2018 | 2019
ACADEMIC CATALOG

DAKOTA COUNTY
TECHNICAL COLLEGE

A Member of Minnesota State

Real Education. Real Results.

TABLE OF CONTENTS

GENERAL INFORMATION

Understanding this Guide

This catalog contains sample course sequences for completing degrees, diplomas and certificates at Dakota County Technical College (DCTC). **Please note that the sequence samples shown are only one of many options.** You should meet with an instructor or academic advisor to discuss a sequence that fits your schedule and meets your educational goals. For the most up-to-date information, visit dctc.edu.

Accreditation & Approvals

DCTC is fully accredited by the Higher Learning Commission of the North Central Association of Colleges and Schools. DCTC also holds occupationally specific accreditation in a number of its programs.

Health

- The Dental Assistant program is accredited by the Commission on Dental Accreditation of the American Dental Association.
- The Medical Assistant program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) on recommendation of the Curriculum Review Board of the American Association of Medical Assistants Endowment (AAMAE).
- The Nursing Assistant program is accredited by the Minnesota Department of Health.
- The Practical Nursing program is approved by the Minnesota Board of Nursing.
- Accreditation Notice: The American Veterinary Medical Association (AVMA) has accepted the Veterinary Technician program's application for accreditation, and has scheduled a site visit for September 12-14, 2018.

Transportation

- The Automotive Technician program, Auto Body Collision Technology program, Automotive Service Educational Program, and Heavy Duty Truck program are accredited by the National Automotive Technicians Educator Foundation, Inc. (NATEF).
- The Heavy Construction Equipment program is accredited by the Association of Equipment Distributors (AED) Foundation

Construction and Manufacturing

- The Electrical Construction Maintenance program is approved by the Minnesota Board of Electricity.
- The Interior Design program is accredited by the National Kitchen and Bath Association.

DCTC meets established standards and is approved for the instruction of veterans, orphans of war veterans, state and federal rehabilitation students, and members of the workforce needing training or retraining. DCTC meets the definition of an institution of higher education, and students who qualify may participate in federal financial assistance programs.

ADMISSIONS

651-423-8000 | ADMISSIONS@DCTC.EDU

Students interested in exploring higher education options and those beginning the application process are encouraged to attend DCTC's Campus Visit (Every Tuesday 1-2:30 p.m., no reservation required). At the visit, students are given the opportunity to gather information on the college, the admissions requirements, and visit classrooms, labs and shops.

New Student Admission

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

1. **Submit a DCTC Application**
   Available in Enrollment Services, or online at dctc.edu/go/onlineapp

2. **Pay a $20 non-refundable application fee**
   Online payment is accepted with a credit card at http://www.dctc.edu/admissions/

3. **Complete the ACCUPLACER Placement Test**
   For a testing schedule, call 651-423-8000 or visit dctc.edu/go/accuplacer

4. **Submit transcripts**
   All students must submit a copy of their high school transcript or high school diploma. GED recipients must provide a copy of their GED certificate. Official college transcripts are required from students with previous degrees or when transferring in credits. Official non-Minnesota State college transcripts must be sent directly from the previous college in a sealed envelope.

Note: Applicants must have a High School Diploma or GED to apply for financial aid. In addition, applicants to specific programs must meet published, program-specific admissions requirements.

Gainful Employment Acknowledgement
Students entering diploma and certificate programs are required to read and ackowledge information provided on gainful employment, which includes data on program costs, student success rates, chances of getting a job and more. This step is required by the U.S. Department of Education. Admissions staff will guide you to this if it is required.

Returning Student Admission
Students in continuous programs who have been absent for one or more terms must comply with the admission requirements that are in effect when returning to DCTC. Contact Admissions for more information.

Transfer Student Admission
A student wishing to transfer credits into Dakota County Technical College must complete the new student admissions process and designate a major field of study.

Only those courses that are applicable to a student's chosen degree, certificate, or major will be considered for transfer. Transfer credits need to have a grade of C- or higher and be from a college with a regional accreditation of colleges and schools (North Central, Middle States, etc) in order to be considered for transfer. General education courses are automatically reviewed for transfer with submission of an official transcript.

For an unofficial review of general education courses, contact Colleen Moser at colleen.moser@dctc.edu. For a review of technical credits, contact an enrollment advisor in Student Services. Official transcripts are not necessary for an unofficial review but will be required for final verification and transcription of transfer credits.

International Student Admission
Dakota County Technical College seeks a culturally diverse campus and welcomes applications from students from other countries. DCTC staff will evaluate each application and determine whether to issue an I-20 (Certificate of Eligibility for Non-Immigrant Student Status) form after receiving the following documentation:

1. Submit International application form with $20 application fee.
2. Provide proof of English proficiency (Official TOEFL score of 61 or higher OR Accuplacer qualifying scores on Reading Comprehension (45 or higher) OR Official U.S. college or university transcript with an English composition/writing course with a "C" or better.).
3. Complete the Financial Responsibility Form and submit with finanicial statements.
4. Provide copy of passport, birth certificate, and/or visa.
5. Provide proof of high school completion (copy of high school certificate/transcript translated into English).
6. Send official U.S. college transcripts (if applicable).
7. Provide documentation of immunization and vaccination history.
8. Provide F-1 Transform Form, a copy of original I-20, a copy of your visa, and a copy of your I-94 form (for students with an F-1 visa who are transferring to DCTC).

International students are sent written notification of acceptance and an I-20 after all documents are received and reviewed.

International students pay the resident tuition rate.

International Student Admission Deadline
Students outside the United States:
June 1 for Fall Semester
October 1 for Spring Semester
Students inside the United States:
July 1 for Fall Semester
November 1 for Spring Semester

Please contact Natalie Shrestha at natalie.shrestha@dctc.edu for more information.

Post-Secondary Enrollment Option (PSEO) Eligibility and Admission
High school students who are residents of Minnesota may participate in the PSEO program upon successful completion of the admissions process. To qualify for PSEO Seniors must rank in the upper half of their graduating class or have a composite score of 21 on the ACT or have a score of 78 on the ACCUPLACER READING Comprehension or have received a 10th grade MCA score of 1047. Juniors must rank in the upper third of their graduating class or have a composite score of 24 on the ACT or have a score of 78 on the ACCUPLACER READING Comprehension or have received a 10th grade MCA score of 1047. Sophomores must attend a Minnesota public high school and have passed the 8th grade MCA with a "Meets Standard".

DCTC PSEO applications for PSEO students are available at DCTC or online at dctc.edu/pseo. PSEO applicants must also submit a PSEO Program Notice of Student Registration form signed by their high school counselor, high school transcript, accuplacer test, submit ACT scores(for those that do not meet the class rank qualifier).

PSEO Admission Deadline
June 1 for fall semster
December 1 for spring semester

To discuss PSEO options at DCTC, call Heath Baumgard at 651-423-8298 or Natalie Shrestha at 651-423-8537 or email admissions@dctc.edu.

ACCUPLACER Placement Test
Minnesota State schools utilize the ACCUPLACER to assess students' college readiness in Reading and Math. Results of the assessment typically do not affect admission to the college (although some programs require certain scores) but are used to appropriately place students in courses. DCTC

offers ACCUPLACER Testing year round on either on a walk-in basis (during the day) and other times by appointment only. Students are encouraged to see if they might be exempt from all or parts of the ACCUPLACER based on MCA, ACT, or SAT scores or past college coursework/degrees. Contact Karianne Loula, Testing Coordinator and Advisor at karianne.loula@dctc.edu OR 651-423-8583 for more information. Testing primarily takes place in the Center for Student Success (Room 2-101).

Undeclared Major
Students do not need to complete the admissions process if they do not intend to:

1. Receive veterans' benefits
2. Complete a degree, diploma, or certificate
3. Enroll full time
3. Receive financial aid

Residency
Residency status will be as determined by Minnesota Statute 135A.031, subd.2. A complete explanation of state residency requirements is available in Student Services.

Credits
Students completing 15 to 18 credits per semester will finish most programs in an average length of time. Students taking 12 or more credits are considered full-time students. Check with Student Services on current definitions as they apply to specific grants and loans.

Degrees, Diplomas, and Certificates
Associate in Applied Science Degrees: are awarded for successful completion of a program of 60 to 85 semester credits with a minimum of 20 semester credits delivered by DCTC. An A.A.S. degree is primarily intended to prepare students for employment. An A.A.S. program includes a minimum of 15 semester credits of general education. General education courses shall be selected from at least three of the 10 goal areas of the Minnesota Transfer Curriculum. At least 30 semester credits shall be program-related occupational or technical credits.

Associate in Science Degrees: are awarded for successful completion of a program of at least 60 credits with a minimum of 20 semester credits delivered by DCTC. An A.S. degree is designed for transfer to a related baccalaureate major. An A.S. program includes a minimum of 30 semester credits in general education. General education courses shall be selected from at least six of the 10 goal areas of the Minnesota Transfer Curriculum.

