clients, and professionals outside of the internship office
* Formulate a firm understanding of law-related office organizations and their internal systems
* Apply problem-solving and decision-making skills to work-related tasks and assignments
* Complete all required documentation, evaluations and reports related to the internship experience
(4-6 C: 0 lect/pres, 0 lab, 4-6 other)

LSCE 1502 - Surveying Principles I
The student 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, positioning of corners per Public Land Survey System. Students will study historical development, description and land boundary elements related to platting, which includes, deed interpretation and boundary systems.
Student Learning Outcomes:
* Locate and calculate positions of government and property corners according to Federal, State, and local established guidelines
* Perform outside traverse and topographical surveys with Total Stations
* Analyze and compute traverse adjustments and section breakdowns
* Identify and examine the PLSS system, convergence and error propagation
* Identify coordinate geometry functions and public land survey terms
* Identify and interpret boundary rights
Corequisite(s): LSCE1526
(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 and property line surveying and precise leveling. This course includes practical field applications including total station and data collector and data transfer.
Student Learning Outcomes:
* Perform basic and complicated field surveys
* Perform, understand and analyze precise level loops and traverses
* Perform topographical surveys with total stations and data collectors
* Transferring data to PC for use in preliminary design
* Calculate survey closures, levels of classification and coordinate geometry computations
* Convert field data to record data in the form of drawings, sketches, and field book files
* Demonstrate ability to work with others in a group situation
* Demonstrate effective writing and communication skills
Prerequisite(s): LSCE1530, LSCE1502 or concurrent registration
(5 C: 1 lect/pres, 4 lab, 0 other)

LSCE 1510 - Civil Drafting Methods
This course is designed to develop the student's technical skills in map making and construction document drafting. Also to give an introduction to interpreting legal descriptions and exposure to the coordinate system, and basic concepts of the public land surveying system. Students will study and practice survey and civil engineering drafting techniques. Drafting work includes horizontal and

vertical alignments with horizontal and vertical curves. Course will focus on hand drafting methods.
Student Learning Outcomes:
* Understand and select proper hand drafting methods
* Produce hand drawn and hand lettered drawings
* Design and produce contour, profile and cross section drawings
* Analyze and calculate slope, volume, topographical data, grading, magnetic declination and angles
* Recognize and understand survey and construction terms associated with cross sections, profiles, grades and coordinates
* Knowledge of PLS system and horizontal curves
* Exhibit safe work habits, safe equipment handling and proper interpersonal skills
* Select correct drafting tools and use scaling devices accurately
(3 C: 2 lect/pres, 1 lab, 0 other)

LSCE 1514 - Civil CADD I
Students will develop a knowledge of system configuration, hardware operations and interactive graphics software ("AutoCAD" and "Softdesk"). The student will input drafting commands to develop civil/survey drawings, store data and produce digital drawings.
Student Learning Outcomes:
* Use fundamental CADD drafting methods to create drawings
* Use fundamental CADD editing techniques to edit and modify drawings so they are neat and will accurately convey ideas
* Work cooperatively with others
* Perform dimensioning, hatching and plotting functions on a drawing file
* Download survey field data collector files into a CADD drawing
Prerequisite(s): LSCE1510
(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. The student will be introduced to materials testing. Students will study construction materials, construction methods, inspection and quality control. The students will study standard contracts and specification documents.
Student Learning Outcomes:
* Identify construction and material terms
* Read and interpret plans and specifications
* Perform materials testing procedures
* Evaluate and analyze testing procedures through written reports
* Identify and recognize construction procedures as related to civil engineering and land surveying
* Estimate cost and materials for civil engineering projects
* Recognize 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 1522 - Technical Computations I
Students will study percents, signed numbers, algebraic operation, equation manipulation, ratios, geometric principles, trigonometric functions, area and volume calculations and physics concepts.
Student Learning Outcomes:
* Computing civil engineering problems concerning areas, volumes, and vectors
* Apply trigonometric functions and geometric principles to civil engineering and land surveying procedures
* Understand and perform equation manipulation
* Apply formulas and mathematical procedures to land surveying and engineering problems beyond basic fundamental mathematics
Prerequisite(s): MATH0380 or MATH0400 or Appropriate Accuplacer Score.
(3 C: 1 lect/pres, 2 lab, 0 other)

LSCE 1527 - Technical Computations II
Students will study the natural laws that govern the relationship between work, force, motion, energy and power. Students will apply this knowledge through practical lab experiments and problem solving. Students will perform computations in the civil engineering/land surveying field. These include: volumes, bearings/azimuths, latitudes/departures, area traverse and various curve calculations. The student will also study elementary concepts involving coordinate geometry and route-survey methods.
Student Learning Outcomes:
* Calculate physics problems involving force, equilibrium, accelerated motion.
* Identify and apply horizontal and vertical curve terminology.
* Perform vertical curve calculations.
* Perform horizontal curve calculations.
* Calculate and analyze traverse adjustments.
* Apply industry standards to highway design computations.
Prerequisite(s): LSCE1510, LSCE1522 or LSCE1510, MATH1300
(3 C: 2 lect/pres, 1 lab, 0 other)

LSCE 1530 - Survey Fundamentals
Students will study basic surveying with practical applications in horizontal distance, angle and vertical measurement, introduction to total station/data collection, traverse angle and distance measurement methods. The student will begin using coordinate geometry. 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
* Use mathematical computations to deal with measurement uncertainties
* Work cooperatively in a work group environment
* Identify Minnesota tree types
* Create survey field notes
(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, advanced traversing, triangulation, resection, areas, volumes, section breakdown and subdivision surveys. Field projects will use total station and data collections procedures.
Student Learning Outcomes:
* Demonstrate ability to perform ALTA surveys
* Overview of ALTA survey requirements and calculations
* Perform star shot procedures and calculations
* Work in collaborative groups with acceptable communication skills
* Perform calculations and problem solving in traverses, vertical curves and horizontal curves
* Perform section breakdown in a lab situation in a collaborative group setting
* Recognize and understand PLSS and GPS terms
Prerequisite(s): LSCE1506, LSCE2514
(5 C: 1 lect/pres, 4 lab, 0 other)

LSCE 2506 - Construction Design and Surveying Principles
Students will focus on construction survey techniques and systems used in construction projects. The student will use practical field techniques for staking profile, blue tops, slope and grade staking, sanitary and storm, curb and gutter, water mains, buildings and some aspects of platting. Emphasis will be on both Total Station with data collection and traditional methods.
Student Learning Outcomes:
* Perform calculations required prior to staking a project and those required after staking a project
* Plan and stake an underground utility project
* Plan and stake road grades, slope stakes and curbing
* Plan and stake various building pads, buildings, site work, and houses
* Perform field survey of existing subdivision lots and boundary
* Interpret results of the survey
* Cooperate in a work group environment
Prerequisite(s): LSCE2502, LSCE2522
(5 C: 1 lect/pres, 4 lab, 0 other)

LSCE 2510 - Surveying Principles II
Students will study Minnesota State Statutes, county and city ordinances relating to platting and surveying methods, along with techniques for record research. Emphasis will also be on writing of land descriptions and easements. Students will study professional duties of surveyor and civil engineer responsibilities and liabilities, tracing land boundaries, boundary establishment through riparian rights, deed descriptions, plats, survey evidence, metes and bounds and Public Land Survey System.
Student Learning Outcomes:
* Write, read and interpret land descriptions
* Identify client-consultant-agency-contractor expectations and requirements
* Study historical context and mechanics of Public Land Survey Systems (PLSS)
* Examine professional practices and ethics relating to Civil Engineering and Land Surveying
* Examine the evolution of property rights and practices relating to Civil Engineering and Land Surveying
* Identify 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 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, dimension and detail survey plat maps using coordinate geometry
* Download field survey data using description keys and various automated mapping tools
* Create triangulated irregular network (TIN) models
* Produce detailed topographic maps
* Produce American Land Title Association (ALTA) maps
* Design roadway alignments and profiles
* Produce erosion control plans
Prerequisite(s): LSCE1527
(3 C: 1 lect/pres, 2 lab, 0 other)

LSCE 2518 - Utility Design I
Students will study basic fluid mechanics. Focus will be on fluid flow characteristics of gravity sanitary sewer and storm sewer systems. Students will be introduced to storm water hydrology, storm water management, and various wetland issues. Students will design storm sewer systems including piping, inlet structures, storm water facilities and site grading and will prepare plan and profile drawings.
Student Learning Outcomes:
* Produce a drainage report for a housing subdivision project
* Study field and office survey methods for determining watershed limits
* Use the Rational method to estimate watershed runoff
* Calculate pipe flow and open channel flow geometry and flow quantities
* Use the Continuity Equation and Manning's equation to analyze flows through hand calculations and by using computer programs
* Design storm water collection system and produce grading plans, plan and profile drawings and related appurtenances
* Study current NPDES requirements and produce erosion control documents
* Read and 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 advanced Autodesk 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:
* Use grading design functions to create grading plans and earthwork functions to compute earthwork volumes
* Perform traverse adjustment calculations using compass rule and least squares methods. These will be done by both hand and computer methods
* Design urban street-plan and profile construction drawings
* Design rural road-plan and profile construction drawings
* Upload survey data to data collectors for field use
* Produce personal resume and cover letter
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, and storm water management. The student will also study wetland issues, existing land use factors, and zoning considerations. Minnesota State Statues, county and city ordinances relating to platting, along with techniques for record research will also be discussed.
Student Learning Outcomes:
* Identify subdivision design constraints found in the State Statutes and in various County, City and local ordinances
* Use design constraints to produce sketch plats
* Design a preliminary and final plat
* Design horizontal and vertical alignment of roadways. This will include vertical curves, horizontal curves and other geometric elements of roadway design
* Produce grading plans and roadway construction documents
* Read and interpret construction specifications
Corequisite(s): LSCE2514
Prerequisite(s): LSCE1502
(4 C: 3 lect/pres, 1 lab, 0 other)

LSCE 2530 - Utility Design II
Students will study basic fluid mechanics and flows in both gravity and pressure systems. Focus will be on flow characteristics in sanitary sewer systems and water supply systems. Students will design a water distribution system and become familiar with materials, valves, flow control devices, appurtenances and construction.
Student Learning Outcomes:
* Create a preliminary design report for a sewer and water construction project in a housing subdivision
* Devise a basic sewer collection system for a housing subdivision. Includes the selection of appropriate materials, slopes, quantities, capacities and system sizing
* Devise a basic water distribution system for a housing subdivision. Includes the selection of appropriate materials, slopes, quantities, capacities and system sizing
* Develop construction drawings for utility construction project
* Read and draw conclusions from construction specifications
Corequisite(s): LSCE2522
Prerequisite(s): LSCE2518, LSCE2526
(3 C: 1 lect/pres, 2 lab, 0 other)

MACH 1503 - Machine Tool Technology I
This course will address the operations of a drill press, pedestal grinder, vertical mill, lathe, and bandsaws. 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 blueprint specifications on the vertical mill
* Create projects to blueprint specifications on the engine lathe.
* Construct bench projects by utilizing hand tools
* Fabricate drilling projects on the drill press.
* Produce projects using the bandsaws.
* Construct and examine various machine setups.
* Grind 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, vernier and digital calipers.
* Develop safe work habits around all metalworking equipment and co-workers.
(4 C: 1 lect/pres, 3 lab, 0 other)

MACH 1507 - 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 geom-

etry, 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 customary 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.
(4 C: 2 lect/pres, 2 lab, 0 other)

MACH 1510 - Machine Tool Technology II
This course will cover additional skill development in the setup and operation of saws, milling machines, lathes and drill presses. More complex machining tasks will be included in mill, drill 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 Outcomes:
* Completion of drilling, boring, jig boring, parallel and step milling projects utilizing milling machine
* Completion of facing, turning, external threading, taper turning projects utilizing engine lathe
* Completion of drilling projects using upright drill press and radial drill press
* Completion of precision layout using height gage
* Develop basic skills using a surface grinder
* Proficiency using hand tools to complete a bench project
* Proficiency on off-hand grinding of drill bits and lathe toolbits
* Develop and apply safe work habits around all metalworking equipment and co-workers
* Proficiency using direct and indirect measurement tools
Prerequisite(s): MACH1503
(4 C: 1 lect/pres, 3 lab, 0 other)

MACH 1511 - 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 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 become familiar with advanced setup and operations on the lathe, milling machine, drill press and grinding machines. The student will also learn the care and use of different tooling used in the lathe, milling machines, and surface grinders.
Student Learning Outcomes:
* 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 for machine setups and inspection purposes
* 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
Prerequisite(s): MACH1510
(5 C: 1 lect/pres, 4 lab, 0 other)

MACH 1514 - Introduction to 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.
* Setup Swiss machines and bar feeder
* Identify tool holding components, tool holding devices and equipment used in Swiss machining.
* Create a number of programs manually and using 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): MACH1511
Prerequisite(s): MACH1510
(2 C: 0 lect/pres, 2 lab, 0 other)

MACH 1517 - Blueprint Reading I
This course will cover the basic principles of blueprint reading that will include three view drawings, the types of lines and view arrangements, dimensioning, types of tolerancing, surface textures, and classification of fits.
Student Learning Outcomes:
* Interpret different lines
* Understand view arrangements
* Proficiency in reading blueprints
* Interpret dimensioning
* Interpret surface texture callout
* Interpret classification of fits
(1 C: 0 lect/pres, 1 lab, 0 other)

MACH 1519 - Blueprint 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
Prerequisite(s): MACH1517, MACH1503
(1 C: 0 lect/pres, 1 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 standard that applies to blueprint standards. Students will learn the symbols, rules and geometric controls shown on today's blueprints. Students will be given prints and exercises to enhance their skills in print reading. Job seeking and keeping information will also be provided for students.
Student Learning Outcomes:
* Understand ANSY Y14.5 standards that effect geometric dimensioning and tolerancing
* Proficiency in using geometric dimensioning and tolerancing symbols and controls
* Experience in reading blueprints that utilize geometric dimensioning and tolerancing controls
* Decipher how piece-parts must be inspected if the features have GDandT symbols and controls
* Complete on a sketch pertinent feature control frames on a part's features(s) to symbolize exact GDandT symbols and necessary modifiers
* Demonstrate an awareness of the shortcomings of any drawing, which has been produced in conventional drawing practices, and provide alternative solutions with GDandT symbology
* Job seeking and keeping requirements
(1 C: 0 lect/pres, 1 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 1532 - CAM I 2D
This course is intended for Machine Tool Technology students to provide an introductory level understanding of computer assisted programming software. The student will create 2 dimensional geometry and progressing into toolpath creation.
Student Learning Outcomes:
The Student will:
* Demonstrate ability to open and save files
* Create two dimensional lines and arcs of part geometry
* Modify two dimensional geometry, deleting, chamfering, filleting
* Create G,M code NC code with Post Processor
Prerequisite(s): TECH1550
(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 is the foundational programming and set up of CNC vertical milling centers (VMCs) and turning centers (TCs) course. The students will learn the word address system as applied to VMCs and TCs. Students will set up and operate equipment 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 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 devises for VMCs and TCs.
* Choose appropriate tooling and work holding devises form multiple styles of VMC and TC work.
* Load and set up work holding devises 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.
Prerequisite(s): MACH1540
(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:
The Student will:
* 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)

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:
The student will:
* 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 2519 - Advanced CNC Milling
This course will cover more advanced CNC set-up and operation techniques. Emphasis will be on the use of fixtures and the reduction of second operation requirements. Industry standard production fixtures will be manufactured and used.
Student Learning Outcomes:
The student will:
* Explain multiple fixture offsets.
* Explain toll 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 4th axis machining.
* Prepare documentation of set-up, tooling and inspection.
Prerequisite(s): MACH2504
(2 C: 0 lect/pres, 2 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 2527 - Advanced CNC Turning
This course will cover more advanced CNC lathe set-up and operation techniques. Emphasis will be on multi operation parts. Specialized soft jaw turning and boring, tailstock relocation and stock advancement with stops will be covered.
Student Learning Outcomes:
The student will:
* Explain multiple fixture offsets.
* Explain tool radius, wear and geometry offsets.
* Prepare stock blanks for production run of parts.
* Produce Soft Jaw fixturing.
* Multiple end cut set-up procedures.
* Prepare documentation of set-up, tooling and inspection.
Prerequisite(s): MACH2504
(2 C: 0 lect/pres, 2 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:
The student will:
* 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:
The student will:
* 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.
Corequisite(s): MACH2504
Prerequisite(s): MACH1514
(2 C: 0 lect/pres, 2 lab, 0 other)

MACH 2542 - CNC Milling Setup and Operations with 4th Axis
This course is a continuation of programming and set up of vertical machining centers (VMCs) with emphasis on production and operation skills include the addition of the 4th axis. 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 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 ran again by other students later in the course.
Student Learning Outcomes:
* Program multiple operation parts on VMCs.
* Setup multiple operation parts on VMCs.
* Correctly and safely complete quality first run parts.
* Create and organize their own programs and setup sheets for future operation by other students.
* Given another students proven program and detailed setup sheets students will setup and safely complete a quality first run part.
Prerequisite(s): MACH1531, MACH2504, MACH1540
(4 C: 1 lect/pres, 3 lab, 0 other)

MACH 2544 - CNC/CAM Capstone
Students will engage in advanced machining activities encompassing all areas of CNC and CAM. Course focus 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-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 CAD .dxf file for CNC machining purposes
* Create an advanced surface milling program
Prerequisite(s): MACH2518, MACH2526
(1 C: 0 lect/pres, 1 lab, 0 other)

MACH 2545 - CNC Turning Setup 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 originally programmed and parts preprogrammed. 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. Students will create and systematically organize original programs and setup sheets.
Student Learning Outcomes:
* Program multiple operation parts on TCs.
* Setup multiple operation parts on TCs.
* Create and organize original programs and setup sheets.
* Setup and run multiple proven programs.
* Run quality first run part utilizing a proven program
* Run quality first run part utilizing an original program.
* Correctly update revisions made to programs during initial operations.
* Correctly update revisions made to setups during initial operations.
Prerequisite(s): MACH2504
(4 C: 1 lect/pres, 3 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.
Corequisite(s): MACH2550
(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:
The student will:
* 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:
The student will:
* 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:
The student will:
* 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.
Corequisite(s): MACH2554 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:
The student will:
* 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 0405 - Foundations for College Mathematics
This course is designed to help students improve their arithmetic and introductory algebra skills. The topics are divided into modules of study. Applications and problem solving will be points of emphasis.
Student Learning Outcomes:
The student will acquire a solid foundation in the basic skills of arithmetic and elementary algebra. Upon completion of this course the student will:
* Apply the basic mathematical concepts that form the foundation of arithmetic and algebra.
* Utilize procedures for manipulating arithmetic and algebraic expressions and equations.
* Demonstrate and apply critical thinking skills to solve a variety of problems.
* Apply arithmetic and 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.
(2 C: 2 lect/pres, 0 lab, 0 other)

MATH 0475 - Principles of Intermediate Algebra
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; quadratic functions and equations; and exponential and logarithmic functions. A wide variety of examples and exercises are used to help the student connect the mathematical content with the real world. This is a college readiness course and does not fulfill a college goal area requirement.
Student Learning Outcomes:
* Apply the basic mathematical concepts that form the foundation of algebra.
* Utilize procedures for manipulating algebraic expressions and equations.
* Evaluate the reasonableness of solutions attained for problems.
* Demonstrate and apply critical thinking skills to solve a variety of problems.
* Formulate algebraic representations necessary to model 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.
* Demonstrate mathematical reasoning skills and formal logic to develop convincing mathematical arguments.
Prerequisite(s): MATH0405 or Appropriate Accuplacer Score.
(4 C: 4 lect/pres, 0 lab, 0 other)

MATH 0485 - Principles of Intermediate Algebra Accelerated
This is a course that will prepare students for Math1300 (College Algebra) by giving them a solid foundation in the principles and applications of intermediate algebra, and by using mathematical tools to analyze and solve problems. It is designed to provide a refresher for students who are borderline between Math 0475 (Intermediate Algebra) and Math 1300 (College Algebra). Although the course content is similar to Math 0475, it is presented in a shorter, more rigorous format than Math 0475. This is a college readiness course and does not fulfill a college goal area requirement.
Student Learning Outcomes:
* Apply the basic mathematical concepts that form the foundation of algebra.
* Utilize procedures for manipulating algebraic expressions and equations.
* Communicate mathematical understanding to others verbally and in written form.
* 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.
* Demonstrate mathematical reasoning skills and formal logic to develop convincing mathematical arguments.
* Apply algebraic principles appropriately to applications.
Prerequisite(s): MATH0405 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

MATH 0495 - Foundations of Statistics
This course explores and provides a connection between algebraic or statistical concepts and practical world questions through solving application problems. It will focus on developing critical thinking skills using quantitative data and descriptive statistical tools. Students will also learn the concept and application of probability in preparing for the next MnTC statistics course. This is a college readiness course and does not fulfill a college goal area requirement. This course does not meet the requirements for college algebra.
Student Learning Outcomes:
* Apply algebraic procedures and process in problems solving.
* Demonstrate basic skills in collecting, organizing, analyzing and interpreting quantitative data.
* Develop critical reading and thinking ability in information analysis and decision making.
* Utilize a systematic approach in problem solving: identify question, gather evidence, analyze information, and derive conclusion.
* Differentiate between all possible solutions, and identify the most feasible one.
* Communicate quantitative results effectively in verbal and written forms.
* Incorporate the concepts of probability and variability when presenting conclu-

sions using inferential statistics.
* Apply an evidence-based approach in problem solving with consideration of probability and contingency.
Prerequisite(s): MATH0405 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

MATH 1300 - College Algebra
Meets MN Transfer Goal 4 - Mathematical/Logical Reasoning. 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
* Demonstrate and 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): MATH0475 or MATH0485 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

MATH 1321 - College Trigonometry
Meets MN Transfer Curriculum Goal Area 4 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:
* Demonstrate and 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): MATH1300 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

MATH 1331 - Applications of Mathematical Reasoning
Meets MN Transfer Curriculum Goal Area 4 - 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.
* Demonstrate and 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): MATH0475 or MATH0485 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