Diplomas: are awarded for successful completion of a program intended to provide students with employment skills. Diplomas vary from 31 to 72 semester credits. At least one-third of the credits shall be delivered by DCTC. Diplomas of 45 or more credits require a minimum of nine semester credits in general education.

Certificates: are awarded for successful completion of a specialized program of study and vary in length from nine to 30 semester credits. At least one-third of the credits shall be delivered by DCTC.

Full-Time and/or Degree Seeking Students
After new students are admitted to the college, they will be invited to attend a New Student Orientation & Registration session. During the session students will be given necessary information to ensure a successful college experience. Also, students will meet with an advisor to select courses for the term and they will register online.

Students must make payment arrangements with the Business Office or pay their tuition online at:
www.dctc.edu/admissions/pay-for-college/tuition-fees/tuition-payment.
Those interested in setting up a payment plan should contact the Business Office at 651-423-8248.

Part-Time or Non-Degree Seeking Students
Students wanting to attend on a part-time basis and are not pursuing a degree may register as an undeclared student. Online, mailed or faxed registration requests will be accepted during the open registration period published on the college calendar. Requests received prior to this date will be held and processed in the order in which they were received after open registration begins. Visit www.dctc.edu/admissions/register-for-courses/register-undeclared/ for additional details.

Change of Registration (Drop, Add, Withdrawal)
Student are responsible for their registration, drop, add and withdrawal from courses. Students are also responsible for the tuition and fees assessed as a result of their registration-related transactions.

Credit for Prior Learning
Credit for Prior Learning (CPL) can give you a head start in completing your diploma or degree. If any one of these apply to you, please contact Student Services for more information: 25 or older, military service, previous college credits, at least three years in the same job, volunteer experience, or any licenses or certifications.

Transfer From DCTC to Another College
DCTC has transfer agreements with several colleges and universities. For more information on transferring your degree from DCTC, visit:
dctc.edu/academics/transfer-from-dctc/

Minnesota Transfer Curriculum (MnTC)
Completion of a defined MnTC course(s) at one public Minnesota institution enables a student to receive credit for lower-division general education upon admission to other Minnesota State colleges and universities and the University of Minnesota.

TUITION & FEES

651-423-8246 | TUITION@DCTC.EDU

Tuition rates are set by the Minnesota State Colleges and Universities Board and are subject to change without notice. Tuition is based upon the number of credits the student takes. Books and supplies are additional and vary for each student each semester, depending on course selection. Tuition and fees for the 2016-2017 school year were $188.71 per credit for classroom instruction. (NOTE: some courses and programs have higher tuition rates).

Senior Citizens

Minnesota residents 62 or older may register for credit courses on a space-available basis and are able to register the second day of the semester. Tuition is $20 per credit. The following fees are applicable: technology, MSCSA, health, parking and non-refundable application fee. Tuition and some additional fees are waived if senior citizens choose to audit the course.

FINANCIAL AID & SCHOLARSHIPS

651-423-8299 | FINAID@DCTC.EDU

Student financial aid is monetary assistance made available to students who qualify. Approximately 80 percent of the students attending Dakota County Technical College (DCTC) receive some type of financial aid. Financial aid is awarded on the basis of need. Need is determined by a family's financial strength. Items such as income, number in the family, other family members in college, and a number of other criteria are taken into consideration.

At DCTC there are four kinds of financial aid: scholarships, grants, work-study, and loans. Scholarships and grants are funds that do not have to be paid back. Work-study funds are earned by students working part-time on campus or at a non-profit organization off campus. Loans are funds that the student borrows from lending institutions and repays with interest. The purpose of the financial aid programs is to provide financial assistance to students who, without such aid, would find it difficult to attend college.

Applying for Financial Aid

Several types of financial aid are available to students at DCTC, but students must apply in order to receive aid. To apply, all students must fill out the Free Application for Federal Student Aid (FAFSA), complete the admissions process, and register for classes at DCTC. The FAFSA is available on the Web at fafsa.gov. Some financial aid programs require an additional application. Students who want to be considered for a DCTC or DCTC Foundation scholarship must complete a separate scholarship application. DCTC staff are available to assist with the application process. Additional information about the application process is available at fafsa.gov.

The financial aid year includes fall semester, spring semester and summer session. **Students must re-apply each year they attend college.** The FAFSA determines eligibility for the following programs:

Federal Pell Grant: This is a Federal grant, which does not have to be paid back.

Minnesota State Grant Program: This is a state grant that does not have to be paid back. It is available to Minnesota residents only.

Federal Supplemental Educational Opportunity Grant (FSEOG): This is a federal grant that does not have to be paid back.

Work-Study: This program allows students to work while they go to school. Positions are available on campus and at certain non-profit agencies.

Stafford Student Loan: This loan allows students to borrow money for education related expenses. The Stafford Loan must be paid back. DCTC strongly encourages students to limit the amount they borrow. As with other types of financial aid, all students must complete the FAFSA before applying for the Stafford Loan. All students must complete a loan entrance counseling session before applying for a student loan. This can be done at studentloans.gov. Additionally, students must complete a loan exit counseling session before leaving DCTC.

SELF, PLUS, and Alternative Loans: These are additional loans for students and parents of students. Information on these loan programs is available from your advisor in the Students Services office. The student must complete the FAFSA to access these loan programs.

Child Care Assistance: A limited amount of funds are available on a first-come, first-serve basis through the Post-Secondary Child Care Grant Program for students who have children needing child care.

Other Funding Sources

Veteran and Military Benefits: Veterans and military personnel planning to use their education benefits should contact Enrollment Services. All students must apply through this office for certification of eligibility by the college. All students with questions regarding veteran or military benefits should contact Kerry Lurken at 651-423-8278 or e-mail Kerry.Lurken@dctc.edu

Scholarships: Scholarships are awarded each year and are based on certain criteria. Scholarship funds may be available to first- and second-year students, recent high school graduates, and adult learners. Many scholarships are awarded through the DCTC Foundation. The mission of the Foundation is to support the college's mission, education for employment, by providing resource support for students, the college, and the programs. See www.dctc.edu/foundation

COLLEGE SERVICES

DCTC is committed to providing its students with the opportunity to develop the technical skills needed to succeed in their career. The excellent faculty and superb technical facilities contribute to the learning environment. College staff provide a variety of services to complement and enhance each student's success.

Accuplacer Testing
651-423-8399

Minnesota State schools utilize the ACCUPLACER to assess students' college readiness in Reading and Math. Results of the assessment typically do not affect admission to the college (although some programs require certain scores) but are used to appropriately place students in courses. DCTC offers ACCUPLACER Testing year round on either on a walk-in basis (during the day) and other times by appointment only. Students are encouraged to see if they might be exempt from all or parts of the ACCUPLACER based on MCA, ACT, or SAT scores or past college coursework/degrees. Contact Karianne Loula, Testing Coordinator and Advisor at karianne.loula@dctc.edu OR 651-423-8583 for more information. Testing primarily takes place in the Center for Student Success (Room 2-101).

Behavioral Intervention Team (BIT)
651-423-8399

DCTC's Behavioral Intervention Team (BIT) responds to the college community's concern about students who may be at risk to themselves or others. Referrals can be made through an electronic form available on the DCTC website at www.dctc.edu/support-services/behavioral-intervention/ . Contact Patrick Lair, Director of Student Success at patrick.lair@dctc.edu.

Bookstore
651-423-8486 | BOOKSTORE@DCTC.EDU

Students may purchase books and supplies in the DCTC Bookstore and online. Visit the bookstore website at dctcbookstore.com for store hours.

Career Services
651-423-8283

Career Services at DCTC serves as a resource for students needing career assessments, resume building, job-seeking sources, interviewing skill development and job placement. The Career Center is located in Room 2-202. Contact Jessica Ayub, Director of Career Services at jessica.ayub@dctc.edu.

Center for Student Success
651-423-8420

The Center for Student Success is the place to go for Tutoring, Testing, Success Planning/Coaching and Study. The Center is available to students for general computer use, printing and Internet access during regular college hours. Charging stations, laptop computer areas and study tables are also available. Visit the Center for Student Success (Room 2-101) or contact Patrick Lair, Director of Student Success at patrick.lair@dctc.edu or 651-423-8399.

Disability and Access Services
651-423-8469

Enrolled DCTC students may be eligible for services if they have a documented disability that significantly limits one or more major life activities. For more information contact Anne Swanberg, Disability and Access Services Advisor at anne.swanberg@dctc.edu OR 651-423-8469. Anne is located in Student Services.

Early Alert Referral System (EARS)
651-423-8417

EARS is an electronic tool sent to faculty early in the semester to identify students in their classes who are struggling academically. Once an alert has been submitted, the advisor(s) of the students on alert are notified so that an intervention can take place. Contact Patrick Lair, Director of Student Success at patrick.lair@dctc.edu or 651-423-8399.