MATH 1350 - Statistics
Meets MN Transfer Curriculum Goal Area 4 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 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, regression and inference about relationships, and comparison of population parameters.
Student Learning Outcomes:
* Apply the basic mathematical concepts that form the foundation of statistical analysis.
* Utilize procedures for manipulating algebraic expressions and equations.
* Demonstrate and apply critical thinking skills to solve a variety of problems.
* 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.
* Expand mathematical reasoning skills and formal logic to develop convincing mathematical arguments
Prerequisite(s): MATH0475 or MATH0495 or MATH0485 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

MATH 1380 - Precalculus
Meets MN Transfer Goal 4 - Mathematical/Logical Reasoning. 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 1300 and MATH 1320. 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 1320).
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
* Demonstrate and 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): MATH0475 or MATH1300 or MATH0485 or Appropriate Accuplacer Score.
(5 C: 5 lect/pres, 0 lab, 0 other)

MATH 2310 - Calculus I
Meets MN Transfer Curriculum Goal Area 4 - 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:
* Apply the basic mathematical concepts that form the foundation of calculus.
* Utilize procedures for manipulating algebraic and trigonometric expressions and equations.
* Demonstrate and apply critical thinking skills to solve a variety of problems.
* Formulate algebraic representations necessary to model problems.
* Apply calculus and algebraic principles appropriately to applications.
* Utilize a systematic approach to problem solving which incorporates verbal, numeric, visual and symbolic strategies.
* Demonstrate mathematical reasoning skills and formal logic to develop convincing mathematical arguments.
* Evaluate the reasonableness of solutions attained for problems.
* Communicate mathematical understanding to others verbally and in written form.
Prerequisite(s): MATH1380 or MATH1321.
(4 C: 4 lect/pres, 0 lab, 0 other)

MATH 2320 - Calculus II
Meets MN Transfer Curriculum Goal Area 4 - 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 the basic mathematical concepts that form the foundation of calculus.
* Utilize procedures for manipulating algebraic and trigonometric expressions and equations.
* Demonstrate and apply critical thinking skills to solve a variety of problems.
* Formulate algebraic representations necessary to model problems.
* Apply calculus and algebraic principles appropriately to applications.
* Utilize a systematic approach to problem solving which incorporates verbal, numeric, visual and symbolic strategies.
* Demonstrate mathematical reasoning skills and formal logic to develop convincing mathematical arguments.
* Evaluate the reasonableness of solutions attained for problems.
* Communicate mathematical understanding to others verbally and in written form.
Prerequisite(s): MATH2310
(4 C: 4 lect/pres, 0 lab, 0 other)

MHTT 1502 - Diesel Engine I
This is an introductory course; students learn theory, design, and operation of a diesel engine and fuel system. Working in the lab in groups of two, students will disassemble, inspect, and reassemble a running light duty diesel engine. After completion of this course students will be prepared to advance to Diesel II.
Student Learning Outcomes:
All listed outcomes must be performed to acceptable levels of NATEF Standards.
* Identify and demonstrate safe use of hand tools and shop equipment
* Identify and explain functions of engine components
* Disassemble engine and clean parts
* Inspect and analyze engine parts according to OEM specifications
* Assemble engine using manufacturers techniques and specifications
* Test and adjust fuel system
* Test run engine for operating conditions
Prerequisite(s): TRAN1502
(4 C: 2 lect/pres, 2 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, ECM operation, and output devices. Students will identify components, test their operations, and retrieve and program data in accordance with manufacturers procedures.
Student Learning Outcomes:
All listed outcomes must be performed to acceptable levels of NATEF Standards.
* Identify, describe, and test input devices,
* Apply varied software used in scan tools and laptops,
* Retrieve data and perform basic programming of the ECM,
* Identify, describe, and test output devices,
* Locate, retrieve and apply service, technical, and troubleshooting information,
* Exhibit technician/mechanic professionalism.
Prerequisite(s): TRAN1504
(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 studies include component troubleshooting, repair operations, and preventive maintenance practices.
Student Learning Outcomes:
All listed outcomes must be performed to acceptable levels of NATEF Standards.
* Explain clutch, manual transmission, drive shaft and differential theory of operation.
* Utilize manufacturers service data to complete power train rebuild and repair procedures.
* Troubleshoot noise, vibration, and poor performance of truck power train components.
* Analyze and perform power train preventive maintenance operations.
Prerequisite(s): TRAN1502
(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 air and hydraulic brake system theory and operation including actuation and foundation system assemblies. Other studies include component troubleshooting, repair operations, and preventive maintenance practices.
Student Learning Outcomes:
All listed outcomes must be performed to acceptable levels of NATEF Standards.
* Describe hydraulic and pneumatic brake system theory of operation.
* Utilize manufacturers service data to complete brake system repair procedures.
* Troubleshoot noisy and poor brake system performance and determine necessary repairs.
* Analyze and perform brake system preventive maintenance operations.
Corequisite(s): MHTT1518
Prerequisite(s): TRAN1502
(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:
All listed outcomes must be performed to acceptable levels of NATEF Standards.
* Identify alignment angles.
* Perform repair procedures necessary to correct vehicle alignment angles.

* Apply manufacturers service data to complete wheel bearing and suspension system repairs.
* Describe steering system theory of operation.
* Utilize manufacturers service data to complete steering system repairs.
* Evaluate and perform steering and suspension system preventive maintenance operations. Prerequisite(s): TRAN1502
(3 C: 1 lect/pres, 2 lab, 0 other)

MHTT 1522 - Electrical II
Through this course the electrical theory learned in Electrical I is applied to the vehicle by the study of the starting and charging 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.
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
(2 C: 1 lect/pres, 1 lab, 0 other)

MHTT 1526 - Truck Maintenance I
The goal of low cost efficient truck operation is to maintain the trucks in a manner that minimizes repair and downtime and ensures safe vehicle operations for the driver. This goal is the emphasis for this course. Following the recommendations of the OEM maintenance manuals, the student will perform truck maintenance in the lab.
Student Learning Outcomes:
All listed outcomes must be performed to acceptable levels of NATEF Standards.
* Understand the importance of preventive maintenance
* Examine OEM maintenance schedules
* List and practice shop safety procedures
* Perform vehicle maintenance
* Examine service parts and fluids used in maintenance
* Perform shop equipment maintenance
* Troubleshoot vehicle electrical failures
* Troubleshoot mechanical failures
Prerequisite(s): MHTT1502, MHTT1514
(3 C: 1 lect/pres, 2 lab, 0 other)

MHTT 1530 - 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), 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)
* Fabricate a metal object using welding processes
(3 C: 1 lect/pres, 2 lab, 0 other)

MHTT 2502 - Diesel II
With the knowledge and experience gained in Diesel I, students practice engine rebuilding skills on medium to heavy duty diesel engines in the lab. Emphasis is placed on understanding the theory and operation of different fuel systems and tune up procedures.
Student Learning Outcomes:
* Understand fuel system theory of operation of various engine manufacturers
* Utilize engine manufacturer's service data to complete repair procedures
* Perform engine rebuild and repair procedures
* Troubleshoot engine no-start and misfire conditions
* Determine engine component condition for re-use
Prerequisite(s): MHTT1502
(4 C: 1 lect/pres, 3 lab, 0 other)

MHTT 2506 - Diesel III
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 repair engines.
Student Learning Outcomes:
All listed outcomes must be performed to acceptable levels of NATEF Standards.
* Identify fuel system types
* Analyze EPA regulations
* Perform engine tune-ups
* Evaluate engine computer operation
* Program engine computer parameters
* Troubleshoot mechanical engine failures
* Troubleshoot electronic engine failures
* Interpret wiring diagrams for engines
Corequisite(s): MHTT2522
Prerequisite(s): MHTT2502, MHTT1508
(4 C: 2 lect/pres, 2 lab, 0 other)

MHTT 2514 - Gas Engines and Alternative Fuel Systems
In this elective course students have an opportunity to study gasoline engine systems while rebuilding their own gasoline engine in the lab. Emphasis is placed on different fuel and ignition systems.
Student Learning Outcomes:
* Demonstrate knowledge of properties of automotive fuels
* Demonstrate knowledge of and test gas fuel supply systems
* Demonstrate knowledge of and test gas fuel injection systems
* Demonstrate knowledge of and test ignition systems
* Rebuild gasoline engine to industry standards
Prerequisite(s): MHTT1502, TRAN1504
(3 C: 2 lect/pres, 1 lab, 0 other)

MHTT 2518 - Automatic Transmissions
The popularity of the transmission in the trucking industry continues to grow. This elective course gives students the opportunity to study the theory and operation in the classroom. Then, experience hands on skills in the lab by practicing the rebuilding of an operational Allison automatic transmission.
Student Learning Outcomes:
* Identify the parts of an automatic transmission
* Understand the operation of automatic transmission parts
* Disassemble, clean, and inspect automatic transmission
* Reassemble automatic transmission
* Test automatic transmission
* Remove and install automatic transmission
* Perform automatic transmission maintenance
(3 C: 1 lect/pres, 2 lab, 0 other)

MHTT 2522 - Electrical III
This advanced course involves lighting, instrumentation, accessories, and ABS electrical systems on medium and heavy trucks and trailers. Emphasis is placed on using wiring diagrams and digital multimeters to troubleshoot electrical failures and perform industry approved electrical repair procedures.
Student Learning Outcomes:
All listed outcomes must be performed to acceptable levels of NATEF Standards.
* Interpret electrical diagrams
* Apply multimeters to test circuits
* Test starting and charging circuits
* Repair electrical failures
* Discriminate standard color codes
* Test electrical components
Prerequisite(s): MHTT1522
(3 C: 1 lect/pres, 2 lab, 0 other)

MHTT 2530 - Truck Heating and AC Systems
Proper operation of Heating and AC ventilation systems is important for driver comfort and safe vehicle operation. This course covers theory and heater AC and ventilation systems. Other studies include system troubleshooting, repair operations, and preventive maintenance practices.

Student Learning Outcomes:
* Identify heating and AC system theory of operation
* 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
Prerequisite(s): TRAN2514
(2 C: 1 lect/pres, 1 lab, 0 other)

MHTT 2534 - Transport Refrigeration
Many truck technicians choose careers in which knowledge and skills in transport refrigeration system are needed. The theory and skills are achieved in lecture and through working in the lab on truck and trailer refrigeration units. Emphasis is on maintenance and troubleshooting of electrical and refrigeration systems.
Student Learning Outcomes:
* Explain refrigeration theory
* Diagram heat/cool refrigeration flow
* Service refrigeration system
* Diagnose refrigeration system
* Diagram heat/cool current flow
* Test electrical system
* Perform preventative maintenance
(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, approximately 40 hours per week. The tasks will be consistent with previous course work.
This is a variable credit course, with credits 1-7.
Student Learning Outcomes:
* Perform required maintenance and various inspection procedures on over the road vehicles, agricultural equipment or heavy equipment
* Demonstrate job entry skills development when performing service operations
* Conform to federal OSHA and state MPCA rules as it relates to vehicle service procedures
* Adhere to ethical practices as it relates to service procedures
* Exhibit technician/mechanic professionalism
Prerequisite(s): MHTT1526
(1-7 C: 0 lect/pres, 0 lab, 1-7 other)

MHTT 2546 - Truck Preventive Maintenance and Troubleshooting
Basic skills acquired by the student in previous courses shall be used and developed into advanced troubleshooting and preventive maintenance skills necessary to operate a truck fleet or perform shop operations in the transportation industry. Studies shall include mechanical and electrical system diagnosis and troubleshooting procedures. Identifying and practicing mechanical and electrical system preventive maintenance operations. Customer/shop communication processes shall also be studied.
Student Learning Outcomes:
All listed outcomes must be performed to acceptable levels of NATEF Standards.
* Identify, diagnose, and repair vehicle electrical and mechanical systems.
* Analyze drivers report and problem descriptions.
* Perform power analysis of engine systems.
* Perform vehicle preventive maintenance inspection.
* Identify procedures and perform MNDOT annual vehicle inspection.
* Rebuild truck components.
* Perform all shop operations in compliance with industry safety standards.
Prerequisite(s): MHTT1526
(4 C: 1 lect/pres, 3 lab, 0 other)

MSNA 1205 - Intro to Help Desk
The course provides students with the fundamentals to provide basic help desk services. Students, through case studies and hands-on projects, will learn to perform activities associated with real-world customer support operations. Focus will be on the development of interpersonal skills and communication with end-users, to troubleshoot and resolve real-world issues, and to identify user hardware and software requirements, and to develop training plans and written documentation for clients. Students will also learn basic installation, configuration and usage of Microsoft Office applications.
Student Learning Outcomes:
* Learn and demonstrate installation, configuration and use of Microsoft Office Suite.
* Investigate hardware and software problems, through effective communication with end-users.
* Understand interpersonal issues when working with computer end-users, recognize and demonstrate effective customer service skills.
* Identify and document end-user technical requirements, based on user-stated functional needs.
* Prepare hardware and software technical specifications for purchasing new systems.
* Document problem circumstances and resolution, to assist in resolving future occurrences.
* Write end-user documentation, and use application software to create training plans and materials.
* Provide end-user training and create reference materials
* Instruct customers in the use of hardware and software products.
* Understand importance of effective equipment and software distribution
* Show mastery of the concept of Frameworks and the guidance they provide by processing lab troubleshooting scenarios through ITIL Frameworks and best practices including troubleshooting, incident resolution, documentation and customer acceptance.
* Show competencies in ITIL Service Strategy, Service Design, Service Transition, Service Operation and CSI Processes within the ITIL Framework by developing an IT Services management plan.
(3 C: 2 lect/pres, 1 lab, 0 other)

MSNA 1209 - MSNA Portfolio
Students will learn to use computer applications and Internet based support services to prepare both electronic and paper copies of a personal portfolio, documenting their knowledge and experience in information technology. Through individual and group work and discussions, students will produce finished paper and electronic documents, which they can use in seeking employment.
Student Learning Outcomes:
* Knowledge of tools and techniques used to create portfolios
* Demonstrate ability to present technical knowledge and skills to a selected audience
* Use desktop applications and eFolio web-based portfolio software to prepare portfolios
* Ability to formulate and present information appropriate to a designated audience
(1 C: 1 lect/pres, 0 lab, 0 other)

MSNA 1213 - MS Server Infrastructure OS
Students will learn the concepts and skills necessary to install and configure the Microsoft (MS) Windows 2008 Network Operating System (NOS). Topics include introduction to networking concepts, installing the MS Server 2008 NOS, configuring server components, maintaining the network and securing data transmission. This course also prepares students for the Microsoft 70-642 certification exam.
Student Learning Outcomes:
* Install MS Server 2008 NOS
* Configure server settings
* Understand, choose and configure server roles
* Configure storage
* Activate the server with Microsoft
* Configure routing and remote access
* Configure and maintain file and print services
* Maintain the MS Server 2008 network health
* Secure data transmission and authentication
Prerequisite(s): MSNA1214 or Appropriate Accuplacer Score.
(3 C: 2 lect/pres, 1 lab, 0 other)

MSNA 1214 - Windows Desktop Operating Systems
Students will study the skills needed to effectively manage the current Microsoft Windows desktop operating system. Topics include installing the operating system and applications, how to use functions and utilities, manage security, and

describe the importance of knowing the command line environment. This course also prepares students for the current Microsoft operating system configuration exam.
Student Learning Outcomes:
* Learn and perform an install and upgrade to Windows desktop operating systems.
* Determine the proper configuration for a given scenario and then configure hardware and applications.
* Prepare sub netting information and then configure Windows settings for network connectivity.
* Determine security and access settings for shared resources and configure access to shared resources.
* Configure a Windows computer for remote access and mobility.
* Prepare a plan for preventive maintenance, monitor and maintain Windows clients.
* Plan and deploy Windows Backup and Recovery Options.
(3 C: 2 lect/pres, 1 lab, 0 other)

MSNA 1225 - Cisco Routing and Switching Essentials
Routing and Switching Essentials describes the architecture, components, and operations of routers and switches in a small network. Students learn how to configure a router and a switch for basic functionality. By the end of this course, students will be able to configure and troubleshoot routers and switches and resolve common issues with RIPv1, RIPv2, single-area and multi-area OSPF, virtual LANs, and inter-VLAN routing in both IPv4 and IPv6 networks.. The course is part of the four-part Cisco curriculum that prepare for the CCNA certification exam.
Student Learning Outcomes:
* Describe enhanced switching technologies such as VLANs, VLAN Trunking Protocol, Rapid Spanning Tree Protocol, and 802.1q
* Describe basic switching concepts and the operation of Cisco switches
* Configure and troubleshoot basic operations of a small switched network
* Configure and troubleshoot basic operations of routers in a small routed network
* Configure and troubleshoot VLANs and inter-VLAN routing
* Describe the operations of Dynamic Host Configuration Protocol and Domain Name System for IPv4 and IPv6
* Apply the basic RIPv2 configuration commands and evaluate RIPv2 classless routing updates
* Use advanced configuration commands with routers, implementing EIGRP
* Describe the importance of routers to the functioning of the Internet
Prerequisite(s): MSNA1220
(3 C: 1 lect/pres, 2 lab, 0 other)

MSNA 1230 - Introduction to Networks I
The Introduction to Networks I course introduces the architecture, structure, functions, components, and models of the Internet and computer networks. The principles of network operating systems, network protocol and communications, network access, Ethernet and the Physical, Data Link and Network layers of the OSI model are introduced. Network design emulation tools are introduced as well as industry standard syntax conventions.
Student Learning Outcomes:
* Describe the devices and services used to support communications in data networks and the Internet.
* Describe the role of protocol layers in data networks.
* Build a simple Ethernet network using routers and switches.
* Describe the operation of protocols at the OSI Data Link Layer and explain how they support communications.
* Utilize common network utilities to verify small network operations, analyze data traffic, and troubleshoot network problems.
* Recognize the devices and services that are used to support communications across an Internetwork.
(2 C: 1 lect/pres, 1 lab, 0 other)

MSNA 1235 - Introduction to Virtualization
Introduction to Virtualization focuses in on server virtualization, how it has helped so many enterprises, and what students would need to test and deploy it. We examine both 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.
* Install, configure and manage virtual machines and device.
* Explain the benefits of virtualization in a cloud environment.
* Apply appropriate resources using best practices.
* Diagnose system performance issues.
* Optimize system performance.
(2 C: 1 lect/pres, 1 lab, 0 other)

MSNA 1240 - Hardware Support
Students learn the functionality of hardware components as well as suggested best practices in maintenance and safety issues. Students will learn to diagnose, troubleshoot, and maintain microcomputer components, computer technology fundamentals, such as PC installation, configuration, mobile devices, and networking as well as 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 the importance of computer components, their purpose and properties.
* Install and configure storage devices and use appropriate media.
* Identify common PC connector types and associated cables.
* Compare and contrast network architecture devices, their functions and features.
* Demonstrate effective communication with end-users.
* Troubleshoot common problems related to motherboards, RAM, CPU and power with appropriate tools based on a given scenario.
* Examine a system and determine, based on knowledge and research, the best solution to resolve an issue.
* Troubleshoot and repair common mobile device issues while adhering to the appropriate procedures.
* Summarize topical information and explain its importance in the technology field.
(3 C: 1 lect/pres, 2 lab, 0 other)

MSNA 1245 - Software Support
This course will provide practical knowledge of installing and configuring operating systems including Windows, iOS, Android, Apple OS X and Linux, software installation and utility management needed to provide technical support to computer users, It also addresses security, 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:
* Compare and contrast various features and requirements of operating systems.
* Install operating systems using appropriate methods based on a given scenario.
* Summarize the properties and purpose of services provided by networks host.
* Perform common preventative maintenance procedures using the appropriate OS tools.
* Deploy and enforce security best practices on a workstation based on a given scenario.
* Install and configure basic mobile device network connectivity and email.
Prerequisite(s): MSNA1240
(2 C: 1 lect/pres, 1 lab, 0 other)

MSNA 1255 - Introduction to Networks II
The Introduction to Networks II course introduces the architecture, structure, functions, components, and models of the Internet and computer networks. The principles of the Transport and Application layers of the OSI model, IP addressing and sub-netting, IPv4 and IPv6 are compared and implemented in small

network settings. By the end of the course, students will be able to build simple LANs, perform basic configurations for routers and switches, and implement IP addressing schemes.
Student Learning Outcomes:
* Describe the importance of addressing and naming schemes at various layers of data networks in IPv4 and IPv6 environments.
* Design, calculate, and apply subnet masks and addresses to fulfill given requirements in IPv4 and IPv6 networks.
* Build a simple Ethernet network using routers and switches.
* 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 such as HTTP, DNS, DHCP, SMTP, Telnet, and FTP.
* Describe the operation of protocols at the OSI Data Link Layer and explain how they support communications.
* Utilize common network utilities to verify small network operations, analyze data traffic, and troubleshoot network problems.
Prerequisite(s): MSNA1230
(2 C: 1 lect/pres, 1 lab, 0 other)

MSNA 2201 - MS Server AD Configuration
Students will study the skills necessary to install and deploy Active Directory in a Microsoft server environment. Topics will include operations such as installing, configuring, and maintaining the Active Directory environment. This course will help validate the skills and knowledge necessary to administer a Windows Server Infrastructure in an enterprise environment. This course will focus on real skills for real jobs and prepares students to prove mastery of core services such as user and group management, network access, and data security. This course will also prepare the student for the Microsoft 70-411 certification exam.
Student Learning Outcomes:
* Install and upgrade of Active Directory on MS Server.
* Assess Active Directory in server setting.
* Configure Active Directory on Server based on a given set of requirements in hands on lab and/or virtual setting.
* Install and configure additional server management software and applications.
* Design, configure and deploy security through the use of authentication and encryption techniques.
* Plan and perform backups of critical server components and data.
* Troubleshoot using a predetermined step-by-step troubleshooting script to resolve Active Directory issues and user reported problems.
* Plan, install and configure Group policies when given security and access criteria.
* Install and configure web security through the use of access lists, group policies and cryptography or the use of certificates.
Prerequisite(s): MSNA1213
(3 C: 2 lect/pres, 1 lab, 0 other)