Enrollment/Academic Advising
Each award-seeking, enrolled student at DCTC will be assigned an Enrollment Advisor. This professional advisor can provide guidance and information to students on financial aid, academic planning, course selection, career options, and graduation preparation. Contact advising@dctc.edu for more information. Enrollment advisors are located in Student Services.

Fresh Stop Cafe
651-423-8417

The café is open daily when the college is in full session and other times as posted. The café offers breakfast and grill entrees as well as soup, salad, sandwiches, juice, soda, and snacks.

Health Services
651-423-8371

A licensed practical nurse is on duty Monday-Friday from 7 a.m. to 3 p.m. during fall and spring semesters and 7 a.m. to 2:30 p.m. during summer session. Health Services in located in Room 1-501. Please report any medical concerns to Health Services.

Housing
DCTC maintains a housing and apartment list for students based on information provided by the general public. For the most current list, visit dctc.edu/housing.

Library
651-423-8366

The DCTC Library exists to provide informational resources to students, staff and faculty by assisting users in locating these services. The Library supports classroom instruction but also helps students complete assignments and foster the development of using library tools and resources. For more information visit the web site at http://dctclibrary.dctc.edu or contact them at library@dctc.edu. The Library is located on the 1st level facing the West Atrium and Entrance.**Lunch Box**
651-423-8270

Lunch Box
DCTC's Student Life Center provides basic meals to help support students without the financial resources to either purchase food or bring food from home. Students can access and use the Lunch Box twice per week and pick up three food times each visit (a main meal item, a side and a snack), For more information contact or stop by the Student Life Center.

Mobile Pantry
651-423-8270 | MOBILE.PANTRY@DCTC.EDU
DCTC in partnership with Open Door, brings the Mobile Pantry to campus every other Thursday to any DCTC student in need of food support. The freshly-stocked bus provides students and their families healthy, wholesome food. For more information, email mobilepantry@dctc.edu.

Safety and Security
651-423-8388

A Deputy Sheriff from the Dakota County Sheriff's Office is on campus most of the day Mondays through Fridays and is available to respond to safety and security concerns on campus. The Deputy is located in our Operations Office (Room 2-514). A campus security escort is available in the evenings by calling 651-423-8388 or the Security pager at 651-610-1824. As always, in case of an emergency, dial 911.

Social Work & Resources Connection
651-423-8217

A social worker is on staff and available to assist DCTC students at no cost. The DCTC social worker will help students with coping strategies in dealing with a variety of educational, life circumstances and mental health issues and will provide information on appropriate community and social services. Contact Chris Tran at chris.tran@dctc.edu or visit Student Services. (Room 2-131F).

Student Success Planning
651-423-8399

Typically available to students who are on Academic Warning or Academic Probation. Each student works with a Student Success Coach to develop a plan to support their academic improvement and success. Contact Patrick Lair, Director of Student Success at patrick.lair@dctc.edu or 651-423-8399 for more information. Patrick is located in the Center for Student Success (Room 2-141).

TRiO/Student Support Services
651-423-8514 OR 651-423-8289

The Student Support Services program provides academic development, advising and success strategies towards graduation. Available to eligible DCTC students who are first-generation, low income, and/or have a disability. For more information contact Cori Robinson at cori.robinson@dctc.edu or 651-423-8514 OR Xuong Tran at Xuong.tran@dctc.edu or 651-423-8289. The TRIO office is located in Room 2-130. (Room 2-130).

TUTORING AND TEST PREP

Accounting Tutoring
651-423-8420

Available to students in the Accounting program or taking Accounting classes. Walk-in hours and tutoring appointments are both available. For more information contact Michelle Keske at michelle.keske@dctc.edu or find her in the Center for Student Success (Room 2-101).

ACCUPLACER Prep Resources
651-423-8399

Free ACCUPLACER preparation resources are available to help students sharpen their Math, Reading and Writing skills while preparing to take/retake the ACCUPLACER. For more information contact Karianne Loula, Testing Coordinator and Advisor at karianne.loula@dctc.edu OR 651-423-8583.

English/Reading/Writing Tutoring
651-423-8420

Available at no cost to all DCTC students who need assistance in improving their English, reading and writing skills. Tutoring is available by appointment only. Contact Justin Jones, Writing Center Tutor, at justin.jones@dctc.edu OR 651-423-8420 OR visit the Center for Student Success (Room 2-101).

Math Tutoring
651-423-8420

Available at no cost to all DCTC students who need assistance in improving their math skills. Tutoring is available five days a week on a walk-in basis. For more information, contact Becky Egg, Math Tutor, at becky.egg@dctc.edu or stop in or contact the Center for Student Success (Room 2-101).

Online Tutoring
651-423-8399

A free online tutoring service available to all DCTC students. Get assistance with subjects such as writing, math, science, finance, economics, Microsoft Office, accounting, and Spanish. For more information contact Patrick Lair, Director of Student Success at patrick.lair@dctc.edu OR 651-423-8399. Online tutoring services can be accessed through students' D2L/Brightspace portal.

Science Tutoring
651-423-8650

Available to students taking any Science course at DCTC who needs extra assistance in understanding science concepts and/or completing lab experiments. Tutoring is provided by appointment only. Contact Kate McMenomy at kate.mcmenomy@dctc.edu or 651-423-8650 OR visit the Science Lab (Room 1-305).

Student Athlete Tutoring
651-423-8420

Available to any DCTC student athlete who needs a focused and supervised study session while balancing the demands of college and intercollegiate athletics. For more information contact Michelle Keske at michelle.keske@dctc.edu or find her in the New Center for Student Success (Room 2-101).

TEAS Prep Class
952-703-3128

In collaboration with Rosemount-Apple Valley-Eagan Adult Basic Education, DCTC offers its Practical Nursing applicants a free TEAS Prep course. The class is generally scheduled for Tuesdays and Thursdays from 4:00 – 7:00 p.m. for a period of 8 weeks. The class is limited to 25 students and students must commit to the full course length (16 classes). For more information on the class, contact Karianne Loula, Testing Coordinator and Advisor at karianne.loula@dctc.edu or 651-423-8583.

STUDENT LIFE

651-423-8270 | STUDENTLIFE@DCTC.EDU

The Student Life program at DCTC provides opportunities for students to participate in co- and extra-curricular activities. A goal of the program is to maximize student's experience and involvement in the educational process at DCTC. The college believes a dynamic Student Life program creates a distinctive and excellent learning environment that promotes the college. DCTC's student life center is located on the first floor in the central commons area.

Alumni Association

651-423-8293 | ALUMNI@DCTC.EDU

Anyone who has ever attended a class at DCTC is an alum, and therefore eligible for membership in the DCTC Alumni Association. There is no cost to be a member of the Alumni Association. The mission of the Alumni Association is to reunite former students with the college and their programs, and to provide life-long learning opportunities and services to the community. To be a part of the association, contact contact Amy Eppen at amy.eppen@dctc.edu or visit dctc.edu/about-us/alumni/

Student Senate

651-423-8341 | STUSENATE@DCTC.EDU

The Student Senate is the official voice of students and is involved in many decisions made on campus including tuition increases and college initiatives. All students are encouraged to participate in the Student Senate, and each student club and athletic team is strongly encouraged to send representatives to Student Senate meetings. The Senate has the following three sub committees students can join:

- Activities Committee plans and coordinates campus activities and events sponsored by the Student Senate.
- Outreach Committee works to promote Student Life activities to the DCTC community and on Student Life retention efforts. The goal of the Outreach Committee is to create a stronger community among DCTC students, faculty, and staff.
- Student Life Committee studies and makes recommendations to the Student Senate on issues related to finances, including tuition increases and club funding requests.

Blue Knights Athletics

651-423-8462 | ATHLETICS@DCTC.EDU

DCTC participates in NJCAA Division II for baseball, fastpitch softball, volleyball and men's basketball. The DCTC women's soccer and men's soccer teams compete in NJCAA Division I.

All teams are independent members of the NJCAA Region XIII. DCTC offers athletic scholarships (grant in aid) for participation in varsity athletics as awarded by the head coach of a particular team. Students wishing to play varsity sports for DCTC should visit www.goblueknights.com, the Student Life Center, or contact the head coach of a team.

Clubs and Organizations

DCTC has a variety of program and special interest clubs and organizations where students can get involved and be active outside of the classroom. We currently offer:

- American Institute of Graphic Arts
- American Marketing Association
- Automotive Club
- Business Professionals of America
- Chess Club
- Christians on Campus
- Creative Arts & Writing Club
- Design Connexion
- Electronics Club
- Information Technology Club
- Landscape Horticulture Club
- Lions Club
- Multicultural Student Leadership Association
- Muslim Student Association
- Phi Theta Kappa Honor Society
- Photons Photography Club
- Sexuality and Gender Acceptance Association (SAGA)
- SkillsUSA
- Student Ambassadors
- Student Senate
- Veterans Club

For more information or to start your own club, visit dctc.edu/go/clubs.