MSNA 2211 - Linux Server
The Linux course introduces students to the knowledge and skills needed to manage all Linux distributions. Students will learn installation principles, manage and administer file systems and processes, configure network services and security, and perform other system administrative tasks. This course covers the objectives outlined by CompTIA for its Linux+ certification exam, an internationally recognized industry credential that offers proof of knowledge.
Student Learning Outcomes:
* Prepare and install Linux using VMWare
* Define, use and manage Linux file system
* Configure Linux using system management tools
* Troubleshoot local and network problems in Linux
* Configure and use Linux Bash shell
* Navigate the Linux desktop, including KDE, Gnome and Mac GUI
* Manage the network and security, including connectivity to Microsoft Server OS
* Prepare for Linux+ certification
(3 C: 2 lect/pres, 1 lab, 0 other)

MSNA 2215 - MSNA Internship
This course emphasizes interaction between the student and internship site with emphasis on applying 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 their program coursework. Students will learn from hands-on training and real world application in a day-to-day work environment that emphasizes the computer and network installation, configuration, maintenance, administration and repair skills of the program. The internship is considered a last semester 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 and initiative while performing assigned tasks.
* Demonstrate ethical behaviors and standards at the work site.
* Display honesty and courtesy towards co-workers.
* Observe and record job tasks, work standards and policies at the internship site.
* Report technology use and trends of the host organization to college faculty.
(2 C: 0 lect/pres, 0 lab, 2 other)

MSNA 2226 - MSNA Capstone
The Capstone course is taken in the final semester of Network Administration program 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 Outcomes:
* Build, configure, upgrade, and maintain a personal computer system
* Diagnose and resolve problems of a personal computer system
* Install and configure various peripheral devices, including printers, as well as diagnose and resolve problems related to peripheral devices
* Set up, configure, and maintain a local-area network
* Resolve network connectivity problems on a local-area network using a systematic troubleshooting approach
* Install, configure, upgrade, and maintain Microsoft Windows operating systems
* Diagnose and resolve problems using Microsoft Windows system tools
* Understand 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
* Use a customer-oriented approach to resolve user problems
* Provide computer hardware and software based on a set of standard and systematic diagnostic principles
(2 C: 0 lect/pres, 1 lab, 1 other)

MSNA 2235 - Cisco Routing and Switching - Scaling Networks
Scaling Networks describes the architecture, components, and operations of routers and switches in a large and complex network. Students learn how to configure routers and switches for advanced functionality. By the end of this course, students will be able to configure and troubleshoot routers and switches and resolve common issues with OSPF, EIGRP, STP, and VTP in both IPv4 and IPv6 networks. Students will also develop the knowledge and skills needed to implement DHCP and DNS operations in a network.
Student Learning Outcomes:
* Configure and troubleshoot DHCP and DNS operations for IPv4 and IPv6
* Describe the operations and benefits of the Spanning Tree Protocol (STP)
* Configure and troubleshoot STP operations
* Describe the operations and benefits of link aggregation and Cisco VLAN Trunk Protocol (VTP)
* Configure and troubleshoot operation of routers in a complex routed network for IPv4 and IPv6
* Configure and troubleshoot advanced operations of routers and implement RIP, OSPF, and EIGRP routing protocols for IPv4 and IPv6
* Manage Cisco IOS® Software licensing and configuration files
* Explain the functions of hierarchical network design, selecting appropriate devices for a LAN environment

* Configure a switch for basic functionality in a converged network
Prerequisite(s): MSNA1225
(3 C: 2 lect/pres, 1 lab, 0 other)

MSNA 2240 - Cisco Routing and Switching - Connecting Networks
Connecting Networks discusses the WAN technologies and network services required by converged applications in a complex network. The course enables students to understand the selection criteria of network devices and WAN technologies to meet network requirements. Students learn how to configure and troubleshoot network devices and resolve common issues with data link protocols. Students also develop the knowledge and skills needed to implement IPSec and virtual private network (VPN) operations in a complex network. Students will develop the knowledge and skills necessary to implement a Wireless LAN (WLAN) in a small to medium network. Students will study and apply the knowledge needed to prepare for the Certified Wireless Technology Specialist (CWTS) certification exam. The course is part of the four-part Cisco curriculum that prepare for the CCNA certification exam.
Student Learning Outcomes:
* Describe the operations and benefits of virtual private networks (VPNs) and tunneling
* Describe different WAN technologies and their benefits
* Configure and troubleshoot serial connections
* Configure and troubleshoot broadband connections
* Configure and troubleshoot IPSec tunneling operations
* Monitor and troubleshoot network operations using syslog, SNMP, and NetFlow
* Design network architectures for borderless networks, data centers, and collaboration Describe the impact of applications (Voice and Video Over IP) on a network
* Configure, verify and troubleshoot DHCP and DNS operations on a router
* Explain the appropriate administrative tasks required for Wireless LAN (WLAN) and Install a Small Wireless Network
Prerequisite(s): MSNA2235
(3 C: 2 lect/pres, 1 lab, 0 other)

MSNA 2245 - IT Security Fundamentals
This course is designed to expose security concepts to students. Using current events and examples, the students will work through real-world issues facing network administrators. Students will explore the basics of network security, security objectives, security architecture, security models, risk management, network security policy, and security training. The content and materials are designed to help prepare the student for the Security Fundamentals MTA certification which will be offered to students at the end of the course.
Student Learning Outcomes:
* Identify basic terminology of networking security.
* Apply authentication methods commonly used in networked environments.
* Simulate common methods used to attack computer networks.
* Recognize the basic design of various types of programmed threats used to attack networks.
* Formulate a plan to prevent physical security threats to a network.
* Implement security configuration parameters on network devices and other technologies.
(2 C: 1 lect/pres, 1 lab, 0 other)

MSNA 2260 - MS Server Applications
Students will gain hands-on skills to install, configure, and manage Microsoft Server applications, including System Center Configuration Manager (SCCM), Internet Information Server (IIS), Microsoft Exchange and SharePoint using management tools and PowerShell. This course will provide students with a greater knowledge of Microsoft Server applications and the associated management and end-user (client) applications, to better support end users.
Student Learning Outcomes:
* Demonstrate management of SCCM, Internet Information Services (IIS), Exchange and SharePoint Server Applications, server-side management applications.
* Troubleshoot Internet Information Server (IIS), Exchange and SharePoint server and client-side application usage and issues.
* Demonstrate knowledge of basic network command line interface (CLI) utilities, and other software and hardware tool usage to troubleshoot connectivity issues.
* Employ network security, to ensure server application information protection.
* Automate repetitive administrative tasks through the use of PowerShell and batch scripts.
* Deploy Internet Information Services (IIS) for access by the end-user.
* Troubleshoot server and client-side application configurations.
* Apply security to Internet Information Services (IIS), Exchange and SharePoint.
* Identify common security threats and migration techniques.
(3 C: 2 lect/pres, 1 lab, 0 other)

MUSC 1320 - Music in World Culture
Meets MN Transfer Curriculum Goal Areas 6 and 8 - This course will examine musical soundscapes, traditional instruments, and cultural perspectives of traditional, folk, and pop genres from major musical traditions in Africa, Asia, the Americas, Europe, and the Middle East. Students will develop basic skills in critical listening, intercultural awareness, analysis, and writing about music. Previous knowledge of musical instrument or notation is not required.
Student Learning Outcomes:
* Develop a greater international awareness of the world through music
* Demonstrate knowledge of diverse cultural, social, religious and linguistic differences in musical examples
* Examine each musical system in its cultural context, including various musical ensembles, instruments, ceremony and ritual attached to the music itself
* Expand student's cultural perspectives outside of their immediate realm of experience
* Explain basic musical terminology appropriate to music studies
* Develop music listening skills to appreciate the similarities and differences between the many diverse cultural music's.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

MUSC 1340 - History of Rock and Roll
Meets MN Transfer Goal Area 6 - Humanities and Fine Arts. History of Rock and Roll Music is a historical survey of rock music from 1920 to 1990 with emphasis on rock music as social history. This course will examine how significant events in American history of the last eighty years have been both reflected and influenced by rock music.
Student Learning Outcomes:
* Acquire basic knowledge of the classics of rock
* Explain basic terminology of musical terms appropriate to the music studied
* Identify basic characteristics of American contemporary music
* Develop listening skills related to basic musical structure
* Examine academic writing on the study of rock music
* Explore the assumptions behind both popular and rock music
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

MUSC 1350 - Experiencing Live Music
Meets MN Transfer Goal 6 - Humanities and Fine Arts. Musical creations have always been an expression of the values and perceptions of human beings. Music extends into many facets of life and touches all of our lives. This course will explore the nature of music through listening to live performances and through lectures and discussions relating to these performances. No musical background required.
Student Learning Outcomes:
* Attend live musical performances
* Identify basic characteristics of music
* Develop listening skills related to basic musical structure
* Acquire basic terminology of musical terms appropriate to the music studied
* Explore music through readings, written reports
* Identify relationships between types of music
* Develop opinions surrounding music
* Develop writing skills through written reports of attended concerts
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

MUSC 1360 - Class Voice
Meets MN Transfer Goal 6 - Humanities and Fine Arts. This course is for

students with little or no voice training as well as those who wish to continue previous vocal training. Class Voice 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. These fundamentals will include principles of voice production, breathing, tone placement, resonance, articulation, and song interpretation.
Student Learning Outcomes:
* Develop basic skills of singing, including vocal technique (in speech and singing) and solo vocal performance
* Develop a vocabulary about and an understanding of the vocal instrument
* Discover strategies for learning a song and performing it effectively
* Demonstrate an understanding and thoughtful evaluation of a song's character and mood
* Foster a respectful environment for thoughtful and receptive critiques of peers and concert performances
* Improve self-awareness and self-confidence
* Develop an appreciation for vocal art as a cultural force in a civilized world
* Write effectively using these terms and class topics for journal entries, quizzes, and concert reports
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

NUCP 2500 - Nuclear Energy Fundamentals
This course teaches the nuclear power plant fundamentals of basic Atomic and Nuclear Physics, Heat Transfer and Fluid Flow, and Reactor and Power Plant Chemistry.
Student Learning Outcomes:
* Explain basic atomic structure and nuclear interactions.
* Demonstrate understanding of the basic fission process and residual/decay heat production.
* Outline basic reactor types and their operation.
* Explain concepts of the steam-water cycle, pressure-temperature relationship, and boiling and saturation.
* Apply fundamentals of chemistry: acids and basis, conductivity, ion exchange, pH, molecules, mixtures, solutions and compounds.
* Demonstrate understanding of basic water chemistry control fundamentals: impurities, ion exchange theory, parameters monitored, water treatment, corrosion process, water chemistry control methods.
* Explain reactor water chemistry fundamentals: core conditions, control/removal of impurities, hydrogen gas, radiolysis and recombination, and radiochemistry.
Prerequisite(s): ETEC1541
(3 C: 3 lect/pres, 0 lab, 0 other)

NUCP 2504 - Nuclear Plant Materials and Protection
This course teaches the properties of reactor plant materials, radiation protection and detection, and reactor plant protection.
Student Learning Outcomes:
* Analyze basic material properties.
* Compare brittle fracture characteristics.
* Distinguish plant material problems (general and specific) and potential impacts.
* Demonstrate understanding of the principles and operation of radiation protection and monitors.
* Examine radiation effects on matter and body tissues.
* Perform calculations that involve radioactive dose and matter.
* Compare methods of exposure control.
* Demonstrate understanding of basic concepts of reactor plant protection.
* Decipher concepts related to accident analysis.
* Demonstrate understanding of basic concepts related to transient prevention, mitigation of core damage and accident management.
* Summarize basic information on major industry operating experience.
* Examine proper methods for breaching systems, including applicable radiological exposure and contamination controls.
* Determine potential applications and operation of various devices (for example, video cameras, filter removal tools and remotely operated machines) used for radiological exposure reduction.
Prerequisite(s): NUCP2500
(4 C: 4 lect/pres, 0 lab, 0 other)

NUCP 2508 - Nuclear Plant Operating Systems
This course covers the main operating systems of nuclear power plants having pressurized and boiling water reactors.
Student Learning Outcomes:
Demonstrate a detailed understanding of the following systems:
* Auxiliary feedwater and reactor core isolation cooling systems
* Auxiliary steam systems, including boilers
* Chemical volume control and reactor water cleanup systems
* Chilled water systems
* Circulating water systems
* Condensate, feedwater and polisher (demineralizer) systems
* Charging water or control rod drive hydraulics systems
* Instrument and station air systems
* Systems that contain important valves
* Other systems important to plant operations such as those covered by Technical Specifications
Prerequisite(s): NUCP2504
(4 C: 4 lect/pres, 0 lab, 0 other)

NUCP 2512 - Nuclear Plant In Processing
This course is designed to train students on the requirements to get un-escorted access to a Nuclear Plant. Students will go through the in-processing procedure at a Nuclear Plant. Students will be receiving a background check, drug/alcohol test, and successfully complete all Computer Based Training (CBT) for the Nuclear Plant.
Student Learning Outcomes:
* Understand and demonstrate all rules and regulations needed for a technician in the plant.
* Perform proper dress out Dynamic Learning Activity (DLA) for working in contaminated areas.
* Recognize and follow plant tagging procedures and perform a Tagging DLA.
* Comprehend how to read plant radiation levels and exposure reduction processes.
* Interpret dose levels allowed for safe exposure to radiation.
* Identify and apply appropriate safety procedures.
(1 C: 0 lect/pres, 0 lab, 1 other)

NUCP 2516 - Nuclear Plant Electrical Job Shadow
This course is designed for students to follow an electrical technician around to see all procedures and processes an electrical technician does in the nuclear field.
Student Learning Outcomes:
* Practice all rules and regulations needed for technician in the plant.
* Sit in on a job briefings and go over any complications or hazards that the technicians should be aware of during the job.
* Perform plant entry procedures and learn how to log in and out of a work order and the plant.
* Know how to monitor your dose level while in the plant.
* Learn what an electrical technician does in the plant.
* Identify and apply appropriate safety procedures.
Corequisite(s): NUCP2512
(1 C: 0 lect/pres, 0 lab, 1 other)

NUCP 2520 - Nuclear Plant Mechanical Job Shadow
This course is designed for students to follow a mechanical technician around to see all procedures and processes a mechanical technician does in the nuclear field.
Student Learning Outcomes:
* Practice all rules and regulations needed for technician in the plant.
* Sit in on a job briefings and go over any complications or hazards that the technicians should be aware of during the job.
* Perform plant entry procedures and learn how to log in and out of a work order and the plant.
* Know how to monitor your dose level while in the plant.
* Learn what an electrical technician does in the plant.
* Identify and apply appropriate safety procedures.
(1 C: 0 lect/pres, 0 lab, 1 other)

NURS 2401 - Transitional Nursing Concepts
This course builds on the foundations of the practical nursing curriculum and focuses on the role transition to the professional level of nursing. Concepts of professional behaviors, ethical and legal issues, communication, evidenced-based practice, and informatics are introduced in this course. Concept mapping is introduced as a critical thinking tool that incorporates concepts of assessment, caring interventions, teaching and learning, and clinical decision making.
Student Learning Outcomes:
* Identify concepts of effective communication. (SLO 1)
* Define the concept of teaching and learning in the role of the nurse and examine strategies utilized in the care of patients. (SLO 1)
* Identify culture and diversity concepts to be considered in the provision of nursing care to diverse populations. (SLO 1)
* Define the concept of clinical decision making utilizing the nursing process and concept mapping to plan patient care. (SLO 2)
* Explain the knowledge and skills related to informatics and technology that are essential for safe quality patient care. (SLO 3 and 4)
* Describe professional nursing behavior concepts and various ethical, legal, and regulatory standards that guide professional nursing practice. (SLO 5)
* Distinguish the concept of collaboration as a team member within nursing and other health care disciplines. (SLO 6)
* Discuss the concept of Evidence-Based practice in nursing in the delivery of safe quality care. (SLO 7 and 8)
(3 C: 3 lect/pres, 0 lab, 0 other)

NURS 2411 - Professional Nursing Concepts
This course focuses on the professional behaviors of the registered nurse in preparation for the student to assume the role of the graduate nurse. Nursing concepts addressed are teamwork and collaboration, managing care, advocacy, accountability and professional identity. Course content also includes health care delivery systems, health policy and quality improvement concepts.
Student Learning Outcomes:
* Describe the concepts of advocacy and accountability when partnering with patients, families, and diverse populations in communities. (SLO 1)
* Apply teaching and learning concepts related to staff education and mentoring.
* Analyze clinical decision making and evidence based practice concepts that influence improved best practices. (SLO 2 and 8)
* Compare and contrast informatics concept and technologies that support clinical decision-making, error prevention, and care coordination to minimize risk of harm to patients and providers. (SLO 3 and 4)
* Synthesize ethical and legal concepts in professional nursing practice environments. (SLO 5)
* Explore managing care and collaboration concepts in partnership with patients, families and interprofessional health care teams. (SLO 5 and 6)
* Summarize the importance of a continuously evolving identity as a nurse through the accountability concepts of professional growth and development and promotion of life long competence in nursing. (SLO 5)
* Investigate health care systems, health policy and quality improvement concepts that influence health care goal outcomes for patients, families and diverse populations in communities. (SLO 7)
(3 C: 3 lect/pres, 0 lab, 0 other)

NURS 2415 - Nursing Concepts I
This course assists the student to develop comprehensive knowledge and understanding of focused biophysical, developmental, health, wellness, and illness concepts. 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:
* Demonstrate comprehensive understanding of biophysical, developmental and health, wellness and illness concepts.
* Apply teaching and learning concepts for safe, quality, holistic care of patients and families.
* Apply concepts of assessment, caring interventions and clinical decision making related to health, wellness and illness across the lifespan of the patient.
* Distinguish plans of care based on evidence and research to ensure safe quality holistic care to clients across the lifespan in health, wellness and illness.
* Determine the importance of ethical, legal, and safety concepts that guide patient-centered care.
* Correlate pharmacological interventions related to biophysical, developmental, health, wellness and illness concepts across the lifespan.
(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 medical-surgical patients, children and child bearing families.
Student Learning Outcomes:
* Provide competent patient-centered care applying the concepts of culture, diversity, communication, teaching and learning and caring interventions. (SLO 1)
* Utilize clinical decision making concepts and nursing judgment in the development of individualized plans of care for patients across the lifespan. (SLO 2)
* Implement safety concepts to minimize risk of harm to self, patients and providers. (SLO 3)
* Use informatics concepts to communicate and support safe processes of care. (SLO 4)
* Demonstrate professional behavior related to the concepts of accountability, advocacy, ethical, legal and professional standards of care. (SLO 5)
* Function effectively applying the concepts of teamwork and collaboration within nursing and interprofessional teams. (SLO 6)
* Integrate evidence based practice to assure continuous quality improvement of care. (SLO 7 and 8)
(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:
* Demonstrate comprehensive understanding of biophysical, psychological and social functioning concepts across the lifespan of the patient.
* Apply teaching and learning concepts for comprehensive and complex patients and families across the life span.
* Synthesize the concepts of assessment, caring interventions and clinical decision making in care of complex patients across the lifespan with multiple physical, psychological and social stressors.
* Analyze plans of care based on evidence and research used to provide comprehensive holistic care for complex patients and families across the lifespan.
* Relate the concepts of ethical, legal, and safety that ensure patient-centered care in complex patients.
* Correlate pharmacological interventions related to biophysical, psychological and social functioning concepts in complex patients across the lifespan.
(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:
* Assimilate competency in the provision of patient-centered care to diverse populations in the rural community and complex care environments integrating culture, diversity, communication, teaching and learning, and caring intervention concepts. (SLO 1)
* Relate clinical decision making concepts and nursing judgment in the development of individualized complex plans of care for patients and families in rural and advanced practice environments. (SLO 2)
* Appraise safety concepts and standardized practices within varied health care

systems used to minimize risk of harm to self, patients and providers. (SLO 3)
* Apply informatics and technology concepts to communicate, manage knowledge, mitigate error and support decision making processes. (SLO 4)
* Illustrate professional behavior related to the concepts of leadership and managing care including accountability, advocacy, ethical, legal and professional standards of care. (SLO 5)
* Practice competently applying teamwork and collaboration and leading and managing care concepts within nursing and interprofessional teams. (SLO 6)
* Employ concepts of evidence based practice and quality improvement to improve the quality of care for patients and families within varied health care systems. (SLO 7 and 8)
(4 C: 0 lect/pres, 4 lab, 0 other)

PHIL 1310 - Introduction to Philosophy
Meets MN Transfer Curriculum Goal Area 6 - Introduction to Philosophy explores the questions that arise from standard philosophical attempts at understanding human nature and experience: Are we minds and bodies? Just bodies? Just minds? What difference might it make? What is it to lead a good human life? What does it mean to live in the modern period? Where do conceptions of identity come from? What is knowledge? What can we know, and how do we know it? What is a thing? Do things have essences? Is reality independent of our minds? Is there a God? While the discipline of philosophy does encompass specialized agendas and many complex technical issues, the sorts of questions we will address in this course are ones to which most of us have, at one time or another, formed some answers, however rudimentary. Students will be introduced to classical and contemporary philosophical treatises that offer answers to these fundamental questions, and will be challenged to develop analytic thinking skills to defend and articulate their own answers. In this course, neither fluency nor even passing acquaintance with the history and practice of philosophy is presupposed; curiosity, on the other hand, is.
Student Learning Outcomes:
* Describe the scope and variety of philosophical thought as expressed in historical texts, figures, movements and religions.
* Explain these philosophical works as investigations into the nature of the world, the basis of human experience, and limits and capacities of human understanding.
* Craft an informed, rationally supported personal reaction to these philosophical investigations.
* Defend their own philosophical views concerning the nature of the world, human experience and human understanding.
* Analyze philosophical views contrary to their own.
* Distinguish between the sub-fields of Metaphysics, Epistemology, and Ethics.
* Recognize the applicability of traditional philosophical texts to a diverse range of modern problems.
* Differentiate between classical philosophical worldviews and worldviews of the modern philosophical period.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

PHIL 1320 - Ethics
Meets MN Transfer Curriculum Goal Areas 6 and 9 - 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 they 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 such as the death penalty, poverty, and war. Emphasis is also given to a variety of medical-related issues such as patient-provider interactions, end-of-life decisions, and individual obligations in the workplace.
Student Learning Outcomes:
* Summarize a diverse range of philosophical thought in ethics.
* Demonstrate individual investigations into the basis of human moral values.
* Explain their 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.
* Articulate ethical arguments, including those contrary to their personal views.
* Distinguish between logically supported ethical judgment and popular conceptions of morality.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

PHIL 1340 - Introduction to Logic
Meets MN Transfer Curriculum Goal Areas 2, 4, and 9 - 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 includes traditional Aristotelian logic and modern symbolic logic, validity, invalidity, and proofs. Students will learn a variety of tools for proving validity in deductive arguments and for recognizing formal and informal fallacies in logical reasoning.
Student Learning Outcomes:
* Identify the components of an argument.
* Demonstrate what constitutes a valid logical argument employing multiple analytical tools.
* Apply higher-order problem solving strategies.
* Translate arguments into standard categorical and syllogistic form.
* Translate verbal statements into symbolic statements.
* Differentiate between inductive and deductive arguments.
* Recognize common logical fallacies in argumentation.
* Determine immediate inferences.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

PHIL 1360 - Comparative World Religions
Meets MN Transfer 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:
* Discuss the basic history, philosophies, and practices of major religious traditions and to begin comparative studies
* Interpret religious values, images, symbols, and texts critically
* Understand the role religion plays in culture and to improve (multi) cultural literacy
* Be more effective about one's own beliefs and more tolerant about the beliefs of others
* Describe how religion has shaped and been shaped by civilizations, past, and present
* Demonstrate an awareness of the scope and variety of artistic and literary expressions in religion
* Articulate an informed personal reaction to artistic and literary works in various religions
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

PHYS 1300 - General Physics
Meets MN Transfer Goal 3 - Natural Sciences. This is an introductory course in Physics and its applications. This course is designed for students who have no previous experience in physics. However, a good working knowledge of algebra is assumed. The primary goals of this course are to help individuals acquire a solid foundation in the basic theory and application of classical physics and to apply these skills through problem solving, simulation, and laboratory experiments. Topics include: linear and rotational motion, vectors, forces and equilibrium, work and energy, momentum, properties of solids, liquids and gases, heat and thermodynamics, waves and sound.
Student Learning Outcomes:
* Solve practical problems in all topic areas
* Demonstrate and apply critical thinking skills to solve a variety of problems
* Utilize the scientific method to verify or discover physical phenomena
* Demonstrate the ability to work as a member of a team to achieve a common

goal, by showing respect for other people's needs, ideas, and feelings
* Use appropriate computer technology and software to perform experiments, perform analysis, and prepare reports
* 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
* Demonstrate an awareness of global issues that are affected by the principles of physics
Prerequisite(s): MATH1300 or MATH0480 or MATH0490 or MATH0475 or MATH0485 or Appropriate Accuplacer Score.
(4 C: 3 lect/pres, 1 lab, 0 other)

PLBG 1504 - Piping Procedures I
Students will study plastic piping, which involves the joining of drainage, waste and vent, water supply and 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 comprehend materials and methods of hanger 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, diameters, weights and pressures. Students will also use formulas common to the industry.
Student Learning Outcomes:
* Solve formulas, decimals, fractions, square roots, angle measurement and conversion of length measurements
* Calculate allowances for pipe fittings
* Calculate equal spacing and angles
* Solver 45-degree diagonals and pipe lengths
* Solve for various center to center and end to end pipe calculations
* Calculate for slope and drop
* Solve elevations and grade
* Calculate rolling offsets
* Solve pipe length calculations
* Calculate water measure, rectangular solids and cylinders
* Solve for parallel offsets
* Solve for water pressure, head and force
* Calculate pipe sizing and ration of pipe capacities
(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:
* Define and comprehend words and terms related to plumbing
* Comprehend basic and general plumbing principles
* Identify materials used for pipes, fittings, joints and connection
* Comprehend and apply the principle of traps, cleanouts and identify the materials they are made of
* Identify fixture materials and their usage and be aware of installation procedures
* Comprehend the principals of interceptors, separators and backwater valves
* Identify component parts of hangers and demonstrate knowledge of the installation procedures for hangers and supports
* Comprehend the principles of indirect and special wastes
(3 C: 3 lect/pres, 0 lab, 0 other)

PLBG 1514 - Minnesota State Plumbing Code II
Students will study the Minnesota Plumbing Code which covers the laws, rules and regulations of plumbing installed in Minnesota including plumbing principles, materials, traps and fixtures, water supply and drainage, waste and vent systems used in construction, repair and remodeling of buildings.
Student Learning Outcomes:
* Comprehend component parts, potable water installation and protection from backflow and backsiphonage
* Identify component parts and understand installation procedures for drainage, waste, and vent systems in residential buildings
* Describe the principles of storm drainage systems
* Apply principles of inspections and test of residential plumbing systems
* Explain the qualifications of licensed plumbers and the steps taken to qualify for a plumbing license and when the test is given
* Design a water system for a residence and apartment buildings
* Utilize useful information used in plumbing including weights and measurements, pressure and heads, geometric calculations and pipefitting angle calculations
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 cost for new installations and remodels and prepare projects using industry developed estimating procedures. Estimates include material, fixtures and labor costs with profit and overhead calculations.
Student Learning Outcomes:
* Understand Architects scale
* Interpret and draw simple orthographic drawings
* Comprehend 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 their labor cost
* List all fixtures and estimate materials and labor cost
* Recap all labor and materials cost including markup and profit
* 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 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 roof drain systems including how to size, draw and estimate the cost of a storm water disposal system.
Student Learning Outcomes:
* Interpret architectural drawings for complex residential and light commercial applications
* Prepare isometric sketches of complex residential and light commercial projects
* Prepare isometric drawings to solve construction problem situations
* Complete piping layouts according to blueprint
* Estimate piping and materials for complex residential and light commercial projects
* Interpret complex residential and commercial blueprints
* Read mechanical blueprints
* Plan piping layouts according to the blueprint requirements
Prerequisite(s): PLBG1518
(3 C: 1 lect/pres, 2 lab, 0 other)

PLBG 1524 - Plumbing Calculations II
The application of mathematics to plumbing calculations in developed lengths of pipe, fitting allowances, offsets, areas, volumes, diameters, weights and pressures. Students will also use formulas common to the industry. Emphasis will be put on estimating plumbing jobs. Calculation of profit margin percentages as it relates to the plumbing industry.
Student Learning Outcomes:
* Solve formulas, decimals, fractions, square roots, angle measurement and conversion of length measurements
* Calculate allowances for pipe fittings
* Calculate equal spacing and angles
* Solve 45 degree diagonals and pipe lengths
* Solve various center/center and end/end pipe calculations
* Calculate for slope and drop
* Solve elevations and grade
* Calculate rolling offsets
* Solve pipe length calculations
* Calculate water measure, rectangular solids and cylinders
* Solve for parallel offsets
* Solve for water pressure, head and force
* Calculate pipe sizing and ration of pipe capacities
Prerequisite(s): PLBG1508
(3 C: 1 lect/pres, 2 lab, 0 other)

PLBG 1530 - Piping Procedures II
Students will study the assembly of Cast Iron hub and no-hub soil and waste pipe and fittings. Students will join Cast Iron hub type neoprene and fabricate projects in no hub pipe. Students will fabricate steel piping projects using the fundamentals of cutting, threading, grooving of piping, identify fittings and apply sealants to piping. Students will learn the standard installation procedures of common plumbing fixtures and appliances, which comply with the Minnesota Plumbing Code requirements.
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 gas powered cast iron cutting tools
* Operate steel and cast iron assembly tools
* Operate electric power steel cutting and threading tools
* Comprehend various types of hangers
* Fabricate and assemble steel and cast iron projects
* 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
* Install and repair faucets
* Identify parts of hydronic heating system
* Understand modern hydronic heating
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.
Student Learning Outcomes:
* Complete a series of plumbing tasks which will vary from plumbing business to plumbing business but will be germane to plumbing in general and the shop in particular
* Show up for work, dressed appropriately, with handtools and safety equipment, on time
* Complete assigned tasks
* Follow rules and regulations of the employer
* Complete all assigned responsibilities as required
(2 C: 0 lect/pres, 0 lab, 2 other)

PLBG 1544 - Career Planning/Customer Relations
The student will write a telephone script, fill out a job application, complete an employer ready cover letter and resume. Students will write short, intermediate and long term personal and professional goals. Students will study the fundamentals of good customer relations and apply them in their daily working lives. Student will participate in discussions with guest prospective employers.
Student Learning Outcomes:
* Complete a letter of application/cover letter
* Complete a job application
* Complete a phone script
* Complete an employer ready resume
* Compile short, intermediate and long term goals
* Participate in presentation by potential employers
* Study fundamentals of good customer relations
(1 C: 0 lect/pres, 1 lab, 0 other)

PLTW 1500 - Introduction to Engineering Design
This course covers fundamental principles of the engineering design and development process. Topics include planning and developing, recording, modeling, product analysis and marketing. The student will learn procedures in these areas, developing their own ideas in a lab environment, and presenting their ideas. Specific emphasis is given in drawing and developing through the use of pencil sketching and computer software.
Student Learning Outcomes:
* Apply pencil sketching techniques
* Create multiple-view drawings using software
* Develop a portfolio documenting the entire design process
* Apply process planning, procurement, cost analysis and quality control principles
* Demonstrate the ability to work as a member of team to achieve a common goal, by showing respect for other people's needs, ideas, and feelings
* Use appropriate computer technology and software to perform experiments, perform analysis, and prepare reports
* 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
* Demonstrate safe work habits
(3 C: 1 lect/pres, 2 lab, 0 other)

PLTW 1502 - Principle of Engineering
This course covers fundamental principles and processes of engineering. Topics include definition and types of engineering, the design process, engineering systems, engineering for reliability, and the documentation process used in engineering fields. The student will learn procedures in these areas, developing their own ideas in a lab environment, and presenting their ideas. Specific labs in material testing, statics, and statistics will be utilized. The student will acquire a fundamental approach in the design, development and engineering process. Individuals will apply these skills through problem solving and laboratory experiments.
Student Learning Outcomes:
* Identify different types of engineering fields
* Create rough sketches of designs
* Create simple drawings using CAD software
* Identify different engineering systems
* Perform basic calculations for statics and strength of materials
* Understand basics of dynamics and kinematics
* Demonstrate the ability to work as a member of a team to achieve a common goal, by showing respect for other people's needs, ideas and feelings
* Use appropriate computer technology and software to perform experiments, perform analysis, and prepare reports
* 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
* Demonstrate safe work habits
(3 C: 1 lect/pres, 2 lab, 0 other)

PLTW 1504 - Digital Electronics Engineering
This course covers fundamental principles of digital electronics, number systems and Boolean Algebra. Topics include number conversion, logic simplification, logic gates and their applications, sequential logic, logic families, microprocessors and interfacing. A background in basic electronics is given to aid in the understanding of some of the material presented in this course. The student will learn how to connect logic gates to form functional devices using simulation and breadboards with integrated circuits. Finally, a capstone project of their own

design will be simulated, built on a breadboard and presented.
Student Learning Outcomes:
* Identify logic gates and families
* Simplify combinational logic circuits
* Design, build, analyze, debug, trouble-shoot, test, and repair digital circuits and systems
* Interface digital circuitry with the real world
* Demonstrate the ability to work as a member of a team to achieve a common goal, by showing respect for other people's needs, ideas, and feelings
* Use appropriate computer technology and software to perform experiments, perform analysis, and prepare reports
* 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
* Demonstrate safe work habits
(3 C: 1 lect/pres, 2 lab, 0 other)

PLTW 1506 - Civil Engineering and Architecture
Students learn about various aspects of civil engineering and architecture and apply their knowledge to the design and development of residential and commercial properties and structures. In addition, students use 3D design software to design and document solutions for major course projects. Students communicate and present solutions to their peers and members of a professional community of engineers and architects
Student Learning Outcomes:
* Create working drawings using CAD software
* Create presentation drawings using CAD software
* Calculate costs and quantities for a construction project
* Identify typical components of a residential framing system
* Determine the loads transferred from a steel framed structure to the ground through the foundation
(3 C: 1 lect/pres, 2 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

POLS 1320 - Public Issues
Meets MN Transfer Goals 5 and 9 - History and the Social and Behavioral Sciences and Ethical and Civic Responsibility. This course examines issues of domestic public policy such as poverty, social services, the environment, criminal justice enforcement, economic problems, social inequality, and civil liberties. There will also be consideration of foreign policy issues such as national security, military interventions abroad, nuclear weapons, international economic competition, and human rights.
Student Learning Outcomes:
* Acquire basic knowledge and understanding of several important social problems and public policies
* Gain additional knowledge about current affairs, political controversies, and international relations
* Acquire additional knowledge of the U.S. government and the Constitution
* Develop greater curiosity about the problems and event of the modern world
* Develop enhanced college-level skills in analysis, writing, research and oral presentations
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer 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, treatment and nursing interventions of acute and chronic disorders. It 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:
* Differentiate patterns of health promotion and disease prevention for acute and chronic conditions incorporating transcultural approaches to health
* Discuss Evidenced Based Practice and science to safe patient care
* Identifies care based on professional knowledge and scope of practice to minimize risk of harm and enhance the likelihood of desired health outcomes
* Recognizes individual patient responses to health and illness emphasizing humility, trust, empathy, and support
* Determines the definition, diagnostics, pathophysiology/etiology, signs and symptoms, medical and surgical treatments, and nursing interventions of acute and chronic disorders.
Reference:
National League for Nursing (2010). Outcomes and competencies for graduates of practical/vocational, diploma, associate degree, baccalaureate, master's, practice doctorate, and research doctorate programs in nursing. : National League for Nursing.
Corequisite(s): PRSG2409, PRSG2419, PRSG2429, PRSG2439
(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, treatment and nursing interventions of acute and chronic disorders. It 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:
* Develop patterns of health promotion and disease prevention for acute and chronic conditions incorporating transcultural approaches to health
* Relate Evidenced Based Practice and science to safe patient care
* Prioritizes care based on professional knowledge and scope of practice to minimize risk of harm and enhance the likelihood of desired health outcomes
* Distinguishes individual patient responses to health and illness emphasizing humility, trust, empathy, and support
* Determines the definition, diagnostics, pathophysiology/etiology, signs and symptoms, medical and surgical treatments, and nursing interventions of more complex acute and chronic disorders.
Reference:
National League for Nursing (2010). Outcomes and competencies for graduates of practical/vocational, diploma, associate degree, baccalaureate, master's, practice doctorate, and research doctorate programs in nursing: National League for Nursing.
Corequisite(s): PRSG2450, PRSG2460, PRSG2410
Prerequisite(s): PRSG2409, PRSG2419, PRSG2401, PRSG2439, PRSG2429
(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:
* Summarizes basic concepts and principles of nursing practice in the health care environment
* Relates knowledge and science to nursing practice

* Explains personal and professional standards and behaviors of nursing practice
* Develop therapeutic relationship skills for nursing practice
* Interprets the impact of team functioning on safe quality care
Reference: National League for Nursing (NLN). (2010). Outcomes and competencies for graduates of practical/vocational, diploma, associate degree, baccalaureate, masters, practice doctorate, and research doctorate programs in nursing. New York: National League for Nursing.
(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. This course also consists of a systematic review for the State Licensure Examination. Additionally, this course illustrates employer-employee and consumer relations along with successful completion of a service-learning project.
Student Learning Outcomes:
* Examine how change, technology, legislation, and regulation affect nursing practice
* Evaluate legal and ethical behaviors on regulatory and professional standards
* Explore how economics impacts health care
* Relate evidence based practice and science to quality and safety of client care
* Compare and contrast leadership and management, and recognize the importance of developing leadership skills
* Analyzes factors that contribute to patient safety and methods of improving safety in health care environments
* Determine sources of conflict and conflict resolution strategies
* Distinguishes the role of teamwork in delivering safe, quality care
* Design and complete a service learning project
* Recall prior nursing knowledge and resources in preparation for the NCLEX exam.
Reference: National League for Nursing (NLN). (2010). Outcomes and competencies for graduates of practical/vocational, diploma, associate degree, baccalaureate, masters, practice doctorate, and research doctorate programs in nursing. New York: National League for Nursing.
(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
* Modifies nursing action based on judgment, knowledge, and science in nursing practice
* Displays personal and professional standards of nursing practice
* Exercises safe and quality patient care
* Demonstrates therapeutic interactions in nursing practice
* Exercises effective teamwork by respecting others contributions when providing safe and quality
(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 while keeping in mind the values and belief systems of the individual.
Student Learning Outcomes:
* Identify medication administration concepts that guide nursing practice
* Reviews current technologies and guidelines that promote safe medication administration decisions
* Recognize the evolution of technology and medications as a continual process of change
* Appreciate the patient as a unique being with individual values and beliefs about 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
* Practice 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
* Participates as a positive member in a multidisciplinary health care team
Reference: National League for Nursing (NLN). (2010). Outcomes and competencies for graduates of practical/vocational, diploma, associate degree, baccalaureate, masters, practice doctorate, and research doctorate programs in nursing. New York: National League for Nursing
(3 C: 0 lect/pres, 3 lab, 0 other)

PRSG 2440 - Clinical Application II
This course is a progressive course as it builds on to 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 and contrast 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 and organize care while being cost effective
* Collect and 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
* Implement 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 recognize the importance of life- long learning
* Participates as a positive member in a multidisciplinary health care team
Prerequisite(s): PRSG2401, PRSG2439, PRSG2409, PRSG2419, PRSG2429
(5 C: 0 lect/pres, 5 lab, 0 other)

PRSG 2450 - Family Health Nursing
This course utilizes a family centered approach to introduce the student to the concepts of nursing for obstetrics and pediatrics including labor, delivery, newborn and postpartum care. In addition, this course provides the student with an opportunity to explore the physiological and psychological responses of children and families to illness while considering the family culture. Nursing care

concepts and the application of the nursing process are considered with the focus on health promotion and disease prevention.
Student Learning Outcomes:
* Appraises family and community dynamics for health promotion and disease prevention
* Integrates evidence based practice and science to provide safe family centered care
* Describe diagnostic procedures that contribute to the safety of the mother and infant, and increase desired health outcomes
* Monitor sequential care of the client and family with diversity and integrity while engendering an environment of mutual trust and respect
* Investigate how the family culture is enhanced by community health promotion
Prerequisite(s): PRSG2409, PRSG2419, PRSG2401, PRSG2439, PRSG2429
(3 C: 3 lect/pres, 0 lab, 0 other)

PRSG 2460 - Mental Health Nursing
In this course the student will have the opportunity to build on their understanding of human behavior, mental health disorders, psychoactive medications and therapeutic communication skills. The student will also examine nursing interventions that enable monitoring 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.
* Define HIPAA and its role in mental health care delivery.
* Apply the concepts of personality development, developmental tasks and parenting styles to mental health nursing.
* Identify classifications, uses, actions, side effects and nursing considerations well as consideration for selected psychoactive medications.
* Inspect physical and behavioral symptoms, treatment modalities and nursing care of mental health disorders.
* Apply the concepts of crisis to mental health nursing and the nurses role in crisis situations.
* Examine the characteristics of substance abusers.
(2 C: 2 lect/pres, 0 lab, 0 other)

PSYC 1300 - Introduction to Psychology
Meets MN Transfer Curriculum Goal Area 5 - Survey of contemporary scientific psychology. Includes: research methods, biological bases of behavior, cognitive mechanisms, sensation and perception, learning and behavioral adaptation, development, social influences, and personality disorders.
Student Learning Outcomes:
* Explain the scientific method, data collection, and analysis used in psychological research.
* Apply psychological theories, processes, and concepts to human behavior.
* Explain strategies for self-discovery and insight.
* Compare and contrast normal and abnormal behaviors.
* Analyze cultural and historical perspectives in the science and practice of psychology.
* Demonstrate critical thinking skills applied to psychological phenomena.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

PSYC 1304 - Life Span Developmental Psychology
Meets MN Transfer Goal 5 - Life Span Psychology is both intriguing and biographic because each of us is constantly developing. The course examines human biosocial, cognitive, and psychosocial development in diverse contexts from "Womb to Tomb". It includes coverage of scientific discoveries and theories; critical analysis of evidence supporting or contradicting those theories; basic concepts and terminology; integration of personal experience and developmental theory and research; and related current public policy and diversity issues.
Student Learning Outcomes:
* Explain the scientific methodologies used in developmental psychology.
* Compare and contrast the major developmental theories.
* Demonstrate a basic understanding of the interaction of the developmental process and periods of human development.
* Integrate developmental theory and research with naturalistic and/or other observations of individuals at various stages of development.
* Compare and Contrast ones own personal development and projected future development across the developmental life stages.
* Evaluate and analyze current public policy issues in the field of developmental psychology
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

PSYC 1310 - Psychology of Women
Meets MN Transfer Goal 5 and 7- History/Social, Behavioral Sciences and Human Diversity. Psychology of Women will critically explore the topic of women's psychology in a Sociocultural, historical, global and multi-cultural context. It will focus on many facets of women's lives and the sociocultural impact. The class will compare feminist theories and research with other theories that are sex biased.
Student Learning Outcomes:
* Compare theories and critically examine biases relevant to the psychological factors shaping the lives of women
* Explore the psychological effects of dominance, and subordination in women's relationships
* Examine the beliefs and theories regarding women's sexuality and its impact
* Identify contributions of historical and contemporary women psychologists
* Examine the cultural messages which affect women's development
* Examine up-to-date studies in the field
* Improve research skills and knowledge in understanding and interpreting research
* Be familiar with and to understand feminist theories and research
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