Military & Veterans Service Center

651-423-8274 | VETERANS@DCTC.EDU

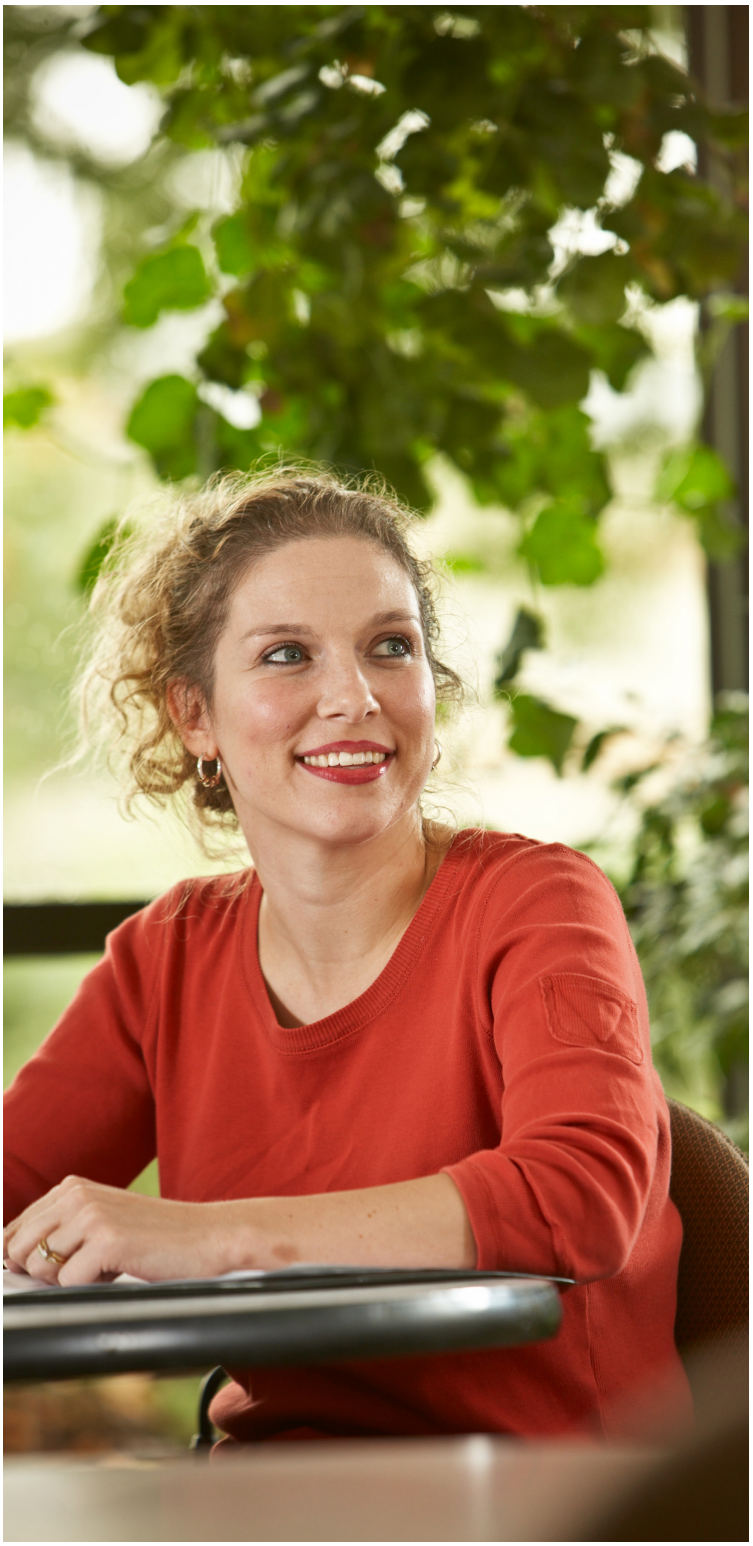
The Military & Veterans Service Center provides support services and program information to military veterans, current military, and their families. The center is located in Room 2-303 (above the bookstore). Kathy Bachman serves as the coordinator of the center that is committed to helping veterans reach their higher education goals. For more information contact Katherine Bachman at kathy.bachman@dctc.edu OR 651-123-8274.

Wellness Center

651-423-8677 | WELLNESS.CENTER@DCTC.EDU

The Wellness Center is a workout facility available to DCTC students. The Center provides cardio equipment, weight machines and free weights. Qualified staff are available to give first-time users an introduction to the equipment. The Wellness Center is located in Room 1-706.

BUSINESS



PROGRAMS OF STUDY

Accounting

Administrative Support
- Administrative Assistant
- Legal Administrative Assistant
- Medical Administrative Specialist

Business & Management
- Business Administration
- Business Management
- Management for Airline Professionals
- Multicultural Management
- Small Business Entrepreneurship
- Technical Management

Marketing & Sales
- Business Marketing
- Digital Marketing Specialist
- Marketing Design
- Sales Management

Individualized Studies B.A.with focus on

Transportation Management
- Refer to Transportation section of catalog

TAKING CARE OF BUSINESS

Make your mark in the arena of free enterprise. Learn from experienced business people who understand the complexities of commercial affairs.

The business of doing business is often complex and challenging. Shifting economic landscapes, strong competition and dwindling markets are problems that are routinely confronted.

TRAITS OF THE TRADE

Top business professionals, managers and entrepreneurs possess a number of characteristics:

- Clarity of purpose
- Outstanding communication skills
- Able to think tactically and strategically
- Desire to lead

Unless otherwise specified, salary data is sourced from careerwise.careerwise.edu.

CONTACT US

FACULTY

Candace Carlstrom
Administrative Support
A.A.S., Dakota County Technical College
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ACCOUNTING

Delivery: Daytime, Evening, and Online Classes (Accelerated options available)
Start: Fall or Spring Semester, Full- or Part-Time
Location: Rosemount Campus

Outcomes

Accountant A.A.S. Degree . . . . . 60 cr.
Accountant Diploma . . . . . 54 cr.
Accounting Clerk Diploma . . . . . 32 cr.
Small Business Accounting Certificate. . . . . 16 cr.

Major Description

Accounting students are trained to analyze, interpret and record financial information regarding the operations and financial condition of businesses and organizations. Working with spreadsheet and accounting software, they acquire the skills necessary to prepare financial statements, tax returns, and government forms. Students also learn federal and state tax and payroll laws. Accountants need to be life-long learners with the ability to work with all aspects of business.

Work Environment

Many companies require the ongoing expertise of an in-house accountant. As an accountant, you may find yourself working for a manufacturing firm, a hospital, a bank, an insurance company, or a private corporation. In addition, CPA firms, government agencies and not-for-profit organizations also hire accountants.

Potential Job Titles

- Accountant
- Financial Analyst
- Financial Advisor
- Payroll Accountant
- Tax Accountant
- Accounting Clerk
- Receivables/Payables Clerk
- Cost Accountant

Salary Data

Entry Level

- Average Wage: $19.64/hour
- Top Earners: $23.24/hour

Senior Level

- Average Wage: $31.55/hour
- Top Earners: $39.29/hour

ACCOUNTANT – A.A.S. DEGREE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year – First Semester

ACCT1010	Principles of Financial Accounting I	4
ACCT1100	Business Law & Ethics	3
ACCT1106	Accounting Mathematics	3
	General Education (MnTC Goal 3 or 4)	3
	Total Credits	**13**

First Year – Second Semester

ACCT1013	Principles of Financial Accounting II	4
ACCT1206	Payroll Accounting	2
ACCT1306	Spreadsheets	3
ACCT1406	Income Tax	4
SPEE1020	Interpersonal Communication	3
	Total Credits	**16**

Second Year – First Semester

ACCT2000	Intermediate Accounting I	4
ACCT2110	Managerial Accounting I	4
ACCT2200	Accounting Computer Apps	3
ENGL1150	Composition I	3
	General Education Electives (Any MnTC area)	3
	Total Credits	**17**

Second Year – Second Semester

ACCT2003	Intermediate Accounting II	4
ACCT2113	Managerial Accounting II	4
ACCT2206	Fund Non-Profit Accounting	3
	General Education Electives (Any MnTC area)	3
	Total Credits	**14**
	TOTAL PROGRAM REQUIREMENTS	**60**

ACCOUNTANT – DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year – First Semester

ACCT1010	Principles of Financial Accounting I	4
ACCT1100	Business Law & Ethics	3
ACCT1106	Accounting Mathematics	3
	Total Credits	**10**

First Year – Second Semester

ACCT1013	Principles of Financial Accounting II	4
ACCT1206	Payroll Accounting	2
ACCT1306	Spreadsheets	3
ACCT1406	Income Tax	4
SPEE1020	Interpersonal Communication	3
	Total Credits	**16**

Second Year – First Semester

ACCT2000	Intermediate Accounting I	4
ACCT2110	Managerial Accounting I	4
ACCT2200	Accounting Computer Apps	3
ENGL1150	Composition I	3
	Total Credits	**14**