PSYC 1320 - Psychology of Trauma
Meets MN Transfer Curriculum Goal Area 5. This course provides an overview of the psychology of trauma. Topics include a review of acute stress and trauma, a historical perspective, and the impact on individuals, families, and communities. The course also includes education on related psychological disorders and treatment, current trends and research, as well as what communities are doing for prevention. This course is of particular interest for people who are pursuing a field where they will 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.
* Evaluate 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 critique treatment perspectives related to trauma.
* Analyze the different theoretical approaches in psychology used to understand trauma, and the effects traumatic events have on people.
* Evaluate society's response to trauma and traumatic events.
* Discuss and develop solutions for community awareness and prevention strategies.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

PSYC 1350 - Positive Psychology - Building Human Strengths
Meets MN Goal Area 5 - History and the Social and Behavioral Sciences. Positive Psychology uses the scientific method to measure, understand and build the characteristics and virtues that foster a satisfying and meaningful life. The course will include numerous self-assessment exercises to bring awareness and to develop the characteristics such as love, empathy, self-control, wisdom, commitment, happiness, self-respect, hope and friendship. Students will examine research and theory from behavioral, cognitive, developmental, personality and social psychology as well as human physiology and neuroscience. The course will include stress management.
Student Learning Outcomes:
* Demonstrate an understanding about how research is conducted and the goals of researchers in the field of positive psychology and how it differs from other fields of study in psychology
* Describe and critically analyze scientific evidence regarding what creates well

being
* Evaluate and integrate personal strengths and weaknesses through scientific research based assessments
* Identify unhealthy triggers to stress such as alcohol, tobacco, and drugs and critically analyze research and theory on the causes, effects and healthy solutions
* Identify safe and healthy sexual relations
* Apply the Positive Psychology scientific theories of mind-body approaches to their own health
* Analyze alternative theories and treatments such as physical exercise for anxiety, stress, and depression
* Compare and contrast cultural values regarding human strengths
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

PSYC 2310 - Abnormal Psychology
Meets MN Transfer Goal Area 5 - This course explores the nature and causes of abnormal behavior and the terminology used in describing and discussing abnormal behavior. Students will examine current trends and research in the fields of mental health and psychopathology.
Student Learning Outcomes:
* Examine abnormal behavior in a historical and cultural context
* Describe the current system for the classification and assessment of mental disorders
* Categorize the behaviors and syndromes necessary for the diagnosis of mental disorders
* Identify the gender, cultural, psychological, biochemical, and environmental factors which predispose individuals toward mental disorders
* Compare the different approaches used in treating mental disorders including psychotherapy, medical, and non-psychiatric methods such as 12 step programs
* Utilize research and statistics to answer questions about mental disorders and its impact on society
* Examine how legal issues influence the treatment of mental disorders
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

READ 0300 - Foundations for College Reading I
In this course students will learn basic reading and vocabulary strategies for success in college level courses. Course materials will focus on textbooks and other types of reading materials prevalent in both technical and liberal arts courses. This course is developmental and does not fulfill a general studies or general education requirement.
Student Learning Outcomes:
* Students will apply vocabulary building strategies to increase overall reading comprehension and fluency.
* Students will demonstrate the use of academic vocabulary for college level readings.
* Students will identify and use textbook features for vocabulary development and reading comprehension.
* Students will build an extensive reading foundation by using a variety of expository texts and longer passages to strengthen comprehension.
* Students will read and summarize passages.
* Students will identify and differentiate between topics, stated main ideas, major supporting details, and basic patterns of organization in expository passages.
(3 C: 3 lect/pres, 0 lab, 0 other)

READ 0304 - Foundations for College Reading II
In this course students will learn a variety of reading strategies to help them become strategic readers and learners. Course materials will focus on textbooks and other types of reading materials prevalent in both technical and liberal arts courses. This course is developmental and does not fulfill a general studies or general education requirement.
Student Learning Outcomes:
* Students will identify and demonstrate vocabulary decoding strategies to improve analysis of college level readings.
* Students will identify and demonstrate various active college level textbook reading strategies to improve comprehension and retention.
* Students will demonstrate comprehension of college level textbook readings, through identification and analysis of topics, main ideas (both stated and implied), supporting details and patterns of organization.
* Students will summarize, paraphrase, and respond to a variety of college level reading materials to monitor reading comprehension.
* Students will critically analyze and evaluate college-level reading material by making inferences, differentiating between fact and opinion statements, and determining a writers purpose, tone and bias.
* Students will demonstrate understanding of adjusted reading rates based on reading purposes.
Prerequisite(s): READ0300 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

READ 1112 - Study Strategies
Students develop study skills necessary for academic success in college. Students focus on developing personal study habits that aid the student in reaching a desired level of academic accomplishment. Topics include time management, listening skills, test taking strategies, memory, concentration, college textbook reading techniques, taking lecture notes, learning style preferences, test anxiety, stress and procrastination management, visual note taking strategies, reading and evaluating websites, and academic goal setting.
Student Learning Outcomes:
* Assess and reflect individual academic strengths and weaknesses
* Identify and apply a variety of study skill strategies to increase academic success in college
* Develop a personal study plan that is realistic, manageable and uses effective study strategies
* Analyze personal application and results of learned study strategies
* Assess the use of study strategies through written evaluation
* Determine the strategies most effective for their needs and demonstrate adapting them to their specific course tasks and study requirements
* Develop and demonstrate skills in evaluating the accuracy and reliability of Internet websites
Prerequisite(s): READ0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

RERP 2506 - Measurement Systems
This course will expose students to several measuring devices and industry used tools. Students will utilize measurement equipment such as, coordinate measurement machine (CMM), robot arm, optical comparator, calipers, micrometers, angle gages and thread gages. Emphasis will be on the application of these tools in relation to parts and drawings of the parts. Students will also analyze the measurements to the tolerances on the drawing for accuracy.
Student Learning Outcomes:
* Measure parts using the Coordinate Measuring Machine (CMM)
* Measure parts using an inspection arm.
* Measure parts using the optical comparator.
* Measure parts using calipers and micrometers.
* Measure parts using the angle, radius and threads gauges.
* Analyze part measurements and compare to drawing for part acceptance.
Prerequisite(s): CADD2509
(3 C: 1 lect/pres, 2 lab, 0 other)

RERP 2510 - 3D Scanning to Solid Model
Students will use 3D Scanners in the reverse engineering process for data acquisition of existing parts. Students will transform that data into solid model geometry, and make necessary modifications to the solid model files so they can be used to create parts of equal or superior quality.
Student Learning Outcomes:
* Operate 3D scanners to acquire geometric data.
* Convert Geometric data into solid model geometry.
* Use solid modeling software to refine 3D scanner geometric data.
* Follow and use sound maintenance practices for scanning equipment.
Prerequisite(s): CADD2509
(2 C: 1 lect/pres, 1 lab, 0 other)

RERP 2514 - Rapid Prototyping Technologies
Students will learn the different technologies used in additive rapid prototyping machines. The use of these machines is generally the final step before reverse engineered parts are moved into production, and can also be used to create production parts that meet specific criteria. Students will use some of these tech-

nologies to create rapid prototypes for design purposes to check fit and function of components.
Student Learning Outcomes:
* Convert 3D model files into rapid prototyping language.
* Manipulate rapid prototyping software to create code for machine.
* Employ the setup procedure prior to running parts.
* Follow and use sound maintenance practices for rapid prototyping equipment.
* Inspect completed parts for fit, finish and function.
Prerequisite(s): CADD2509
(3 C: 1 lect/pres, 2 lab, 0 other)

RERP 2518 - Advanced Reverse Engineering
This course will provide students with a deeper understanding of the reverse engineering process. It will utilize broad band of measurement tools and instruments to create fully functional industry standard part and assembly drawings. The importance of functional dimensioning and part fitment for assemblies will be a major focus.
Student Learning Outcomes:
* Measure parts with advanced inspection equipment.
* Produce sketches of parts and document measurements.
* 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 manufacturing practices
* Uncover and improve design shortcomings.
* Evaluate and recommend manufacturing processes for component parts.
Prerequisite(s): CADD2509
(1 C: 0 lect/pres, 1 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:
* Learn and apply terminology essential to marketing communications.
* Describe the elements of the market mix: Product, Price, Place (Distribution), Promotion and apply 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.
* List and examine the benefits of each component in a marketing plan.
* Identify and analyze the environmental forces affecting international marketing efforts.
* Differentiate between corporate ethics and corporate social responsibility.
* Learn and differentiate between the steps of the consumer buying decision process and the business buying decision process.
* Calculate 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 it relates to the wholesale distribution process.
* Understand and define differences between service, wholesale and retail customer service environments and cultures.
* Recognize and 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.
* Compare and contrast various customer relationship management systems, technologies, and their utilization as support tools.
* Examine customer service breakdowns, service recovery, and retention methods.
* Explore and research both in-bound and out-bound customer call center delivery systems.
* Practice customer service phone and electronic communications as part of the sales, management and marketing processes.
* Practice customer service presentations in both 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 customers 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:
* Define personal selling characteristics and practice personal selling style.
* Distinguish between traditional and trust-based relationship selling and apply to the steps of the selling process.
* Understand the importance of sales ethics and practice scenarios.
* Categorize and define types of buyers and apply style flexing while role playing.
* Explain buying teams and member roles as it applies to an organizations sales team.
* Describe and utilize various sales tools and their applications in the selling process.
* Define and practice active and effective listening.
* Describe and interpret the different forms of verbal and nonverbal communication used in the sales process.
* Research and recognize the importance of networking.
* Define and understand your customers business.
* Understand customer complaints and resolution methods and apply to the business setting.
* Develop and present the business-to-business (B2B) sales presentations through research, building rapport, determining needs, demonstrating, trial closing, clarifying questions and objections, professional closing techniques, follow-up and use of relationship selling techniques.
(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:
* 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
* Understand and identify procedures for implementing effective control systems
* Use key communication channels, evaluate results, and apply to decision making
* Identify ethical perspectives and practice outlining processes for making ethical decisions
* Develop an appreciation for corporate social responsibility within small and mid size organizations
* Explore processes for quality improvement, team building, and leadership development
* Understand the importance of a team environment and its contribution to the 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.
* Develop center of influence contacts by practicing networking and self-promotion at professional organizational events.
* 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 is 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): SAMG1240, SAMG1236
(2 C: 0 lect/pres, 0 lab, 2 other)

SAMG 1251 - Financial Strategies for Business
Financial strategies for business require the ability to assess the profitability and effectiveness of the organization. In this course students will analyze and interpret financial documents to assess a business financial condition. Emphasis will be placed on various business forms, the accounting cycle, financial statement analysis, and merchandise strategies for owning or operating a successful business. Upon completion of this course students will be able to make informed strategic financial decisions.
Student Learning Outcomes:
* Describe the financial variations of legal business forms (sole proprietorship, partnership, and corporation).
* Interpret financial statements, including profit and loss, sales data, inventory turnover, and monthly and year-end reports.
* Define basic accounting terminology and the accounting cycle.
* Interpret the effects of business transactions on the financial statements.
* Analyze financial statements to determine ROI (return on investment), profitability, and decisions for maximum returns.
* Analyze business scenarios and case studies using financial problem solving and critical thinking skills.
* Interpret and analyze merchandising cases to determine appropriate accounting and profitability decisions.
* Utilize technology tools to create and analyze financial statements.
* Study tax considerations for businesses related to property, income, and sales.
* Define the role of banking and payroll record keeping as a function of business operations.
* Study insurance coverage and premiums for business.
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 managers 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:
* Examine marketing management as it relates to the operation of an organization and the development of its marketing strategy.
* Identify and analyze optimal, serviceable market segmentation schemes used by businesses when developing its marketing plan.
* Evaluate target markets for profitability and service by the marketers firm.
* Communicate succinctly the parameters of that position to a number of different audiences.
* Distinguish and assess the qualities of goods and services as they relate to brands and new products.
* Predict and illustrate how demand and elasticity enter pricing decisions made by marketers.
* Analyze and compare distribution channels of goods and services for efficiency and profitability.
* Develop and evaluate marketing goals for an advertising campaign of a company's products, brands, and position in the marketplace.
* Evaluate and select media options for an effective integrated marketing communications strategy.
* Categorize and compare social media variations as they relate to effective pre and post-purchase information and promotion.
* Analyze and interpret customer evaluation process as it translates to customer relationship management (CRM) and customer lifetime value (CLV).
* Compare and evaluate market research tools used to gather data used for making marketing decisions.
* Develop, present, and evaluate a strategic marketing plan using professional presentation format.
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 and practice the sales process from prospecting through follow-up.
* Demonstrate prospecting methods, lead generation, and cold calling techniques and apply to the sales process.
* Develop network through center of influence contact lists, person-to-person contacts, professional organizations, and print and web resources.
* Practice appointment closing call strategies.
* Research the use of various sales support technologies.
* Utilize value propositions and value statements.
* Write sales proposals utilizing pricing strategies and their appropriate use.
* Explore sales aids as applied to customer engagement.
* Define types of buyers resistance and practice methods to overcome.
* Practice and evaluate sales conversations and flexing techniques for various communication styles.
* Map sales territory and routes utilizing time management.
* Practice self-leadership skills.
* Calculate sales goals, budgets, and practice account management techniques.
* Study and compare compensation packages.
* Study and 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 organizations 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.
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): SAMG1215, SAMG1211
(3 C: 3 lect/pres, 0 lab, 0 other)

SAMG 2285 - Entrepreneurship
Students in this course will generate and evaluate small business opportunities. They will then research and create a business plan taking it from conception through development. Students will utilize technology and key industry factors to determine business venture viability. 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:
* Generate and evaluate ideas for small business opportunities.
* Research and complete feasibility analysis for business plan application.
* Identify and apply research methods to a business plan.
* Research and conduct target market analysis.
* Examine and calculate investment required for business start-up.
* Create, interpret and analyze an income statement, balance sheet, and cash flow statement for inclusion in the business plan.
* Identify and evaluate financing options for business start up or expansion.
* Learn, analyze, and select appropriate business legal structures for business plan development.
* Determine managerial operations of a business for inclusion in business plan.
* Develop, present, and evaluate a business plan.
Prerequisite(s): SAMG1200, SAMG1251
(3 C: 3 lect/pres, 0 lab, 0 other)

SOCI 1310 - Introduction to Sociology
Meets MN Transfer Curriculum Goal Area 5 - 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 concepts to the study of social interactions.
* Examine social structure, organization, 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 concepts and theories to analyze social institutions.
* Develop a sociological imagination.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

SOCI 1350 - Sociology of Marriage and Family
Meets MN Transfer Goal Area 5 - History and the Social and Behavioral Sciences. 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.
Student Learning Outcomes:
* Study historical changes in the concept of family and family structure
* Examine the role of love and intimate relationships in our lives
* Analyze the impact of courtship practices on marriage
* Understand the impact of communication skills on relationships
* Analyze the impact of gender, race, ethnicity, class, sexual orientation, and disability status on family dynamics
* Examine child-rearing practices and parenting skills
* Examine the dynamics of power, violence, and abuse within dating and family relationships
* Analyze the effect of social policy on family dynamics
* Demonstrate understanding of marriage from a variety of sociological perspectives
* Analyze the historical impact popular culture and media has had on American's perceptions about intimate relationships and family life
* Learn constructive ways to resolve family conflicts, interpersonal difficulties and developmental/transitional issues and family crises
* Improve awareness of individual perspectives on intimate relationships and marriage
* Work effectively in collaboration with others within the class
* Apply critical thinking skills to achieve clarity, accuracy, precision, depth, and fair-mindedness in the development of sociological thinking
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer 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): READ0304 and ENGL 0304 or Appropriate Accuplacer 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

SPAN 1310 - Beginning Spanish I
Meets MN Transfer Goal 8 - Global Perspective. This is the first course in a two-semester sequence in Beginning Spanish. Beginning level vocabulary (colors, family, time, basic descriptions) is introduced and then is incorporated into elementary conversations and writing assignments. Grammar presented in the first semester includes present tense of regular and irregular verbs and the future tense. The course covers essential grammar, oral and listening practices, composition and reading. Students are also introduced to the cultures of Spanish-speaking countries, with an emphasis on the differences among them. 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.
* Write grammatically correct sentences in Spanish using increasingly advanced vocabulary.
* Use beginning level Spanish grammar and vocabulary in oral communication.
* Translate Spanish sentences and paragraphs with increasingly advanced grammar and vocabulary.
* Identify effects of the Spanish colonization on Latin America.
* Summarize linguistic and cultural differences between Spain, Mexico and Latino/a culture in the U.S.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(4 C: 4 lect/pres, 0 lab, 0 other)

SPAN 1315 - Spanish for the Professions
Meets MN Transfer Goal Area 8 - Global Perspective. This course is an introduction to basic Spanish communication focusing on the skills needed in specific workplace environments. The aim of this course is to achieve the basic level of proficiency in spoken and written Spanish needed to exchange information and perform basic everyday tasks when in contact with Spanish-speakers in the workplace. Grammar presented in this course includes present and past tenses of regular and irregular verbs, common command forms, and the future tense. While the course covers grammar, reading and writing, the focus will be on listening and speaking through role playing, intensive study, and active participation. Students are also introduced to different cultures, lifestyles, and historical backgrounds, highlighting the similarities and differences, both linguistic and cultural, among the Spanish-speaking countries. No previous knowledge of Spanish is necessary.
Student Learning Outcomes:
* Comprehend basic Spanish using increasingly advanced vocabulary.
* Write grammatically correct sentences in Spanish.
* Communicate effectively and appropriately in Spanish with Spanish-speaking customers, clients, co-workers or patients.
* Summarize historical reasons for the immigration of Spanish-speaking peoples to the U.S.
* Identify linguistic differences between Spanish-speakers in the U.S., Mexico, Cuba, Puerto Rico, El Salvador, Dominican Republic and Guatemala.
* Summarize religious, cultural, and social similarities and differences among Spanish-speaking countries.
* Describe the impact culture and religion has in workplace relationships.
* Identify your role in interacting with diverse cultures.
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

SPAN 1318 - Spanish in the Workplace
This course is a targeted introduction to context-specific Spanish. It is a "topical course," meaning content will vary according to the profession, such as Healthcare Providers, Paralegals, Marketing Professionals, or Dental Professionals. Students should already have a basic knowledge of Spanish grammar and vocabulary in order to succeed in this course. Basic Spanish skills will be broadened with vocabulary pertinent to the profession (e.g. diseases, feelings, accident description, expressions of pain, profession-specific form completion, questions and comfort to the patient, or interviewing an employee). Through role-playing, intensive study, and increased cultural awareness students will learn to better interact with potential patients, customers, clients, and co-workers.
Student Learning Outcomes:
* Recall and apply profession-specific vocabulary.
* Communicate effectively and appropriately in Spanish with Spanish-speaking customers, clients, co-workers, and patients.
* Apply new cultural knowledge when interacting with clients, patients, or co-workers of Spanish-speaking heritage.
Prerequisite(s): SPAN1310 or SPAN1315
(1 C: 1 lect/pres, 0 lab, 0 other)

SPAN 1320 - Beginning Spanish II
Meets MN Transfer Goal 8 - Global Perspective. Beginning Spanish II is the second course in a two-semester sequence in Beginning Spanish. 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 verbal and writing skills, as well as their comprehension of more complicated reading and listening assignments. Grammar studied in this semester includes the past tenses, the subjunctive, 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. food, gender roles, educational system, health, and politics). Linguistic varieties as well as idiomatic differences among Spanish-speaking countries continue to be discussed.
Student Learning Outcomes:
* Demonstrates increased fluency in reading and speaking
* Compose grammatically correct paragraphs and stories in Spanish using increasingly advanced vocabulary and grammatical structures
* Decipher and translate Spanish stories with increasingly advanced grammar and vocabulary by developing a deeper reading comprehension
* Adopt advanced beginning level Spanish grammar and vocabulary in oral communication.
* Summarize the historical and political differences between Spain and its former colonies.
* Explain linguistic and cultural differences between Spanish-speaking countries.
Prerequisite(s): SPAN1310
(4 C: 4 lect/pres, 0 lab, 0 other)

SPAN 2310 - Intermediate Spanish I
Meets MN Transfer Goal 8 - Global Perspectives. 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. Students will learn to listen for general information and for details. They will also develop the ability to listen for specific information. Intermediate Spanish 1 will stress the correct application of grammar through reading, speaking and writing. The writing skills of students in the third semester will expand from being able to write a paragraph with supporting details to being able to write essays with a sequential order. 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 and arts of the different Spanish-speaking countries will be covered extensively through upper level readings and videos.

Student Learning Outcomes:
* Apply grammar rules to spontaneous spoken Spanish.
* Write grammatically correct summaries and essays.
* Use advanced Spanish grammar and vocabulary in oral communication.
* Summarize in written and spoken Spanish, literary works from Spanish-speaking countries
* Interpret, in written and spoken Spanish, literary works from Spanish-speaking countries
* 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 2320 - Intermediate Spanish II
Meets MN Transfer Curriculum Goal Areas 6 and 8 - Humanities and Global Perspective. 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 4 semester 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 persuasive essays as well as short stories in Intermediate Spanish 2. Original literary works will be read and analyzed by students in a written and oral format. The people, culture, history and arts of the different Spanish-speaking countries will be covered extensively through original readings and videos.
Student Learning Outcomes:
* Generate spoken and written Spanish with advanced grammar and vocabulary
* 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
* Evaluate a variety of works of art from the Spanish-speaking world within their historical, social, and political 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.
(1-6 C:)

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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

SURG 1400 - Medical Microbiology
This course will enable you to recognize how you can prevent the spread of disease and promote wound healing. You will study the structure and function of microorganisms, the various diseases caused by pathogenic microorganisms, and the methods of transmission of disease. Various methods of sterilization and disinfection will be studied. You will classify wound types and study the wound healing process in conjunction with the body's defenses against disease. You will also learn to protect yourself by studying the concept of standard precautions.
Student Learning Outcomes:
* Define microbiological terms
* Describe the structure and function of microorganisms
* Recognize diseases caused by pathogenic microorganisms
* Describe how disease are spread
* Explain means of controlling the spread of diseases
* Describe the wound healing process and the factors affecting this process
(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.
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
* Apply metric and apothecary systems of measure.
(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
Corequisite(s): SURG1404, SURG1424
(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, abnormalities, 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 laparotomies, hernia repairs, and surgeries performed on the reproductive, urinary, digestive, skeletal, muscular, endocrine, sensory, respiratory and nervous system organs. 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:
* Explain surgical anatomy and abnormalities that relate to each type of surgical procedure
* Describe preoperative, intraoperative and postoperative processes as they relate to each type of surgical procedure
* Identify surgical procedures according to specialties including General, Gastrointestinal, Obstetrics and Gynecological, Genitourinary, Ear, Nose, Throat, Ophthalmic, Neurosurgery, Thoracic
* Explain diagnostic procedures relating to surgery
* Demonstrate interview techniques and prepare personal resume, cover letter and follow-up letter
Prerequisite(s): SURG1400, SURG1404, SURG1420, 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.
Corequisite(s): SURG1442
Prerequisite(s): EMSC1480, SURG1424 must be taken in the semester immediately preceding SURG 1462
(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.
Corequisite(s): SURG1443
Prerequisite(s): SURG1462, SURG1442
(3 C: 0 lect/pres, 3 lab, 0 other)

TECH 1500 - Applied Algebra
This is an introductory algebra course. The course is designed for students who have no previous experience in algebra and for those who need a review of basic algebraic concepts. The primary goals of this course are to help individuals acquire a solid foundation in the basic skills of algebra and to show how algebra can model and solve authentic real-world problems.
Student Learning Outcomes:
* Solve practical problems in all topic areas
* Apply critical thinking skills to solve a variety of problems
* Utilize a systematic approach to problem solving
* Work as a member of a team to achieve a common goal, by showing respect for other people's needs, ideas, and feelings
* Exhibit professional and responsible behavior by being on time, participating

in class discussion, effective utilization of resources and completing assignments on time
* Demonstrate effective use of resources including faculty, other students, reference materials, industry sources, and the Internet
(3 C: 2 lect/pres, 1 lab, 0 other)

TECH 1522 - Manufacturing Math
This course will focus on the practical applications of applied geometry and trigonometry. Students will be involved in problem solving as it relates to industrial manufacturing and trade applications.
Student Learning Outcomes:
* Solve practical applied problems in plane geometry
* Calculate volumes, surface areas
* Use trigonometric functions and laws to find needed information
* Demonstrate and apply critical thinking skills to solve a variety of problems
* Utilize a systematic approach to problem solving
* Demonstrate timeliness in finishing assignments
* Treat classmates with respect
Prerequisite(s): TECH1500 or MATH1300
(4 C: 3 lect/pres, 1 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 1540 - Technical Communications
Students are introduced to the correct procedures for verbal and written communication in the technical field including and presenting technical data and working in a team environment.
Student Learning Outcomes:
* Define and relate technical writing to the expectations of the workplace
* Prepare various types of reports
* Organize ideas and collect information for the creation of an outline
* Prepare or present visual aids
* Prepare an informational report
* Develop a resume
* Cooperate with teammates
* Demonstrate the ability to meet time deadlines
Prerequisite(s): TECH1530 or CPTR1210
(1 C: 0 lect/pres, 1 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 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), 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
* Evaluate varied welding processes and applications to your trade
(2 C: 1 lect/pres, 1 lab, 0 other)

TECH 1554 - Basic Electric Circuits
This course gives students a fundamental understanding of electrical circuits, components, test equipment, and troubleshooting techniques. Students will develop skills in reading electrical prints, using a volt-ohm meter, ammeter, connecting and testing common electrical components: such as switches, relays, solenoids, and motors.
Student Learning Outcomes:
* Demonstrate safe work habits consistent with industry standards and college policy
* Demonstrate the ability to wire a basic electrical circuit as shown by an electrical wiring diagram
* Use appropriate instruments to measure voltage, current, resistance and continuity
* Differentiate between alternating current and direct current power sources
* Troubleshoot and repair faculty electrical circuits
* Demonstrate the ability to work as a member of a team
(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 1310 - Theatre Appreciation
Meets MN Transfer Goal Area 6 - Humanities and Fine Arts. This course is designed through a broad survey of dramatic text/performance, to improve students'

understanding and appreciation of Theatre and Humanity. Through explorations in dramatic literature, as well as recorded and live performance, students will gain insight into Theatre-past and present. We will survey the history of Theatre and the theatre of history, gaining a deeper appreciation of our individual roles in these entwined processes.
Student Learning Outcomes:
* Define Theatre
* Recognize historical/cultural distinctions
* Explore the role of Theatre in history
* Differentiate types of theatre
* Identify themes in theatrical text/performance
* Examine themes in specific works of drama
* Relate themes to history/society
* Apply critical thinking skills to achieve clarity, accuracy, precision, depth, and fair mindedness to reading, speaking, writing, and listening
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

THTR 1360 - Acting for Everyone/Beginning Acting/Acting I
Meets MN Transfer Goal 6 - Humanities and Fine Arts. This course is designed, through explorations in 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.
Student Learning Outcomes:
* Develop strategies for research, preparation, and rehearsal of group and individual presentations
* Demonstrate an understanding and thoughtful evaluation of different emotional states
* Give thoughtful, rehearsed preparation for presenting academic and creative works
* Work effectively in collaboration with others
* Write effectively for different contexts and readers
* Improve self-awareness and self-confidence
* Apply critical thinking skills to achieve clarity, accuracy, precision, depth, and fair-mindedness in analyzing texts/performances in classroom discussions and in writing assignments
Prerequisite(s): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

TRAN 1502 - General Service
This course is an introduction to the transportation industry. Materials covered will include an overview of the entire vehicle layout and components and correct procedures and intervals for servicing and maintaining multiple types of vehicles. Students will have a strong emphasis on shop safety, vehicle lifting and hoisting, along with the use of electronic service information, technical service bulletins and repair orders. Students will also be introduced to shop tools and equipment and 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, serpentine belt/tensioner inspection and replacement, tire services and repair.
* Comprehend waste handling procedures and comply with EPA and MPCA regulations.
* Demonstrate minor battery service and replacement using correct procedures and precautions.
* Perform cooling system test, maintenance and minor repairs to vehicles.
* Analyze electronic service information and technical service bulletins.
* 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.
* Produce a complete repair order.
* Identify the different types of fasteners and hardware used in the transportation industry.
(2 C: 1 lect/pres, 1 lab, 0 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 1516 - Scan Tool Data Acquisition
Students will study how to acquire and store data from various automotive computer systems using factory and aftermarket scan tools. Students should be able to describe automotive computer operation and perform service in accordance with manufacturer's procedures.
Student Learning Outcomes:
* Identify typical automotive computer operation on late model vehicles
* Demonstrate job entry skill development when performing basic engine monitoring with scan tools
* Perform a computerized scan analysis
* Be aware of ethical practices as it relates to engine computer service procedures
* Exhibit technician/mechanic professionalism
(1 C: 1 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. Studies include shop safety, haz-mat identification, haz-mat source identification, storage and handling of haz-mat, personal and environmental effects of haz-mat, emergency procedures involving haz-mat, and pollution prevention techniques.
Student Learning Outcomes:
* Access and utilize safety and environmental information to improve the workplace and global environments
* Recognize their professional obligation to explore and develop pollution preventive maintenance practices
(1 C: 1 lect/pres, 0 lab, 0 other)

TRAN 1520 - Workplace Perceptions and Expectations
The workplace is filled with expectations of the employee, employer, and customers. This course will explore issues concerning safety, performance, and workplace ethics. Students completing this course will develop skills to perform successfully in the transportation industry.
Student Learning Outcomes:
* Communicate effectively in the workplace
* Emphasize communication skills with co-workers, employers, and customers
* Utilize knowledge to complete a resume
(2 C: 2 lect/pres, 0 lab, 0 other)

TRAN 2514 - Basic Air Conditioning
This course covers the principles of air conditioning systems, the various types of systems, diagnosis of malfunctions and proper legal procedures for handling refrigerants. Students will learn to test and repair automotive or truck systems. Hands on experience will include evacuating, replacing of defective components, charging and performance testing air conditioning systems.
Student Learning Outcomes:
* Examine A.C. systems and determine type of system and refrigerant used

* Observe all EPA regulations and perform AC service in compliance to these regulations
* Perform partial recharge or complete recharge and performance tests
* Perform refrigerant reclaiming and recycling procedures
* Perform refrigerant leak detection using electronic or dye methods
Prerequisite(s): TRAN1502, TRAN1504, TRAN1504 or ABCT1506
(2 C: 1 lect/pres, 1 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 a 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-S), 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-S 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-S operations on carbon steel.
Prerequisite(s): READ0304 or Appropriate Accuplacer Score.
(1-5 C: 1 lect/pres, 4 lab, 0 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): READ0304 or Appropriate Accuplacer Score.
(1-3 C: 1 lect/pres, 2 lab, 0 other)

WELD 1520 - Metallurgy and Safety in Fabrication
This course covers the study of metals and how to safely join them in the fabrication 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): READ0304 or Appropriate Accuplacer 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:
* Interprets basic elements of a drawing or sketch.
* Interprets welding symbol information.
* Prepares an applicable bill of materials.
* Performs conversions of standard inch and metric measurements.
* Solve the common welding/fabrication workplace problems involving perimeter, area, surface area and volume.
Prerequisite(s): MATH0405 or Appropriate Accuplacer Score.
(1-2 C: 2 lect/pres, 0 lab, 0 other)

WELD 1533 - Fabrication Print Reading
This course brings all the fundamental component of welding blue prints together that make up structures in industry. The student will break down welding blue prints to develop the skill needed to fabricate individual component parts that will makeup welded structures. There will be discussions on the different welding blue prints and symbols in the various organizations in the welding field. Written and Fundamental tests will be done in accordance with the American Welding Society (AWS) SENSE curriculum and code books.
Student Learning Outcomes:
* Pass AWS SENSE Practical Knowledge of Drawing and Welding Symbol Interpretation
* Interpret welding symbol information
* Fabricate parts from a drawing or sketch
* Prepare an applicable bill of materials
* Perform conversions of standard inch and metric measurements

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. Time will be spent in the lab working with a wide variety of equipment to repair and fabricate new weldments. 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
* Pass AWS SENSE Practical Knowledge of Welding Inspection and Testing
* 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
* Fabricate various projects using blueprints and basic hand tools
* Research employable companies to better prepare for interviewing
* Develop understanding of filler metals and their proper uses
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 in order to evaluate the effectiveness and efficiency of water and wastewater treatment processing. Course also includes: laboratory safety, the identification, care, and use of laboratory equipment.
Student Learning Outcomes:
* Understand the importance and purpose of laboratory safety
* Perform total coliform procedure and interpret results
* Conduct basic water tests using Hach kits
* Identify laboratory equipment, its care and use
* Perform and interpret results of basic solids analysis of wastewater samples
(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.
Prerequisite(s): WETT1506, WETT1510, WETT1502
(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.
Prerequisite(s): WETT1506, WETT1510, WETT1502
(3 C: 2 lect/pres, 1 lab, 0 other)

WETT 1522 - Water Plant Operation II
Students in this course will continue to study the various techniques and methods required to provide a safe, sanitary water supply for the public. The course will focus on water softening and stabilization techniques currently being applied by water industry. The course also examines water fluoridation and adsorption treatment. Plant operation procedures and evaluation of treatment performance will be analyzed both mechanically and by generating and evaluating laboratory data to verify regulatory compliance.
Student Learning Outcomes:
* Assess the chemistry of water softening and combine it with operational data to show an understanding of this procedure.
* Perform pre and post analysis of a water sample in order to determine the adequate chemical dosage required for removal of hardness, turbidity and color using safe and efficient procedures.
* Investigate the importance of providing a stable water supply from both a health and economic perspective.
* Judge the importance and application situations of using adsorption as a water treatment alternative.
* Evaluate the chemicals used to fluoridate a water supply and compare techniques used to feed and apply by calculating and monitoring dosages.
* 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.
Prerequisite(s): WETT1506, WETT1510, WETT1502
(3 C: 1 lect/pres, 2 lab, 0 other)

hnWETT 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 Plant Operation I
This course will assist students in understanding preliminary, primary and secondary operation and process control at a wastewater treatment facility. The concept of rotating biological contractors and trickling filter operations and maintenance will be presented as the secondary processes. 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 preliminary treatment, primary treatment and secondary treatment within a wastewater treatment facility
* Relate control parameters with lab analysis associated with individual treatment processes as well as identify potential hazards in a wastewater treatment facility, lab settings and demonstrate the knowledge and ability to identify and correct unsafe and/or harmful conditions
* Identify and classify lift stations and describe their function in a wastewater collection system
* Compute mathematical functions relative to the operation of wastewater treatment processes
* Observe 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 Plant Operations II
Students will gain an understanding and develop skills, knowledge, 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. The laboratory component presented in this course will require a synthesis of prior theory and practice.
Student Learning Outcomes:
* Assess treatment processes and control techniques for pond systems, septic systems and activated sludge systems.
* Select lab test and relate control parameters to lab analysis results associated with individual treatment processes and the overall treatment facility in a safe and efficient manner.
* Complete necessary forms and reports required by regulatory agencies.
* 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.
* Weigh ability to cooperate and work with others, troubleshoot systems, problem solve and communicate, orally and in writing.
Prerequisite(s): WETT1534 (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 chlorination will be the main focus of the disinfection methods discussed. Calculations of chemical dosages safety practices involved with handling chemicals will also be included in the study of collection and disinfection systems. 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 waters and wastewaters.
* Inspect and explain the mechanical equipment and uses of the equipment in the chlorine feed system.
* 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 synthesize all courses in the Water Environment Technologies program. The process of synthesis will assist students in passing their state "class D" certification examination and to complete an internship in cooperating water and wastewater treatment facilities. Students will also complete the process of researching and applying for employment, using a variety of methods learned in the water and wastewater industry. Use of the D2L online learning environment will be utilized in this class.
Student Learning Outcomes:
* Develop and prepare a resume and cover letter
* Identify and explore sources of employment
* Identify job opportunities and submit applications for employment
* Conduct interviews and perform self-assessments in relation to employment potential
* Solve mathematical problems associated with the operation and control of water and wastewater treatment facilities
* Observe and assist with real-life treatment facility operations and problem solving
* Complete packets in preparation for sitting of state water and wastewater examinations
* Demonstrate ability to listen, organize, creatively think and develop, and communicate orally and in writing
Corequisite(s): WETT1546
Prerequisite(s): WETT1554, WETT1502, WETT1506, WETT1510, WETT1514, WETT1522, WETT1526, WETT1538, WETT1542
(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 operator's license upon meeting the state and federal requirements for biosolids application.
Student Learning Outcomes:
* Identify and describe the main subparts of CFR part 503
* Identify the requirements for biosolids classification
* Complete necessary forms and reports required by regulatory agencies
* Calculate biosolids loading and application rates and other mathematical computations associated with operation and control of biosolids
* Identify and explain the importance of management practices and record keeping
* Describe potential violations and penalties
* Observe and/or assist with the application of biosolids to a land application site
Prerequisite(s): WETT1502, WETT1506, WETT1510
(3 C: 3 lect/pres, 0 lab, 0 other)

WETT 1562 - Backflow Prevention and Control
This course will train the small water system operator to identify areas where backflow prevention is required. The course will also include what the different types of backflow devices are available and the proper application of such devices. Operators will also learn about the potential health concerns related to cross connections and understand the terminology of this subject.
Student Learning Outcomes:
* Distinguish between the various types of backflow prevention devices
* Apply backflow prevention devices in proper applications
* Differentiate between backflow and back-siphonage
* Describe and identify cross connections in a public water supply
* Identify the public health concerns associated with cross connections
(1 C: 1 lect/pres, 0 lab, 0 other)

WETT 1564 - Applying Water Operator Math Skills
This course is designed to train the small water system operator the basic math skills in order to properly operate and maintain a public water system. Pro-

cedures that will be covered will include area volume, quantity and velocity calculations, chemical additions and dosage calculations. Formula selection and calculator usage will also be included.
Student Learning Outcomes:
* Manipulate basic mathematical formulas required by small system operators
* Troubleshoot results of water treatment processes based on results of calculations
* Demonstrate mastery with use of calculators
* Demonstrate ability to assist others with interpretation of data from calculations
* Demonstrate ability to select proper formulas associated with desired information
(1 C: 1 lect/pres, 0 lab, 0 other)

WETT 1566 - Disinfection II, Gas Chlorinators
In this course small system operators will learn the purpose of disinfection processes. Topics that will be covered in this class will include: chemistry of chlorination, chlorine safety requirements, and calculations of dosage. The focus of this course will be on gas chlorination and chlorinators. Students will be required to identify, repair and maintain all components in a gas chlorination system and to recognize associated problems with a failed or failing system. Also, students are expected to learn the standards set forth by the AWWA for materials, installation and application of chlorine facilities.
Student Learning Outcomes:
* Apply the A and B repair kits to 150 pound 1 ton Chlorine containers
* Describe breakpoint chlorination
* Provide routine maintenance for a chlorine system
* Disassemble and reassemble parts of the chlorine system to include the regulator, ejector, rotometer and other feed system components
* Calculate the dose, demand and residual required in a public water system
* Identify safety issues associated with handling and feeding chlorine
(1 C: 1 lect/pres, 0 lab, 0 other)

WETT 1569 - Fire Hydrants and Water Meters
In this course small water system operators will learn to effectively operate and maintain fire hydrants and water meters. Areas to be included in this course will include, proper hydrant flushing techniques, hydrant maintenance, code requirements, differentiating between hydrant types and evaluation of hydrant conditions. Other subject areas will include planning and inspection of construction projects, winter operation and readiness, and pumping of wet barrel hydrants. Water meter component will include disassembly and reassembly of residential and compound water meters, identification of meter parts and common failures of water meters. Students are expected to distinguish between several types and models of water meters and associated components. Students will study how a meter register works and explain the concept behind magnetic metering. Remote meter reading applications will be explored.
Student Learning Outcomes:
* Demonstrate ability to repair a fire hydrant
* Demonstrate ability to repair water meters
* Distinguish between different types of water meters and fire hydrants and where and how they are used
* Identify and describe proper procedures for opening and closing fire hydrants
* Identify procedures used to secure water meters and identify tampering of metered water supplies
* Demonstrate how to flow test a hydrant
* Explain the color coding of fire hydrants in relation to water flow
* Demonstrate the ability to read a water meter register and convert from cubic feet to gallons
(1 C: 1 lect/pres, 0 lab, 0 other)

WETT 1570 - Fluoridation
This course is designed for small system operators enabling them to understand the purpose, the methods, the maintenance, and the monitoring required to operate a fluoride feed system. The course covers a brief history of fluoridation. Techniques that can be used for system setup and calibration. Calculations required to dilute liquid fluoride. MDH reporting requirements to include process and frequency of reports. Operation and maintenance of chemical feed pumps will be included. Module will also include methods available to analyze fluoride concentrations in public water supplies.
Student Learning Outcomes:
* Explain the function and purpose of a fluoride break box
* Install a fluoride feed line into a water main
* Calculate a fluoride feed rate based on desired concentrations in a water system
* Operate a fluoride system
* Identify the hazards associated with fluoride acid
* Identify limitations for fluoride in a system and associated health affects
(1 C: 1 lect/pres, 0 lab, 0 other)

WETT 1573 - Water Testing for Small Systems
This course will train the small water system operator on how to use laboratory analysis to assist in the operation of a water utility. Operators will learn the proper techniques required to perform water analysis and to apply the results to day-to-day operations. The course is designed to provide the operators with adequate time to develop and perfect the skills to obtain useful data. Procedures that will be covered will include but are not limited to total and fecal coliform analysis, pH, iron and manganese, water hardness, and fluoride concentrations.
Student Learning Outcomes:
* Perform lab tests to industry standards
* Demonstrate proper technique in use of lab equipment
* Identify and choose proper equipment for laboratory tasks
* Provide assistance and work with team members as a cohesive unit
* Demonstrate ability to locate necessary resources
* Troubleshoot associated problems and conflicts within a test procedure
(1 C: 1 lect/pres, 0 lab, 0 other)

WETT 1574 - Ion Exchange/Reverse Osmosis
In this course the operator will gain knowledge and understanding in the operation of ion exchange and reverse osmosis water treatment systems. Operators will practice operating and maintaining treatment units in order to provide both safe and aesthetically desirable drinking water supplies.
Student Learning Outcomes:
* Explain theory of operation for ion exchange and RO units
* Identify phases of unit operation
* Perform basic maintenance activities
* Complete troubleshooting analysis
(1 C: 1 lect/pres, 0 lab, 0 other)

WETT 1577 - Disinfection I, Hypochlorinators
This course is designed to provide small water system operators with the knowledge and skills required to operate water facilities chlorination systems using liquid solutions as hypochlorite. The content will include preparation of various strength chlorine solutions, feed equipment and processes used in the hypochlorite feed system, application and monitoring points and proper installation of such facilities. Safe handling and personal protection equipment when dealing with hypochlorite solutions will be emphasized. Disinfection analysis and calculations of dosages are also likely. Other small systems disinfection methodologies may be incorporated into this course to meet the needs of communities in rural areas.
Student Learning Outcomes:
* Prepare a hypochlorite solution to a predetermined strength
* Identify and assemble a hypochlorinator system including the pump feed system
* Analyze Chlorine residual
* Troubleshoot a problem(s) related to a chlorine feed system
* Perform calculations related to chemical feed for various strength solutions
* Recognize safety issues associated with handling of chlorine chemicals
(1 C: 1 lect/pres, 0 lab, 0 other)

WETT 1580 - Water Communications Network
The purpose of this course is to provide small water system operators with the knowledge and skills required to develop and maintain a functional record keeping and reporting system. Primary areas of coverage will include records and reports that are required by the MN Department of Health. Information will also be provided on documentation requirements of EPA and the Safe Drinking Water Act regulations. The course will assist the operators in developing a method to develop records in order to effectively operate and maintain the public water system in their charge to include items such as routine and preventative maintenance. This course will provide assistance with report writing to enhance the communications process.