Second Year – Second Semester

ACCT2003	Intermediate Accounting II	4
ACCT2113	Managerial Accounting II	4
ACCT2206	Fund Non-Profit Accounting	3
	General Education (MnTC Goal 3 or 4)	3
	Total Credits	**14**
	TOTAL PROGRAM REQUIREMENTS	**54**

ACCOUNTING CLERK – DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year – First Semester

ACCT1010	Principles of Financial Accounting I	4
ACCT1100	Business Law & Ethics	3
ACCT1106	Accounting Mathematics	3
	Technical Elective*	6
	Total Credits	**16**

First Year – Second Semester

ACCT1013	Principles of Financial Accounting II	4
ACCT1206	Payroll Accounting	2
ACCT1306	Spreadsheets	3
ACCT1406	Income Tax	4
ENGL1150	Composition I	3
	Total Credits	**16**
	TOTAL PROGRAM REQUIREMENTS	**32**

** Select Technical electives from the following subject areas: ACCT, ISTC or ADMS.*

SMALL BUSINESS ACCOUNTING CERTIFICATE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year – First Semester

ACCT1010	Principles of Financial Accounting I	4
ACCT1206	Payroll Accounting	2
ACCT1306	Spreadsheets	3
ACCT2200	Accounting Computer Apps	3
	Technical Electives*	4
	Total Credits	**16**
	TOTAL PROGRAM REQUIREMENTS	**16**

** Select Technical electives from ACCT1013 or ACCT1406*

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ADMINISTRATIVE ASSISTANT

Delivery: Daytime, Evening and Online Classes
Start: Fall, Spring or Summer Session, Full- or Part-Time

Outcome
Administration Assistant Diploma. . . . . 39 cr.

Major Description
This program prepares students for employment in administrative support. Students use computer systems for document processing and file management tasks. It teaches the expertise needed for creating and editing documents, spreadsheets, databases, electronic presentations and Internet navigation research. Administrative assistants may be called upon to communicate, organize, coordinate, and integrate data.

This is the ideal major for people in the workforce looking for a challenge or ways to advance their careers and gives them an opportunity to obtain Microsoft Certification for the required certification classes.

Work Environment
Graduates find employment in administrative support in a wide variety of businesses, including but not limited to corporate headquarters, insurance companies, banks, manufacturing firms and government agencies.

Potential Job Titles
- Administrative Assistant
- Administrative Clerk
- Administrative Coordinator
- Administrative Office Specialist
- Clerical Office Worker
- Executive Assistant
- Office Assistant

Salary Data
- Average Wage: $19.29/hour
- Top Earners: $22.80/hour

ADMINISTRATIVE ASSISTANT – DIPLOMA

First Year - First Semester

ADMS1005	Keyboarding/Formatting	3
ADMS1010	Business English Skills	2
ADMS1018	Basic Computer Applications	3
ADMS1019	Receptionist Skills	2
ADMS1250	Project Management I	3
ADMS1020	Office Procedures	4
SPEE1020	Interpersonal Communication	3
	Total Credits	**20**

First Year - Second Semester

ADMS1017	Technology for the Business Professional	3
ADMS1040	Integrated Office Skills	3
ADMS1265	Certification Basics - Excel	3
ADMS1260	Certification Basics - Word	3
ADMS1275	Certification Basics - PowerPoint	3
ADMS1285	Oral Business Communications/ Job Seeking Skills	2
ADMS1290	Written Business Communication	2
	Total Credits	**19**

TOTAL PROGRAM REQUIREMENTS 39

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LEGAL ADMINISTRATIVE ASSISTANT

Delivery: Daytime, Online and Hybrid Classes
Start: Fall or Spring Semester, Full- or Part-Time
Location: Rosemount Campus

Outcomes

Legal Administrative Assistant A.A.S. Degree . . . . . .60 cr.
Legal Administrative Assistant Diploma . . . . . 41 cr.

Major Description

This program prepares students to work in a variety of law-related fields. Specialized legal courses include Civil Procedures, Family Law and Criminal Law. Exposure to basic legal concepts is accomplished through courses in Transactional Law and Legal Editing & Proofreading. Students also take a variety of general administrative courses covering software applications, keyboarding and communications.

Work Environment

Key employers include law firms, court systems, insurance agencies, legal and trust departments of banks, corporations and government agencies. Legal administrative assistants interact often and directly with clients and staff.

Potential Job Titles

- Legal Administrative Assistant
- Law Secretary
- Legal Secretary

Salary Data

- Average Wage: $26.32/hour
- Top Earners: $32.49/hour

LEGAL ADMINISTRATIVE ASSISTANT – A.A.S. DEGREE

This is a sample course sequence for a full-time student. All courses are not offered every semester. Please contact your program advisor regarding your academic plans.

First Year - First Semester

ADMS1005	Keyboarding/Formatting	3
ADMS1010	Business English Skills	2
ADMS1018	Basic Computer Applications	3
ADMS1019	Receptionist Skills	2
ADMS1020	Office Procedures	4
	Total Credits	**14**

First Year - Second Semester

ADMS1017	Technology for Business Professionals	3
ADMS1275	Certification Basics - PowerPoint	3
ADMS1290	Written Business Communication	2
LEGL1603	Civil Procedures, Business Organization, and Family Law †	4
LEGL1602	Civil Litigation †	4
	Total Credits	**16**

Second Year - First Semester

ADMS1260	Certification Basics - Word	3
LEGL 1614	Estate, Probate, and Real Estate †	3
	Technical Electives*	4
SPEE1020	Interpersonal Communication	3
ENGL1150	Composition I	3
	Total Credits	**16**

Second Year - Second Semester

ADMS1040	Integrated Office Skills	3
ADMS1285	Oral Business Communications/ Job Seeking Skills	2
	General Education (MnTC Goal 3 or 4)	3
	General Education Elective**	3
	General Education (MnTC Goal 9)	3
	Total Credits	**14**
	TOTAL PROGRAM REQUIREMENTS	**60**

† Online course offered by Alexandria Community and Technical College
** Select Technical electives from the following subject areas: ADMS, ISTC, ENTR, ACCT, SMGT, or BUSN.*
*** Select General Education electives from any MnTC goal area.*

LEGAL ADMINISTRATIVE ASSISTANT – DIPLOMA

This is a sample course sequence for a full-time student. All courses are not offered every semester. Please contact your program advisor regarding your academic plans.

First Year - First Semester

ADMS1005	Keyboarding/Formatting	3
ADMS1010	Business English Skills	2
ADMS1018	Basic Computer Applications	3
ADMS1019	Receptionist Skills	2
ADMS1020	Office Procedures	4
SPEE1020	Interpersonal Communication	3
ADMS1275	Certification Basics - PowerPoint	3
	Total Credits	**20**

First Year - Second Semester

ADMS1017	Technology for the Business Professional	3
ADMS1040	Integrated Office Skills	3
ADMS1260	Certification Basics - Word	3
ADMS1285	Oral Business Communications/ Job Seeking Skills	2
ADMS1290	Written Business Communication	2
LEGL1602	Civil Litigation †	4
LEGL1603	Criminal Procedures, Business Organization, and Family Law †	4
	Total Credits	**21**
	TOTAL PROGRAM REQUIREMENTS	**41**

† Online course offered by Alexandria Community and Technical College.

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MEDICAL ADMINISTRATIVE SPECIALIST

Delivery: Daytime, Online and Hybrid Classes
Start: Fall or Spring Semester, Full- or Part-Time
Location: Rosemount Campus

Outcomes

Medical Administrative Specialist Diploma . . . . . 39 cr.

Major Description

This program prepares students to work in a variety of positions in the medical field. Some of the specialized medical courses include medical office procedures, medical terminology, and anatomy and physiology. Students also complete various communications courses, and students will become proficient in current software applications for word processing, spreadsheets and presentation graphics.

Work Environment

Medical administrative specialists are employed in hospitals, clinics, physician offices, insurance companies and other organizations connected to the medical field. Administrative duties include composing/transcribing correspondence, managing doctors' schedules, preparing professional presentations, scheduling patient appointments, maintaining patient files and transcribing patient reports.

Potential Job Titles

- Medical Office Clerk
- Medical Office Secretary
- Medical Office Specialist
- Patient Services Representative

Salary Data

- Average Wage: $19.72/hour
- Top Earners: $22.33/hour

MEDICAL ADMINISTRATIVE SPECIALIST – DIPLOMA

This is a sample course sequence for a full-time student. All courses are not offered every semester. Please contact your program advisor regarding your academic plans.