Student Learning Outcomes:
* Develop spreadsheets necessary for water facility operations
* Complete standard Minnesota Department of Health forms
* Identify need(s) for records and record keeping
(1 C: 1 lect/pres, 0 lab, 0 other)

WETT 1582 - Water System Corrosion Control
This course is designed to train the small water system operator on the importance of corrosion control in water treatment facilities and distribution systems. Key topics that will be covered and discussed are, use of chemicals, chemical application points, and chemical feed systems. One of the objectives is to be able to identify and recognize a systems need to manage corrosion of the system and recognize the steps to prevent excessive corrosion form occurring.
Student Learning Outcomes:
* Identify corrosion and its effects in a water system
* Demonstrate ability to formulate solutions to colored water problems
* Understand methodologies available to small water system suppliers for managing corrosion in a water system
* Demonstrate the use of chemicals for corrosion control
* Identify causes of aggressive waters
* Distinguish between corrosion and scale formation
(1 C: 1 lect/pres, 0 lab, 0 other)

WETT 1584 - Water Hydraulics
This course is designed to assist operators in applying theories to operations of water a system in relation to the physical effects water has on/in a water system. The affects of head, pressure and force will be explored in both dynamic and static water systems. Head losses, including friction, velocity and total dynamic head will be evaluated. The importance of pressures and pressure losses will be emphasized throughout the course. The concept and effects of water hammer in a water adversely affect a water systems operation and the use of pressure gauges and booster pumps will be demonstrated to replicate what occurs on a daily basis in water systems. Calculations relating to elevation differences and friction losses will be emphasized.
Student Learning Outcomes:
* Compare static to dynamic water system pressures
* Demonstrate the use of piesometers in a water system
* Use pressure gauges to determine head conditions and pump operation
* Identify and differentiate between suction head and suction lift
* Calculate pressure differences throughout a water system
* Explore head losses through friction and minor head loss appurtenances in a water system
(1 C: 1 lect/pres, 0 lab, 0 other)

WETT 1586 - Distribution System Operation and Maintenance
This course is designed to train operators/students to effectively operate and maintain water distribution systems in a safe and effective manner. The course will provide information on system installation, excavation safety, locating and marking of utilities, proper operation of storage facilities, methods of mapping and record keeping and public relations.
Student Learning Outcomes:
* Identify potential sources of contamination and quality problems in a distribution system and associated SDWA regulations
* Identify piping materials and valves available to construct a system
* Operate and maintain storage facilities
* Work safely in a variety of work environments
(1 C: 1 lect/pres, 0 lab, 0 other)

WETT 1588 - Source Water (wells)
This course is designed for small system operators beginning a career as a water operator and for current operators to upgrade their skills and abilities relating to water treatment operator duties. The course covers basic knowledge and understanding of source waters and wells, how they are constructed, protected, monitored and maintained to provide for a constant, safe supply of water for consumers. Students are required to participate in discussions involving the course topics and hands-on exercises developed specifically to enhance the skills and understanding of water system operators. Students will also be able to identify the components of a well system and calculate the production of the well based on actual measurements taken in the field. Students will begin to develop the necessary attitude and values as have become expected by professionals and peers in this industry.
Student Learning Outcomes:
* Identify and define components and methodologies of wells and well construction
* Identify and construct an inner wellhead protection zone
* Determine well levels through physical measurements and mathematical calculations
* Determine well production and well capacity using data collected through direct measurements
(1 C: 1 lect/pres, 0 lab, 0 other)

WETT 1591 - Pump Operation and Maintenance II (Centrifugal)
This course is designed to enable small water system operators to understand the theory and operation of water pumps. The course will include the operation and maintenance requirements for centrifugal and other chemical and water pumps used in utilities today. Topics will include repair and maintenance, parts identification, total head calculations, adjustment and controls, applications and calibration procedures. Class will include hands-on maintenance activities of pumps in laboratory setting using system simulations.
Student Learning Outcomes:
* Develop skills relating to operation and maintenance of centrifugal pumps
* Identify applications for the use of various types of pumps
* Repack a pump packing gland and fit a pump with a mechanical seal
* Size pumps for proper system size
* Demonstrate ability to apply pump curves to pump operation
* Determine head conditions for pump applications
* Identify cavitation in centrifugal pumps and demonstrate how to correct problems
(1 C: 1 lect/pres, 0 lab, 0 other)

WETT 1592 - Water Filtration
This course is designed to train small water system operators to understand the theory and design of water filtration. Information will be presented on both gravity and pressure filtration systems. Topics will include determining when and how to backwash, what parameters to monitor and how they can be implemented into filter operation. The course will also include information on aeration and chemical additions used with filtration systems.
Student Learning Outcomes:
* Demonstrate ability to backwash filters
* Differentiate and describe methods of filtration
* Establish guidelines/parameters for filter wash cycles
* Identify treatment methods incorporated with filtration of water
(1 C: 1 lect/pres, 0 lab, 0 other)

WETT 1594 - Water Exam Preparation
This course is designed to assist operators in preparing for State of Minnesota licensure (upper level). Students will be supplied with materials necessary to study and practice for their exams. Content for each licensure level will be provided. This course will provide training with math skills, Regulations, maintenance, process control and operation knowledge as well as distribution system components and other pertinent components in water treatment systems. Students will be required to complete a variety of tests addressing content covered in the course and reference materials. Materials and tests will be provided in electronic and manual/paper formats.
Student Learning Outcomes:
* Identify various contaminants and their minimum set-back distances
* Complete written tests and worksheets
* Interpret/understand the rules and regulations of the SDWA to a level expected for individual licensure classifications
* Compute mathematical calculations as they apply to the water industry
* Identify and distinguish between primary and secondary standards
(1 C: 1 lect/pres, 0 lab, 0 other)

WETT 1596 - Iron and Manganese Treatment Techniques
This course is designed to train small water system operators to understand the sources of iron and manganese in drinking water supplies. Information will be

presented on treatment techniques, test methods, impacts on and with-in treatment systems as well as chemical and physical processes utilized for removal. Students will review and discuss the effects of iron and manganese on the customers and heating systems throughout their service area. Critical evaluation of the secondary maximum contaminant levels will be explored. The course will also include exploration of aeration systems and chemical addition used in conjunction with filtration systems for the removal of iron and manganese.
Student Learning Outcomes:
* Demonstrate ability to differentiate, visually, the effects of iron and manganese in a public water supply
* Differentiate and describe methods of physical treatment
* Identify and demonstrate chemicals and chemical addition methods for the removal of iron and manganese
* Perform mathematical calculations to establish solution strength and dosage requirements to water supplies
* Identify potential impacts of iron and manganese in water supplies
(1 C: 1 lect/pres, 0 lab, 0 other)

WMST 1300 - Introduction to Women's Studies
Meets MN Transfer Curriculum Goal Areas 2 and 7 - 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): READ0304 and ENGL 0304 or Appropriate Accuplacer Score.
(3 C: 3 lect/pres, 0 lab, 0 other)

Administration, Faculty, and Staff

Aeshliman, **Simone** (saeshliman@sctcc.edu)..... (320) 308-5099
Math Instructor
AF, Northwest Technical Institute
BA, Hamline University
MS, St. Cloud State University

Akerman, **Patricia** (pakerman@sctcc.edu)..... (320) 308-5966
Librarian
AAS, Itasca Community College
AA, Itasca Community College
BA, College of Saint Scholastica
MED, College of Saint Scholastica

Allex, **James** (jallex@sctcc.edu)..... (320) 308-6528
Automotive Service Technician Instructor
Diploma, St. Cloud Technical and Community College
AAS, St. Cloud Technical and Community College

Anderson, **James** (janderson@sctcc.edu)..... (320) 308-5013
Accounting Instructor
BS, St. Cloud State University
MSC, St. Cloud State University

Anderson, **Roseanne** (randerson@sctcc.edu)..... (320) 308-0978
Administrative Assistant Dean of Trades & Industry
Diploma, St. Cloud Technical and Community College

Barker, **Aaron** (abarker@sctcc.edu) ..... (320) 308-6518
Energy/Mechatronics/Instrumentation Instructor
Diploma, Ridgewater College

Bauer, **Jacqueline** (jbauer@sctcc.edu)..... (320) 308-5486
Placement Coordinator/Recruiter
Diploma, RASMUSSEN COLLEGE
AA, St. Cloud Technical and Community College

Baugh, **Anita** (abaugh@sctcc.edu) ..... (320) 308-5936
Director, Financial Aid
BS, Indiana State University
MS, Southwest Minnesota State University

Behn, **Clint** (cbehn@sctcc.edu) ..... (320) 308-3382
General Maintenance Worker

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 Américas-Puebla, Mexico
EDD, University of St Thomas

Berg, **Judy** (jjacobsonberg@sctcc.edu) ..... (320) 308-5096
Counselor
BS, St. Cloud State University
MS, St. Cloud State University

Bergquist, **Viola** (vbergquist@sctcc.edu)..... (320) 308-5177
Chief Information Officer
BA, University of North Dakota
MSC, St. Cloud State University

Berkey, Maggie (mberkey@sctcc.edu)..... (320) 308-5955
Biomedical Instructor
AAS, Southest Technical Institute

Bertram, **Mona** (mfelling@sctcc.edu) ..... (320) 308-5025
Computer Programming Instructor
AAS, St. Cloud Technical and Community College
AA, Anoka-Ramsey Community College
BS, St. Cloud State University
MS, St. Cloud State University

Bjork, **John** (jbjork@sctcc.edu) ..... (320) 308-5757
College Lab Assistant - Disability/Special Needs
BA, Minnesota State University Moorhead

Blanchette, **Kevin** (kblanchette@sctcc.edu)..... (320) 308-5101
Mathematics Instructor
MS, St. Cloud State University

Blommer, **Christine** (cblommer@sctcc.edu) ..... (320) 308-5479
Administrative Assistant, VP of Administration
AAS, St. Cloud Technical and Community College
AA, St. Cloud Technical and Community College

Bordwell, **Amie** (abordwell@sctcc.edu)..... (320) 308-5942
Enrollment Specialist
BS, St. Cloud State University
MA, St. Cloud State University

Borgert, **Catherine** (cborgert@sctcc.edu)..... (320) 308-0973
Sociology Instructor
BS, St. Cloud State University
MS, St. Cloud State University

Brambrink, **Jaclyn** (jbrambrink@sctcc.edu) ..... (320) 308-5418
Practical Nursing Instructor
AAS, St. Cloud Technical and Community College
BSN, Minnesota State University Moorhead

Brandel Ryder, **Paula** (pbrandel@sctcc.edu) ..... (320) 308-5321
Art Instructor
BFA, University of Minnesota
BA, University of Minnesota
MA, University of Iowa
MFA, University of Iowa

Brix, **Stephanie** (sbrix@sctcc.edu) ..... (320) 308-5923
Cashier

Broker, **Margaret** (pbrokerrelph@sctcc.edu) ..... (320) 308-5052
PT Dental Assisting Instructor
Diploma, St. Cloud Technical and Community College
AAS, St. Cloud Technical and Community College
BS, St. Cloud State University

Brooks, **Robert** (rbrooks@sctcc.edu) ..... (320) 308-5989
College Lab Assistant 1 - MIS
AA, Bemidji State University

Brown, **Cheryl** (cbrown@sctcc.edu) ..... (320) 308-5300
Client Partner - Business & Industry
BS, St. Cloud State University

Brunn, **Susan** (sbrunn@sctcc.edu) ..... (320) 308-6021
Enrollment Specialist
AAS, St. Cloud Technical and Community College
BA, Concordia University, St Paul

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

Buchholz, **Daniel** (dbuchholz@sctcc.edu) ..... (320) 308-5954
Outreach Director - Fire/EMS

Buckley, **Susan** (sbuckley@sctcc.edu) ..... (320) 308-5480
Office & Administrative Specialist, Human Resource
AA, North Hennepin Community College
AS, North Hennepin Community College

Budde, **Brandon** (bbudde@sctcc.edu) ..... (320) 308-5304
College Lab Assistant 2 - Paramedicine

Buerman, **Nancy** (nbuerman@sctcc.edu) ..... (320) 308-5919
Administrative Assistant - Dental

Busse, **Theron** (tbusse@sctcc.edu) ..... (320) 308-5016
College Lab Assistant 1 - Transportation Programs
Diploma, St. Cloud Technical and Community College

Carkhuff, **Lois** (lcarkhuff@sctcc.edu) ..... (320) 308-6598
Associate Registrar for Transfer Services
AAS, St. Cloud Technical and Community 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

CCassalom, **Tomy** (tcassalom@sctcc.edu) ..... (320) 308-5979
Registration Assistant
AA, St. Cloud Technical and Community College
CERT, St. Cloud Technical and Community College
AS, St. Cloud Technical and Community College

Cation, **Susan** (scation@sctcc.edu) ..... (320) 308-3382
General Maintenance Worker

Cimenski, **Steve** (scimenski@sctcc.edu) ..... (320) 308-5036
Automotive Service Technician Instructor
Diploma, St. Cloud Technical and Community College
BS, Bemidji State University

Clark, **Sean** (sclark@sctcc.edu) ..... (320) 308-5012
Civil/Highway Technician Instructor
BS, University of Minnesota
MS, University of Minnesota
Graduate Certificate, College of Saint Scholastica

Classen, **Sharon** (sclassen@sctcc.edu) ..... (320) 308-5028
Customer Service Specialist Int-Bookstore

Cone, **Andrew** (acone@sctcc.edu) ..... (320) 308-5315
Substance Abuse Prevention Coordinator
BS, South Dakota State University
MS, South Dakota State University

Crue, **Kelly** (kcrue@sctcc.edu) ..... (320) 308-5336
Speech Communication Instructor
MA, The University of Montana-Missoula
EDD, St. Cloud State University

Cunningham, **Abby** (acunningham@sctcc.edu) ..... (320) 308-5951
Central Services Admin Specialist, Int.
AAS, St. Cloud Technical and Community College

Dahlstrom, **Duane** (ddahlstrom@sctcc.edu) ..... (320) 308-5572
Business Manager

Degen, **Kerry** (kdegen@sctcc.edu)..... (320) 308-5405
Paramedicine Instructor
Diploma, Century College
AAS, Century College
BA, Bethel University

DeRung, **Dale** (dderung@sctcc.edu)..... (320) 308-5742
Automotive Body Mechanics Instructor
Diploma, Willmar Cmty College

Dingman, **Rita** (rdingman@sctcc.edu)..... (320) 308-5439
PT Surgical Technology Instructor
Diploma, St. Cloud Technical and Community College
AAS, St. Cloud Technical and Community College
BS, Bemidji State University
MSED, Southwest Minnesota State University

Doeden, **Gary** (gdoeden@sctcc.edu)..... (320) 308-3382
General Maintenance Worker

Doering, **Nicholas** (ndoering@sctcc.edu)..... (320) 308-5682
Client Partner - Business

Dold, **Nina** (ndold@sctcc.edu)..... (320) 308-3709
Account Clerk

Dombrovski, **Mary** (mjd@sctcc.edu)..... (320) 308-5214
Accounting Instructor
AAS, St. Cloud Technical and Community College
BS, University of Wisconsin-Platteville
MBA, Metropolitan State University

Dufner, **Sally** (sdufner@sctcc.edu)..... (320) 308-6009
General Business Instructor
BA, Minnesota State University Moorhead
MBA, St. Cloud State University

Edwards, **Bretta** (bedwards@sctcc.edu)..... (320) 308-5734
Academic Success Coordinator
BA, St. Cloud State University
MA, St. Cloud State University

Edwards, **Daniel** (dedwards@sctcc.edu)..... (320) 308-5088
Machine Tool Technology Instructor
Diploma, Ridgewater College

Eichten, **Jonathan** (jeichten@sctcc.edu)..... (320) 308-5580
Vice President of Student Affairs
MBA, University of Minnesota
EDD, University of Minnesota

Elness, **Jodi** (jelness@sctcc.edu)..... (320) 308-5087
Director of Enrollment Mgmnt
BS, St. Cloud State University
MA, College of Saint Scholastica

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

Erickson, **Thomas** (terickson@sctcc.edu)..... (320) 308-5994
Administrative Assistant, VP of Academic Affairs

Estwick, **Loren** (lestwick@sctcc.edu)..... (320) 308-5743
Automotive Body Mechanics Instructor
Diploma, Ridgewater College

Evens, **Jennifer** (jevens@sctcc.edu)..... (320) 308-5537
Biology Instructor
AAS, St. Cloud Technical and Community College
BA, St. Cloud State University
MA, St. Cloud State University

Fazekas, **Bryce** (BFazekas@sctcc.edu)..... (320) 308-5993
Human Resources Specialist
BS, Bemidji State University

Feddema, **Lana** (lfeddema@sctcc.edu)..... (320) 308-1595
Registrar
Diploma, St. Cloud Technical and Community College
AA, Lake Superior College
BES, St. Cloud State University

Fiereck, **Jeri** (jfiereck@sctcc.edu)..... (320) 308-6007
Assessment Coordinator

Fischer, **Michelle** (mfischer@sctcc.edu)..... (320) 308-5477
Customer Service Specialist, Intermediate

Flatley, **Thomas** (tflatley@sctcc.edu)..... (320) 308-3382
General Maintenance Worker

Foseid, **Joseph** (jfoseid@sctcc.edu)..... (320) 308-3382
General Repair Worker
Diploma, St. Cloud Technical and Community College

Fritz, **Rose** (rfritz@sctcc.edu)..... (320) 308-6470
Account Clerk, Senior
CEC, Rasmussen College

Gapinski, **Laura** (lgapinski@sctcc.edu)..... (320) 308-5512
Account Clerk Sr.
AAS, Rasmussen College

Garberick, **Thomas** (tgarberick@sctcc.edu)..... (320) 308-5213
Education & Employment Advisor

Gately, **Michael** (mgately@sctcc.edu) ..... (320) 308-5171
Information Technology Specialist 2
AAS, St. Cloud Technical and Community College

Gilmore, **Steven** (sgilmore@sctcc.edu)..... (320) 308-5079
Plumbing Instructor
BS, St. Cloud State University

Goodwin, **Sandie** (sgoodwin@sctcc.edu)..... (320) 308-5174
Account Clerk, Bookstore
AAS, St. Cloud Technical and Community College

Gordon, **Larry** (lgordon@sctcc.edu) ..... (320) 308-5737
CLA1-Medium/Heavy Truck
Diploma, St. Cloud Technical and Community College

Govani, Jay (jgovani@sctcc.edu)..... (320) 308-5516
Physics Instructor
MA, Saurashtra University
PHD, 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

Green-Quayle, **Laurie** (lgreenquayle@sctcc.edu) ..... (320) 308-5921
Surgical Technology Instructor
Diploma, Anoka Technical College
AAS, St. Cloud Technical and Community College

Gress, **Lori** (lgress@sctcc.edu)..... (320) 308-5937
Foundation Director

Griffey, **Stacy** (sgriffey@sctcc.edu) ..... (320) 308-5175
Director of Academic Advising Center
BA, St. Cloud State University
MS, Kansas State University

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 Hosp Grd Frk Clin Prog Rad-T
CEC, University of Iowa College of Medicine
BS, University of St. Francis
MS, St. Cloud State University

Gustafson, Sheila (sgustafson@sctcc.edu)..... (320) 308-5156
Practical Nursing Instructor
AS, Central Lakes College
BS, College of Saint Scholastica

Hallermann, **Jeffery** (jhallermann@sctcc.edu)..... (320) 308-5918
Mechanical Design Instructor
Diploma, St. Cloud Technical and Community College
BS, Bemidji State University

Hansen, **Thomas** (thansen@sctcc.edu)..... (320) 308-5901
Automotive Service Technician Instructor

Hanson, **Jamie** (jhanson@sctcc.edu)..... (320) 308-5060
Environmental Science Instructor
BS, St. Cloud State University
MS, St. Cloud State University

Hart, **John** (jhart@sctcc.edu) ..... (320) 308-5066
Outreach Director

Haus, **Charles** (chaus@sctcc.edu) ..... (320) 308-5111
Welding Instructor
Diploma, St. Cloud Technical and Community College
AA, St. Cloud Technical and Community College
MSED, Southwest Minnesota State University

Helens, Joyce (jhelens@sctcc.edu)..... (320) 308-5017
College President
BA, Saint Martins College
MA, Portland State University

Henderson, **Julie** (jhenderson@sctcc.edu)..... (320) 308-6010
Cardiovascular Technology Instructor

Henkemeyer, **Barbara** (bhenkemeyer@sctcc.edu)..... (320) 308-5906
Dental Hygiene Instructor
AS, Minnesota State University, Mankato
BS, Minnesota State University, Mankato
MS, St. Cloud State University

Hickman, **Dwayne** (dhickman@sctcc.edu)..... (320) 308-5549
Automotive Service Technician Instructor
Diploma, St. Cloud Technical and Community College

Hiemenz, **Karen** (khiemenz@sctcc.edu)..... (320) 308-5017
Administrative Assistant to the President
Diploma, St. Cloud Technical and Community College

Hiestand, **Nathaniel** (nhiestand@sctcc.edu)..... (320) 308-5009
Assistant Director of Student Life
BA, Saint Johns University
MS, St. Cloud State University

Hinnenkamp, **Ruth** (rhinnenkamp@sctcc.edu) ..... (320) 308-5957
Accounting Technician, Custom Training
AAS, St. Cloud Technical and Community College
AA, Anoka-Ramsey Community College
BAS, Southwest Minnesota State University

Hirdler, **June** (jhirdler@sctcc.edu)..... (320) 308-5011
Administrative Assistant

Hoepner, **Matthew** (mhoepner@sctcc.edu) ..... (320) 308-5411
Medium/Heavy Truck Technician Instructor
AAS, Alexandria Technical and Community College
BS, St. Cloud State University

Hollenhorst, **Mark** (mhollenhorst@sctcc.edu) ..... (320) 308-5120
Accounting Instructor
BA, Saint Johns University
MS, St. Cloud State University

Holstad, **Deborah** (dholstad@sctcc.edu)..... (320) 308-3227
Human Resources Director
BA, St. Cloud State University
MS, St. Cloud State University

Horn, **Rocky** (rhorn@sctcc.edu)..... (320) 308-5927
Recruitment and Retention Specialist
BES, St. Cloud State University