First Year - First Semester

ADMS1005	Keyboarding/Formatting	3
ADMS1010	Business English Skills	2
ADMS1018	Basic Computer Applications	3
ADMS1019	Receptionist Skills	2
ADMS1045	Medical Terminology	2
ADMS1057	Medical Office Procedures	4
ADMS1275	Certification Basics - PowerPoint	3
	Total Credits	**19**

First Year - Second Semester

ADMS1040	Integrated Office Skills	3
ADMS1049	Applied Medical Terminology	3
ADMS1260	Certification Basics - Word	3
ADMS1285	Oral Business Communications/Job Seeking Skills	2
ADMS1290	Written Business Communication	2
HEAL1101	Anatomy & Physiology	4
SPEE1020	Interpersonal Communication	3
	Total Credits	**20**
	TOTAL PROGRAM REQUIREMENTS	**39**

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BUSINESS ADMINISTRATION

Delivery: Daytime, Evening and Online Classes
Start: Fall, Spring or Summer Session, Full- or Part-Time

Outcome
Business Administration A.S. Degree . . . . . .60 cr.

Major Description
This program provides essential knowledge, skills and abilities that can be applied to the ever changing and highly competitive world of business. In this multidisciplinary degree, students understand business from management, financial and marketing perspectives.

The Business Administration A.S. offers students the opportunity to complete an Associate of Science degree and then transfer to designated bachelor's degree programs at a number of universities. Work with an advisor for transfer planning.

Work Environment
Business professionals generally work in clean, comfortable, well-lit office spaces. Travel or relocation can be part of the job. However, improved technology continues to increase telecommuting from home offices, which along with teleconferencing, has reduced travel requirements.

Potential Job Titles
Business position titles will vary dramatically depending on the area of technical emphasis and the completion of a four-year degree.

- Small Business Management
- Office Manager
- Non-profit Director
- Front Line Supervisor
- Project Manager

Salary Data
Office Manager

- Average Wage: $39.76/hour
- Top Earners: $48.61/hour

Operations Manager

- Average Wage: $47.35/hour
- Top Earners: $69.67/hour

BUSINESS ADMINISTRATION – A.S. DEGREE

ACCT1010	Principles of Financial Accounting I	4
ACCT2110	Managerial Accounting I	4
MKTC1000	Principles of Marketing	3
BUSN1110	Business Law & Ethics	3
BUSN1210	Project Management	3
BUSN1000	Principles of Management	3
BUSN1320	Managing Diversity	3
ADMS1018	Basic Computer Applications	3
BUSN2010	Graduation Project (or BUSN2970 Internship)	1
	Technical Electives (from BUSN)	3
	Total Credits	**30**

General Education

ENGL1150	Composition I (Goal 1)	3
SPEE1020	Interpersonal Communication (Goal 7)	3
SPEE1015	Fundamentals of Public Speaking (Goal 1)	3
MATS1300	College Algebra (Goal 4)	4
MATS1251	Statistics (Goal 4)	4
ECON1100	Microeconomics (Goal 5)	3
ECON1200	Macroeconomics (Goal 5)	3
	Science (Goal 3)	3 or 4
	General Education Electives (Goal 2,6,8,9,10)	4
	Total Credits	**30**
	TOTAL PROGRAM REQUIREMENTS	**60**

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BUSINESS MANAGEMENT

Delivery: Evening and Online Classes
Start: Fall, Spring or Summer Session, Full- or Part-Time

Outcomes

Business Management A.A.S. Degree. . . . . .60 cr.
Multicultural Human Resources Management Diploma . 33 cr.
Multicultural Leadership Diploma . . . . . .33 cr.
Multicultural Supervision Certificate. . . . . 17 cr.
Human Resource Management Certificate . . . . . 17 cr.
Quality Improvement Certificate. . . . . 17 cr.
Supervisory Leadership Certificate. . . . . 17 cr.

Major Description

This program provides working adults with the essential knowledge, skills and abilities to succeed in today's increasingly competitive business environment. Students acquired the competencies that can be universally applied to global and local organizations in the profit, non-profit and public sectors. Students can individualize their degree by selecting an emphasis area through the completion of two of the following certificates:

- Human Resources Development Certificate
- Multicultural Supervision Certificate
- Quality Improvement Certificate

Work Environment

Graduates with this training perform successfully in leadership positions in entrepreneurial enterprises, government agencies, companies, corporations and organizations in the public, private and nonprofit sectors.

Potential Job Titles

- Team Leader
- Supervisor
- Manager
- Human Resources Specialist/Manager
- Quality Specialist
- Event Manager

Salary Data

- Average wage: $26.87/hour
- Top earners: $33.23/hour

BUSINESS MANAGEMENT – A.A.S. DEGREE

BUSN1000	Foundations of Management	3
BUSN1010	Leadership	3
BUSN1020	Management Effectiveness	3
BUSN1030	Financial Management	2
BUSN1040	Organizational Behavior	3
	Total Credits	**14**

Technical Paths

Select two of the following three certificates:		
Human Resources Management Certificate		14
Multicultural Supervision Certificate		14
Quality Improvement Certificate		14
	Total Credits	**28**

Graduation Project or Internship

Choose one of the following:		
BUSN2010	Graduation Project*	3
BUSN2970	Internship	3
	Total Credits	**3**

General Education

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
	General Education (MnTC Goal 3 or 4)	3
	General Education Electives (Any MnTC area)	6
	Total Credits	**15**
	TOTAL PROGRAM REQUIREMENTS	**60**

** Graduation Project must have advisor approval and registration in the last semester of attendance. See advisor for details.*

MULTICULTURAL HUMAN RESOURCES MANAGMENT - DIPLOMA

BUSN1121	Employee & Labor Relations	3
BUSN1101	Workforce Planning	4
BUSN1130	Risk Management	2
BUSN1141	Human Resource Development	3
BUSN1150	Compensation & Benefits	2
BUSN1320	Managing Diversity	3
BUSN1330	Leading a Multicultural Workforce	3
BUSN1300	Multicultural Mentoring I	2
BUSN1310	Multicultural Mentoring II	1
BUSN1350	Multicultural Conflict Resolution	2
BUSN1340	International Business	3
BUSN1240	Creativity and Problem Solving	2
	Total Credits	**30**

General Education

SPEE1020	Interpersonal Communication	3
	Total Credits	**3**
	TOTAL PROGRAM REQUIREMENTS	**33**

MULTICULTURAL LEADERSHIP – DIPLOMA

BUSN1000	Foundations of Management	3
BUSN1010	Leadership	3
BUSN1020	Management Effectiveness	3
BUSN1030	Financial Management	2
BUSN1040	Organizational Behavior	3
BUSN1240	Creativity and Problem Solving	2
BUSN1300	Multicultural Mentoring I	2
BUSN1310	Multicultural Mentoring II	1
BUSN1320	Managing Diversity	3
BUSN1330	Leading a Multicultural Workforce	3
BUSN1340	International Business	3
BUSN1350	Multicultural Conflict Resolution	2
	Total Credits	**30**

General Education

SPEE1020	Interpersonal Communication	3
	Total Credits	**3**
	TOTAL PROGRAM REQUIREMENTS	**33**

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SUPERVISORY LEADERSHIP – CERTIFICATE

BUSN1000	Foundations of Management	3
BUSN1010	Leadership	3
BUSN1020	Management Effectiveness	3
BUSN1030	Financial Management	2
BUSN1040	Organizational Behavior	3
	Total Credits	**14**

General Education

	General Education Electives (Any MnTC area)	3
	Total Credits	**3**
	TOTAL PROGRAM REQUIREMENTS	**17**

HUMAN RESOURCE MANAGEMENT – CERTIFICATE

BUSN1121	Employee & Labor Relations	3
BUSN1101	Workforce Planning	4
BUSN1130	Risk Management	2
BUSN1141	Human Resource Development	3
BUSN1150	Compensation & Benefits	2
	Total Credits	**14**

General Education

SPEE1020	Interpersonal Communication	3
	Total Credits	**3**
	TOTAL PROGRAM REQUIREMENTS	**17**

QUALITY IMPROVEMENT – CERTIFICATE

BUSN1200	Quality Management	3
BUSN1210	Project Management	3
BUSN1220	Effective Business Communication	3
BUSN1240	Creativity and Problem Solving	2
BUSN1260	Managing Customer Service	1
BUSN1350	Multicultural Conflic Resolution	2
	Total Credits	**14**

General Education

ENGL1150	Composition I	3
	Total Credits	**3**
	TOTAL PROGRAM REQUIREMENTS	**17**

MULTICULTURAL SUPERVISION – CERTIFICATE

BUSN1300	Multicultural Mentoring I	2
BUSN1310	Multicultural Mentoring II	1
BUSN1320	Managing Diversity	3
BUSN1330	Leading a Multicultural Workforce	3
BUSN1340	International Business	3
BUSN1350	Multicultural Conflict Resolution	2
	Total Credits	**14**

General Education

	General Education Electives (Any MnTC area)	3
	Total Credits	**3**
	TOTAL PROGRAM REQUIREMENTS	**17**

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2018-2019 CATALOG

MANAGEMENT FOR AIRLINE PROFESSIONALS

Delivery: Daytime, Evening and Online Classes
Start: Fall, Spring or Summer Session, Full- or Part-Time

Outcome
Mgmt. for Airline Professionals A.A.S. Degree . . . . . .60 cr.

Major Description
This program is for professionals with experience in the aviation industry looking to advance their career. Students obtain the business management knowledge and skill sets to enhance their upward career mobility.

Work Environment
Graduates are prepared to fill entry-level management jobs in the aviation industry. Professionals with this degree are employed at municipal and private airports as well as with private and commercial airlines.

Potential Job Titles
- Airline Maintenance Manager/Supervisor
- Airline Ticketing Manager/Supervisor
- Airline Baggage Manager/Supervisor
- Airline Ramp Supervisor
- Manager/Supervisor

Salary Data *(Salary.com)*

Aircraft Maintenance Supervisor
- Average Wage: $41.00/hour
- Top Earners: $51.00/hour

MANAGEMENT FOR AIRLINE PROFESSIONALS – A.A.S. DEGREE
This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

	Technical Electives* or Prior Learning Credits	30
	Technical Electives (From BUSN)	14
BUSN2010	Graduation Project (or BUSN2970 Internship)	1
	Total Credits	**45**

General Education

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
	General Education (MNTC Goal 3 or 4)	3
	General Education Electives (Any MnTC area)	6
	Total Credits	**15**
	TOTAL PROGRAM REQUIREMENTS	**60**

** Select Technical electives from any technical program, or credit for prior learning.*

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MULTICULTURAL MANAGEMENT

Delivery: Evening and Online Classes
Start: Fall, Spring or Summer Session, Full- or Part-Time

Outcomes

Multicultural Human Resources Management Diploma . . 33 cr.
Multicultural Leadership Diploma . . . . . 33 cr.
Multicultural Supervision Certificate. . . . . 14 cr.

Major Description

These diplomas and certificate provide students with the awareness, knowledge, skills and abilities necessary to succeed in today's multicultural work environments. Students learn to develop a unique set of multicultural supervision competencies, which can be universally applied to global and local organizations in the profit, non-profit and public sectors .

Work Environment

Graduates with this training perform successfully in leadership positions in multicultural agencies, companies, corporations and organizations in the public, private and nonprofit sectors.

Potential Job Titles

- Team Leader
- Supervisor
- Manager
- Production Foreman
- Diversity Coordinator
- Human Resources Manager
- Frontline Supervisor
- Non-Profit Director

Salary Data

- Average Wage: $26.87/hour
- Top Earners: $33.23/hour

MULTICULTURAL HUMAN RESOURCES MANAGMENT - DIPLOMA

BUSN1121	Employee & Labor Relations	3
BUSN1101	Workforce Planning	4
BUSN1130	Risk Management	2
BUSN1141	Human Resource Development	3
BUSN1150	Compensation & Benefits	2
BUSN1320	Managing Diversity	3
BUSN1330	Leading a Multicultural Workforce	3
BUSN1300	Multicultural Mentoring I	2
BUSN1310	Multicultural Mentoring II	1
BUSN1350	Multicultural Conflict Resolution	2
BUSN1340	International Business	3
BUSN1240	Creativity and Problem Solving	2
	Total Credits	**30**

General Education

SPEE1020	Interpersonal Communication	3
	Total Credits	**3**
	TOTAL PROGRAM REQUIREMENTS	**33**

MULTICULTURAL LEADERSHIP – DIPLOMA

BUSN1000	Foundations of Management	3
BUSN1010	Leadership	3
BUSN1020	Management Effectiveness	3
BUSN1030	Financial Management	2
BUSN1040	Organizational Behavior	3
BUSN1240	Creativity and Problem Solving	2
BUSN1300	Multicultural Mentoring I	2
BUSN1310	Multicultural Mentoring II	1
BUSN1320	Managing Diversity	3
BUSN1330	Leading a Multicultural Workforce	3
BUSN1340	International Business	3
BUSN1350	Multicultural Conflict Resolution	2
	Total Credits	**30**

General Education

SPEE1020	Interpersonal Communication	3
	Total Credits	**3**
	TOTAL PROGRAM REQUIREMENTS	**33**

MULTICULTURAL SUPERVISION – CERTIFICATE

BUSN1300	Multicultural Mentoring I	2
BUSN1310	Multicultural Mentoring II	1
BUSN1320	Managing Diversity	3
BUSN1330	Leading a Multicultural Workforce	3
BUSN1340	International Business	3
BUSN1350	Multicultural Conflict Resolution	2
	Total Credits	**14**
	TOTAL PROGRAM REQUIREMENTS	**14**

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SMALL BUSINESS ENTREPRENEURSHIP

Delivery: Evening and Online Classes
Start: Fall or Spring Semester

Outcome
Business Entrepreneur Certificate. . . . . 16 cr.

Major Description
This program teaches small business management skills along with all the necessary knowledge and skill sets to start and grow a new small business. The programs central core is the planning of a small business to ensure that the business has the best possible chance of succeeding. The certificate can stand alone for individuals with existing skills or complement a variety of existing technical programs.

Work Environment
Small business owners and entrepreneurs compete in a vast range of business enterprises. Because they are self-employed, small business owners need a broad base of business skills, including marketing, sales, financial accountability and business planning.

Potential Job Titles
For small business owners and entrepreneurs, titles are usually not a primary concern. Most self-employed people focus on what they do rather than what they're called. If a title is needed, the word "owner" is most often used by self-employed people.

Salary Data *(Simplyhired.com)*
Annual salaries of small business owners and entrepreneurs diverge dramatically due to an immense variety of factors. The biggest factor is if the business is full- or part-time.

- Average salary (U.S.): $62,000/year

SMALL BUSINESS ENTREPRENEUR – CERTIFICATE

ENTR1170	Introduction to Small Business	2
BUSN1110	Business Law and Ethics	3
MKTC1000	Principles of Marketing	3
ENTR1760	Selling and Negotiating for Small Business Owners	3
ENTR1860	Business Plan Development	3
ENTR1920	Capitalizing & Financial Management for Small Business	2
	Total Credits	**16**
	TOTAL PROGRAM REQUIREMENTS	**16**

DAKOTA COUNTY
TECHNICAL COLLEGE

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2018-2019 CATALOG

TECHNICAL MANAGEMENT

Delivery: Daytime, Evening and Online Classes
Start: Fall, Spring or Summer Session, Full- or Part-Time

Outcome
Technical Management A.A.S. Degree . . . . . .60 cr.

Major Description
This program provides students with the knowledge, skills and abilities to succeed in leadership positions and enhances career mobility. The program is highly individualized based on a student's interests and previous experience by completing a credit for prior learning assessment process. Students can leverage their specific technical field with the required Business Management emphasis (BUSN), and they can further explore and incorporate more than one of DCTC's programs as part of this degree.

Work Environment
Working conditions in technical management positions are typically similar to office team settings. Technical professionals fill supervisory and middle management roles in companies and corporations.

Potential Job Titles
- Production Supervisor
- Manager
- Facility Manager
- Line Supervisor
- Maintenance Manager
- Manufacturing Supervisor
- Quality Manager
- Human Resources Manager

Salary Data
- Average Wage: $47.35/hour
- Top Earners: $69.67/hour

TECHNICAL MANAGEMENT – A.A.S. DEGREE
This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

	Technical Electives* or Prior Learning Credits	30
	Technical Electives* (from BUSN)	14
BUSN2010	Graduation Project (or BUSN2970 Internship)	1
	Total Credits	**45**

General Education

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
	General Education (MNTC Goal 3 or 4)	3
	General Education Electives (Any MnTC area)	6
	Total Credits	**15**
	TOTAL PROGRAM REQUIREMENTS	**60**

** Select Technical electives from any technical program, or credit for prior learning.*

DAKOTA COUNTY
TECHNICAL COLLEGE

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BUSINESS MARKETING

Delivery: Daytime and Online Classes
Start: Fall, Spring or Summer Session, Full- or Part-Time

Outcomes

Business Marketing Specialist A.A.S. Degree . . . . . .60 cr.
Marketing A.S. Degree . . . . . .60 cr.
Marketing Communications Specialist Certificate . . . . . 28 cr.

Major Description

Business Marketing Specialist: This degree provides knowledge of all general marketing concepts including strategic planning, consumer buying behavior, event planning, sales, e-marketing, public relations, global marketing, product and service development, advertising, promotions, logistics, and marketing research. Graduates are versed in determining strategic efforts to reach their markets, organizing events, coordinating the distribution of products, planning advertising and promotional campaigns, establishing strong web presence for their organizations, and researching to assist in market planning.

Marketing: This program provides knowledge of all general marketing concepts, as mentioned in the Marketing Communications Specialist certificate, along with management concepts, budgeting and accounting, strategic planning, business laws and ethics, and proposal writing. Graduates are versed in managing projects, determining strategies to reach their markets, coordinating the distribution of products, planning advertising and promotional campaigns, establishing strong web presence for their organizations, and researching to assist in market planning.