Hornseth, **Daniel** (dhornseth@sctcc.edu)..... (320) 308-5365
Director of Marketing

Hutchison, **William** (whutchison@sctcc.edu)..... (320) 308-5398
Master Electrician
Diploma, St. Cloud Technical and Community College

Jacobson, **Nathan** (njacobson@sctcc.edu)..... (320) 308-5998
Admission Representative
BS, St. Cloud State University

Jaenisch, **Rosalie** (rjaenisch@sctcc.edu)..... (320) 308-6155
Medical Records Technology Instructor
Diploma, Ridgewater College
AAS, Ridgewater College
BA, College of Saint Scholastica
BSB, University of Minnesota
MBC, University of Saint Thomas
MS, College of Saint Scholastica

Jensen, **Christ** (cjensen@sctcc.edu)..... (320) 308-5005
College Lab Assistant - Computer Lab
AAS, St. Cloud Technical and Community College

Jensen, **Mary** (mjensen@sctcc.edu)..... (320) 308-5565
Admin Asst , Dean of Math, Sciences & Technology
Diploma, St. Cloud Technical and Community College

Jochum, **Jilleen** (jjochum@sctcc.edu)..... (320) 308-6471
Accounting Officer

Johannes, Jeffrey (jjohannes@sctcc.edu) ..... (320) 308-3382
General Maintenance Worker

Johnson, **Brian** (bjohnson@sctcc.edu)..... (320) 308-1542
Building Maintenance Supervisor

Johnson, **David** (djohnson@sctcc.edu) ..... (320) 308-5044
Mechanical Design Instructor
Diploma, Faribault Technical College

Johnson, **Jed** (jjohnson@sctcc.edu) ..... (320) 308-5975
Architectural Drafting Instructor
Diploma, St. Cloud Technical and Community College

Johnson, **Michael** (mjohnson@sctcc.edu)..... (320) 308-3382
General Maintenance Worker
Diploma, St. Cloud Technical and Community College

Johnson, **Teri** (tjohnson@sctcc.edu) ..... (320) 308-6456
Math Center Coordinator

Kantor, **Cindy** (ckantor@sctcc.edu)..... (320) 308-6641
Admin Asst, Dean of Business, Comm & Humanities
AAS, St. Cloud Technical and Community College
Diploma, St. Cloud Technical and Community College
AA, St. Cloud State University

Kapitzke, **Maria Victoria** (vkapitzke@sctcc.edu)..... (320) 308-5215
Spanish Instructor
BA, Universidad de Sevilla
MA,Universidad de Sevilla

Kapitzke, **Robert** (rkapitzke@sctcc.edu)..... (320) 308-5195
Philosophy Instructor
BS, United States Air Force Academy
MA, University of Florida
PHD, Indiana University-Bloomington

Keeley, **Shaun** (skeeley@sctcc.edu)..... (320) 308-6456
Math Center Coordinator
BS, St. Cloud State University

Keller, **Kristina** (kkeller@sctcc.edu) ..... (320) 308-5538
Associate Vice President for Academic Affairs
BS, University of Minnesota-Crookston
MBA, St. Cloud State University

Kidder, **Randall** (rkidder@sctcc.edu)..... (320) 308-6455
Heating, Air Conditioning & Refrig Instructor
Diploma, Northwest Technical College-Moorhead

Kippley, **Margaret** (mkippley@sctcc.edu) ..... (320) 308-5179
Associate Degree Nursing Instructor
BS, St. Cloud State University
MS, University of Minnesota

Kircher, **Brian** (bkircher@sctcc.edu)..... (320) 308-0901
Construction Electrician Instructor
Diploma, St. Cloud Technical and Community College

Kline, **John** (jkline@sctcc.edu)..... (320) 308-5482
Medium/Heavy Truck Technician Instructor
Diploma, St. Cloud Technical and Community College

Kloos, **Lori** (lkloos@sctcc.edu) ..... (320) 308-5026
Vice President for Administration
BS, Minnesota State University Moorhead

Klug, **Gerianne** (gklug@sctcc.edu)..... (320) 308-1591
Psychology Instructor
BA, St. Cloud State University
MS, St. Cloud State University

Knapek, **Wendy** (wknapek@sctcc.edu) ..... (320) 308-5478
Financial Aid Assistant

Konschak, **Norma** (nkonschak@sctcc.edu) ..... (320) 308-5382
Director of Academic Accountability
BS, North Dakota State University
MSA, Golden Gate University-San Francisco

Korver, **Tiffany** (tkorver@sctcc.edu)..... (320) 308-5080
Academic Advisor
BA, University of Minnesota
MA, St. Cloud State University

Kramer, **Bradley** (bkramer@sctcc.edu)..... (320) 308-5010
English Instructor
BA, St. Cloud State University
MFA, Minnesota State University Moorhead

Kuhn, **Nicolle** (nkuhn@sctcc.edu)..... (320) 308-5145
College Lab Assistant 2 - Nursing
AAS, St. Cloud Technical and Community College

Kvaal, **Daniel** (dkvaal@sctcc.edu) ..... (320) 308-5012
Civil/Highway Technician Instructor

Larison, **Terri** (tlarison@sctcc.edu) ..... (320) 308-3700
Practical Nursing Instructor
AS, Ridgewater College
BS, Minnesota State University, Mankato
MS, Minnesota State University Moorhead

LeBlanc, **Mary** (mleblanc@sctcc.edu)..... (320) 308-5051
Dental Hygiene Instructor
AA, University of South Dakota
BS, University of South Dakota

Lenzen, **Mark** (mlenzen@sctcc.edu)..... (320) 308-3382
General Maintenance Worker
Diploma, St. Cloud Technical and Community College

Lindsey, **Melissa** (mlindsey@sctcc.edu) ..... (320) 308-5024
English Instructor
BA, Moody Bible Institute
MA, St. Cloud State University

Liu, **Tai Jen** (tliu@sctcc.edu)..... (320) 308-5945
Math Instructor
BS, Other Institution
MAST, University of Pittsburgh
MA, University of Pittsburgh

Loewen, **Kathryn** (kloewen@sctcc.edu)..... (320) 308-5485
Admin Assistant, Dean of Nursing and Health
Diploma, St. Cloud Technical and Community College

Loos, **Christopher** (cloos@sctcc.edu)..... (320) 308-6158
Director of Safety

Lourey, **Jessica** (jlourey@sctcc.edu)..... (320) 308-5197
Sociology and English instructor
BA, St. Cloud State University
MA, St. Cloud State University
MS, St. Cloud State University

Lukasek, **Victor** (vlukasek@sctcc.edu)..... (320) 308-5436
Information Technology Specialist 1

Lundblad, **Julie** (jlundblad@sctcc.edu) ..... (320) 308-5076
General Education Instructor
BS, Bemidji State University
BA, Crown College
MA, Bemidji State University

Mackereth, **Kimberly** (kmackereth@sctcc.edu)..... (320) 308-5090
Administrative Assistant, VP of Student Affairs
AAS, St. Cloud Technical and Community College

Majerus, **Melissa** (mmajerus@sctcc.edu) ..... (320) 308-5922
Director of Campus Life
BA, Gustavus Adolphus College
MED, Saint Marys University of Minnesota

Mayer, **Kateri** (kmayer@sctcc.edu)..... (320) 308-5943
Dental Assisting Instructor
Diploma, Central Lakes College
BSED, Bemidji State University

McAllister, **Eric** (emcallister@sctcc.edu) ..... (320) 308-5931
Welding Instructor
Diploma, St. Cloud Technical and Community College
AA, St. Cloud Technical and Community College
BS, Bemidji State University

McClintock, **David** (dmcclintock@sctcc.edu) ..... (320) 308-5032
Information Technology Specialist 1
AAS, St. Cloud Technical and Community College
BS, Bemidji State University

McGuire, **Jeanne** (jmcguire@sctcc.edu)..... (320) 308-5034
Child Care/Guidance/Education Instructor
BA, St. Catherine University
MA, St Thomas College

Mergen, **Jillian** (jmergen@sctcc.edu) ..... (320) 308-5983
Writing Center Coordinator

Mergen, **Robert** (bmergen@sctcc.edu) ..... (320) 308-5902
Construction Electrician Instructor
BS, St. Cloud State University

Meyer, **Susan** (smeyer@sctcc.edu)..... (320) 308-5973
Account Clerk Senior, Purchasing

Middendorf, **Karen** (kmiddendorf@sctcc.edu) ..... (320) 308-6640
College Lab Assistant 2 - Dental
Diploma, St. Cloud Technical and Community College
AAS, St. Cloud Technical and Community College

Miller, **Lisa** (lmiller@sctcc.edu)..... (320) 308-6521
Registration Assistant
Diploma, St. Cloud Technical and Community College
AA, St. Cloud Technical and Community College

Mishow, **Jerold** (jmishow@sctcc.edu) ..... (320) 308-3382
Plant Maintenance Engineer

Missaghi, **Soheyl** (smissaghi@sctcc.edu)..... (320) 308-5409
English Instructor
BA, St. Cloud State University
MA, St. Cloud State University

Mohs, **Bradley** (bmohs@sctcc.edu)..... (320) 308-5037
College Lab Assistant - Culinary Program

Molenaar, **James** (jmolenaar@sctcc.edu)..... (320) 308-5033
Farm Business Management Instructor
AA, Ridgewater College
BS, University of Minnesota
MED, University of Minnesota

Naumann, **Danielle** (dnaumann@sctcc.edu)
College Lab Assistant - Natural Sciences

Netter, **Jacqueline** (jnetter@sctcc.edu)..... (320) 308-5959
Assistant Financial Aid Director
BS, North Dakota State University

Neubauer, **Carolyn** (cneubauer@sctcc.edu)..... (320) 308-5935
Associate Degree Nursing Instructor
AS, North Hennepin Community College
BES, St. Cloud State University
BS, South Dakota State University
MSN, South Dakota State University

Nichelson, **Mark** (mnichelson@sctcc.edu)..... (320) 308-5916
Heating, Air Conditioning & Refrig Instructor
AAS, University of South Dakota
BSE, Dakota State College

Nowak, Eugne (enowak@sctcc.edu)..... (320) 308-3382
General Maintenance Worker

O'Keefe, **Thomas** (tokeefe@sctcc.edu)..... (320) 308-6154
Economics Instructor
BA, Saint Johns University
MBA, St Thomas College

Olson, **Carolyn** (colson@sctcc.edu)..... (320) 308-5156
Dean of Nursing and Health
BSN, Minnesota State University Moorhead
MS, University of Minnesota

Opatz-Osgood, **Clare** (cosgood@sctcc.edu)..... (320) 308-5395
Speech Communications Instructor
BS, St. Cloud State University
MA, Northern Illinois University

Palm, **Jeff** (jpalm@sctcc.edu)..... (320) 308-5924
Advertising Design/Layout/Sales Instructor
BA, Concordia College
MA, North Dakota State University

Parry, **Marge** (mparry@sctcc.edu)..... (320) 308-5028
Central Services Admin. Specialist Sr., Bookstore
Diploma, St. Cloud Technical and Community College

Pearson, **Leanne** (lpearson@sctcc.edu) ..... (320) 308-5047
College Lab Assistant 1 - Auto Body
Diploma, St. Cloud Technical and Community College
AS, St. Cloud Technical and Community College

Pengeston, **Harris** (hpengeston@sctcc.edu)..... (320) 308-5366
College Lab Assistant 1 - MIS

Peterson, **Bruce** (bpeterson@sctcc.edu)..... (320) 308-6639
Executive Dean for Academic Initiatives
BS, Bemidji State University

Peterson, **Kelly** (kpeterson@sctcc.edu)..... (320) 308-3382
General Maintenance Worker

Peterson, **Rita** (rpeterson@sctcc.edu) ..... (320) 308-5031
Dental Assisting Instructor
Diploma, Minnesota State University, Mankato
BS, University of Minnesota

Pfeffer, **Robert** (bpfeffer@sctcc.edu)..... (320) 308-5342
Information Technology Specialist 2-Web Developer
BA, St. Cloud State University
Diploma, St. Cloud Technical and Community College

Plante, **Kerby** (kplante@sctcc.edu)..... (320) 308-5920
Director, Academic Foundations and Achievement

Possail, **Sarah** (spossail@sctcc.edu)..... (320) 308-5074
Information Technology Specialist 2
BA, Dordt College

Potter, **Jennifer** (jpotter@sctcc.edu) ..... (320) 308-5940
Director of Outreach - Health

Preimesberger, **Joseph** (jpreimesberger@sctcc.edu)..... (320) 308-5589
College Lab Assistant 1 - Fire/EMS

Przybilla, **Laurel** (lprzybilla@sctcc.edu) ..... (320) 308-5403
Admin Assistant, Dean of Nursing & Health
Diploma, St. Cloud Technical and Community College

Pueringer, **LeAnn** (lpueringer@sctcc.edu) ..... (320) 308-5221
Academic Coordinator - TRIO

Pundsack, **Marlene** (mpundsack@sctcc.edu) ..... (320) 308-3382
General Maintenance Worker

Raeker, **Alcuin** (araeker@sctcc.edu)..... (320) 308-5902
Construction Electrician Instructor
Diploma, St. Cloud Technical and Community College
BS, St. Cloud State University

Ramanathan, **Gajendranathan** (gramanathan@sctcc.edu)
..... (320) 308-6594
Accounting Instructor
AB, University of Toledo
BBA, University of Toledo
MBA, University of Toledo

Rausch, **Jason** (jrausch@sctcc.edu) ..... (320) 308-5669
Information Technology Specialist 3
AAS, Alexandria Technical and Community College

Redmond, **Keith** (kredmond@sctcc.edu)..... (320) 308-5952
Water Environment Technologies Instructor
AAS, Vermilion Community College
BS, Bemidji State University

Rehnke, **Gary** (grehnke@sctcc.edu)..... (320) 308-5995
Information Technology Specialist 3
Diploma, Anoka Technical College

Reich, **Terry** (treich@sctcc.edu)..... (320) 308-3382
Plant Maintenance Engineer

Reisinger, **Jeremy** (jreisinger@sctcc.edu)..... (320) 308-5934
Chemistry Instructor
BA, Hamline University
MS, University of Minnesota

Rhodes, **Anne** (arhodes@sctcc.edu) ..... (320) 308-5046
Interpreter
AAS, Saint Paul College

Richardson, **Jan** (jrichardson@sctcc.edu) ..... (320) 308-5178
Practical Nursing Instructor
BA, College of Saint Scholastica
MA, Bethel College

Richardson, Kevin (kricharson@sctcc.edu)..... (320) 308-3382
General Maintenance Worker

Roske, **Alexander** (aroske@sctcc.edu)..... (320) 308-5515
Online Learning Assistant
AAS, St. Cloud Technical and Community College

Salner, **Ryan** (rsalner@sctcc.edu) ..... (320) 308-5029
Computer Systems Networking & Admin Instructor
AAS, St. Cloud Technical and Community College
AAS, St. Cloud Technical and Community College
BS, University of Wisconsin-Stout

Schaaf, **Roxanne** (rschaaf@sctcc.edu) ..... (320) 308-6022
Asst Director Enrollment Mgmt
Diploma, St. Cloud Technical and Community College
AAS, St. Cloud Technical and Community College

Scheffler, **Eldon** (escheffler@sctcc.edu)..... (320) 308-5978
Advertising Design/Layout/Sales Instructor
Diploma, St. Cloud Technical and Community College
AAS, St. Cloud Technical and Community College

Schlicht, **Susan** (sschlicht@sctcc.edu) ..... (320) 308-5956
Psychology Instructor
BS, St. Cloud State University
MS, St. Cloud State University
EDD, University of Minnesota

Schmidt, **Mary** (mschmidt@sctcc.edu)..... (320) 308-5230
Speech Communications Instructor
BA, South Dakota State University
MA, South Dakota State University

Schmidtbauer, **Beverly** (bschmidtbauer@sctcc.edu)..... (320) 308-5406
Customer Services Specialist, Sr., Admissions

Scholl, **Stella** (sscholl@sctcc.edu) ..... (320) 308-5085
Associate Degree Nursing Instructor
MSN, Walden University

Scholla, **James** (jscholla@sctcc.edu)..... (320) 308-5252
College Bookstore Supervisor
Diploma, South Central College

Schramel, **Jamie** (jschramel@sctcc.edu) ..... (320) 308-3382
General Maintenance Worker

Shand, **Rebecca** (rshand@sctcc.edu)..... (320) 308-0970
Business, General Instructor
BS, University of Minnesota
MED, University of Minnesota
MBA, St. Cloud State University

Shay, **Timmy** (tshay@sctcc.edu) ..... (320) 308-5915
Truck/Diesel Mechanic Instructor
Diploma, Alexandria Technical and Community College

Shermock, **Carolina** (cshermock@sctcc.edu)..... (320) 308-5040
Administrative Assistant-Custom Training
Diploma, Duluth Community College Center

Shrestha, **Prabesh** (pshrestha@sctcc.edu) ..... (320) 308-5501
Database Developer

Simonson, **Julie** (jsimonson@sctcc.edu)..... (320) 308-5464
Human Resources Technician
BS, St. Cloud State University

Smith, **Lowell** (lsmith@sctcc.edu)..... (320) 308-5405
Paramedicine Instructor
BS, Minot State University

Smith-Stopp, **Chyara** (cstopp@sctcc.edu)..... (320) 308-5903
PT Legal Support Careers Instructor
BA, Stanford University
JD, University of Michigan-Ann Arbor
LLM, Ruprecht-Karls Universitat

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

Spain, **William** (bspain@sctcc.edu) ..... (320) 308-5952
Water Environment Technologies Instructor
Diploma, St. Cloud Technical and Community College
BES, St. Cloud State University

Stang, **Jayme** (jstang@sctcc.edu)..... (320) 308-1541
Office & Administrative Specialist, Intermediate
BS, St. Cloud State University

Stanley, **Jan** (jstanley@sctcc.edu)..... (320) 308-5035
Anthropology Instructor
BA, Mt Mary College
MA, University of Minnesota

Stiles, **Nancy** (nstiles@sctcc.edu) ..... (320) 308-5437
Practical Nursing Instructor
BS, University of Phoenix
MSN, University of Phoenix

Streit, **Stephanie** (sstreit@sctcc.edu)..... (320) 308-6087
Library Technician
AAS, St. Cloud Technical and Community College

Strosahl, **Darrin** (dstrosahl@sctcc.edu)..... (320) 308-5353
Dean of Trades and Industry

Stumpf, **Michele** (mstumpf@sctcc.edu)..... (320) 308-2920
Practical Nursing Instructor
Diploma, St. Cloud Technical and Community College
AS, Anoka-Ramsey Community College
MSN, Walden University

Symanietz, **Emilee** (esymanietz@sctcc.edu)..... (320) 308-5301
Client Partner - Health, Fire/EMS

Tembreull, **Amy** (atembreull@sctcc.edu)..... (320) 308-5921
College Lab Assistant, Surgical Technology

Theisen, **Jason** (jtheisen@sctcc.edu)..... (320) 308-6012
Director of Facilities

Thelen, **Rebecca** (rthelen@sctcc.edu) ..... (320) 308-5359
Administrative Assistant - Academic Advising
BA, St. Cloud State University
BS, St. Cloud State University

Thiesen, **Kenneth** (kthiesen@sctcc.edu) ..... (320) 308-5925
Farm Business Management Instructor
BS, South Dakota State University
MS, Southwest Minnesota State University

Tholl, **Mary** (mtholl@sctcc.edu) ..... (320) 308-5067
Enrollment Management Clerk
Diploma, St. Cloud Technical and Community College

Thoma, **Mark** (mthoma@sctcc.edu) ..... (320) 308-5094
Construction Electrician Instructor
AAS, St. Cloud Technical and Community College

Thomas, **James** (jthomas@sctcc.edu) ..... (320) 308-5037
Culinary Arts Instructor
Diploma, St. Cloud Technical and 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
Office Admin Assistant/Secretary Instructor
BA, College of Saint Benedict
MA, St. Cloud State University

Trousil, **Julie** (jtrousil@sctcc.edu) ..... (320) 308-6618
Registration Assistant
AAS, St. Cloud Technical and Community College

Trutwin, **Patrick** (ptrutwin@sctcc.edu) ..... (320) 308-3382
General Repair Worker

Volkmuth, **Brian** (bvolkmuth@sctcc.edu) ..... (320) 308-5670
Computer Systems Networking & Admin Instructor
AAS, St. Cloud Technical and Community College
BAS, Metropolitan State University

Weseloh, **Harold** (hweseloh@sctcc.edu) ..... (320) 308-5974
English Instructor
BA, St. Cloud State University
MA, St. Cloud State University

Whipple, **Steven** (swhipple@sctcc.edu) ..... (320) 308-5953
English Instructor
BA, Southwest Minnesota State University
MFA, University of North Carolina At Greensbo

Williams, **Joy** (jwilliams@sctcc.edu) ..... (320) 308-5322
Administrative Assistant-Custom Training
AAS, St. Cloud Technical and Community College

Willis, **Jebb** (jwillis@sctcc.edu) ..... (320) 308-6507
Business, General & Mathematics Instructor
BS, St. Cloud State University
MAST, University of Minnesota

Wilson, **Lucy** (lwilson@sctcc.edu) ..... (320) 308-5063
Accounting Instructor
MS, Clarkson University

Wolbersen, **Anthony** (awolbersen@sctcc.edu) ..... (320) 308-6597
Machine Tool Technology Instructor
Diploma, Alexandria Technical and Community College
BS, Minnesota State University Moorhead

Wolters, **Kimberly** (kwolters@sctcc.edu) ..... (320) 308-5069
Financial Aid Assistant
AA, Anoka-Ramsey Community College

Woodard, **Zhanna** (zwoodard@sctcc.edu) ..... (320) 308-6173
Sonography Instructor
CERT, Saint Louis Community College-Forest Par

Yang, **Nhia** (nyang@sctcc.edu) ..... (320) 308-0977
TRIO Director

Zormeier, **Lynn** (lzormeier@sctcc.edu) ..... (320) 308-5065
Medical Record Technology Instructor
AAS, St. Cloud Technical and Community College
AAS, St. Cloud Technical and Community College