Work Environment

Often a key department to the success of any business, marketing professionals work to develop strategies to meet the overall goals of the organization. Marketers can have creative or project management positions within a department because both are needed to grow an organization. Professionals tend to work under deadlines set from managers, vendors, or themselves. Travel or relocation can be part of the job. However, improved technology continues to increase telecommuting from home offices, which along with teleconferencing, has reduced travel requirements.

Potential Job Titles

- Commercial Marketing Specialist
- Marketing Administrator
- Marketing Coordinator
- Brand Manager
- Business Development Specialist
- Media Planner
- Sales Manager
- Project Manager
- Sales Specialist
- Online Marketing Coordinator

Salary Data

- Average Wage: $33.71/hour
- Top Earners: $52.36/hour

BUSINESS MARKETING SPECIALIST – A.A.S. DEGREE

ACCT1010	Principles of Accounting I	4
MKTC1000	Principles of Marketing	3
MKTC1100	Fundamentals of Sales	3
MKTC1150	Consumer and Professional Buying Behavior	3
MKTC2000	Advertising Practices and Procedures	3
MKTC2105	Marketing Communications Writing	3
MKTC2310	Public Relations	3
MKTC2506	Digital Marketing	3
MKTC2507	Digital Media Tools	3
MKTC2550	International Marketing	3
MKTC2600	Marketing Research	3
MKTC2815	Business Law	3
MKTC2900	Portfolio and Interviewing	1
MKTC2970	Marketing Internship	3
BUSN1000	Foundations of Management	3
	Technical Elective*	1
	Total Credits	**45**

General Education

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
	Science or Math (MnTC Goal 3 or 4)	3
	General Education Electives (Any MnTC area)	6
	Total Credits	**15**
	TOTAL PROGRAM REQUIREMENTS	**60**

** Select Technical electives from the following subject areas: MKTC, BUSN, ENTR or ACCT with advisor approval.*

MARKETING COMMUNICATIONS SPECIALIST – CERTIFICATE

MKTC1000	Principles of Marketing	3
MKTC1100	Fundamentals of Sales	3
MKTC1150	Consumer and Professional Buying Behavior	3
MKTC2000	Advertising Practices and Procedures	3
MKTC2105	Marketing Communications Writing	3
MKTC2310	Public Relations	3
MKTC2506	Digital Marketing	3
MKTC2507	Digital Media Tools	3
MKTC2600	Marketing Research	3
MKTC2900	Portfolio and Interviewing	1
	Total Credits	**28**
	TOTAL PROGRAM REQUIREMENTS	**28**

MARKETING – A.S. DEGREE

This degree is designed for students wishing to transfer to a four-year institution to obtain an advanced degree.

MKTC1000	Principles of Marketing	3
MKTC1100	Fundamentals of Sales	3
MKTC1150	Consumer and Professional Buying Behavior	3
MKTC2000	Advertising Practices and Procedures	3
MKTC2105	Marketing Communications Writing	3
MKTC2310	Public Relations	3
MKTC2506	Digital Marketing	3
MKTC2550	International Marketing	3
MKTC2600	Marketing Research	3
MKTC2815	Business Law	3
	Total Credits	**30**

General Education

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
MATS1300	College Algebra	4
MATS1251	Statistics	4
ECON1100	Microeconomics	3
ECON1200	Macroeconomics	3
	Science	3-4
	General Education Electives (Any MnTC area)	6-7
	Total Credits	**30**
	TOTAL PROGRAM REQUIREMENTS	**60**

DAKOTA COUNTY TECHNICAL COLLEGE

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DIGITAL MARKETING SPECIALIST

Delivery: Daytime and Online Classes
Start: Fall, Spring or Summer Session, Full- or Part-Time

Outcomes
Digital Marketing Specialist A.A.S. Degree . . . . . .60 cr.

Major Description
Digital marketing is using the right techniques to allow a marketer to promote in a digital world. While the basics of marketing still apply, digital marketing isn't just another new channel for marketing. It's a refreshingly new approach to marketing which offers a unique understanding of consumer behavior through a digital world.

Today's marketers must be well versed in social media, mobile marketing, analytics and more. Whether you are a recent graduate, accomplished marketing professional or looking to change careers, the Digital Marketing program will provide you with the knowledge and skills to advance your career.
You will learn a solid foundation of basic marketing concepts while obtaining a solid grasp of digital marketing management and strategies. This program combines theory with practical real-world experience.

Work Environment
Digital marketing uses all sorts of digital media for marketing products, including television, radio, internet and social media. A digital marketing specialist oversees the implementation of different digital media programs for clients. You will also need strong writing and grammar skills, as you may be assigned to blogging or other writing for potential clients. You will be expected to have quick turn-around on projects and be a multi-tasker. You must thrive in a entrepreneurial setting, be able to accomplish tasks on your own or as part of a team. You must be a self starter and have strong project management skills. You must already understand authentic marketing.

Potential Job Titles
- Digital Brand Manager
- Digital Marketing Manager
- eCommerce Marketing Specialist
- Marketing Associate
- Internet Marketing Coordinator
- Internet Marketing Director
- Public Relations Specialist

DIGITAL MARKETING SPECIALIST – A.A.S. DEGREE

MKTC1000	Principles of Marketing	3
MKTC1100	Fundamentals of Sales	3
MKTC1150	Consumer & Professional Buying Behavior	3
MKTC2000	Advertising Practices & Procedures	3
MKTC2105	Marketing Communications Writing	3
MKTC2310	Public Relations	3
MKTC2506	Digital Marketing	3
MKTC2507	Digital Media Tools	3
MKTC2511	Web Development for Marketers	3
MKTC2515	Digital SEM and Analytics	3
MKTC2520	Video Content for Marketers	2
MKTC2550	International Marketing	3
MKTC2600	Marketing Research	3
MKTC2815	Business Law	3
MKTC2900	Portfolio & Interviewing	1
MKTC2970	Marketing Internship	3
	Total Credits	**45**

General Education

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
	Any course from MnTC Goal Area 3 or 4	3-4
	General Education Electives (Any MnTC area)	5-6
	Total Credits	**15**
	TOTAL PROGRAM REQUIREMENTS	**60**

DAKOTA COUNTY
TECHNICAL COLLEGE

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MARKETING DESIGN

Delivery: Daytime and Online Classes
Start: Fall, Spring or Summer Session, Full- or Part-Time

Outcomes

Marketing Design Specialist A.A.S. Degree . . . . . 60 cr.
Marketing Design Specialist Diploma . . . . . 46 cr.
Marketing Communications Specialist Certificate . . . . . 28 cr.

Major Description

Marketing is a vast field with room for multitudes of professions. Experts estimate that more than one-third of all Americans have marketing activities in their positions.

Marketing Design Specialist: This program delivers skills of all general marketing concepts including strategic planning, consumer buying behavior, event planning, sales, e-marketing, public relations, advertising, promotions, global marketing, product and service development, logistics, and marketing research, along with basic graphic design. Graduates are prepared to design visual communications materials for marketing efforts, determine strategies to reach their markets, organize events, plan advertising and promotional campaigns, establish strong web presence for their organizations, and research to assist in market planning.

Work Environment

Often a key department to the success of any business, marketing professionals work to develop strategies to meet the overall goals of the organization. Marketers with skills in creativity are often asked to organize events and design materials for their companies to promote and grow the organizations. Professionals tend to work under deadlines set from managers, vendors, or themselves. Travel or relocation can be part of the job. However, improved technology continues to increase telecommuting from home offices, which along with teleconferencing, has reduced travel requirements.

Potential Job Titles

- Marketing Design Specialist
- Marketing Administrator
- Marketing Coordinator
- Special Event Coordinator
- Marketing Event Specialist
- Brand Manager
- Media Planner Sales Manager
- Project Manager
- Sales Specialist
- Commercial Marketing Specialist
- Online Marketing Coordinator

Salary Data *(Salary.com)*

- Average Wage: $31.76/hour
- Top Earners: $40.76/hour

MARKETING DESIGN SPECIALIST – A.A.S. DEGREE

GRDT1010	Adobe Photoshop I	3
GRDT1410	Adobe Illustrator I	3
GRDT1430	Adobe InDesign I	3
MKTC1000	Principles of Marketing	3
MKTC1100	Fundamentals of Sales	3
MKTC1150	Consumer & Professional Buying Behavior	3
MKTC2000	Advertising Practices & Procedures	3
MKTC2105	Marketing Communications Writing	3
MKTC2310	Public Relations	3
MKTC2506	Digital Marketing	3
MKTC2507	Digital Media Tools	3
MKTC2520	Video Content for Marketers	2
MKTC2600	Marketing Research	3
MKTC2815	Business Law	3
MKTC2900	Portfolio and Interviewing	1
MKTC2970	Marketing Internship	3
	Total Credits	**45**

General Education

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
	General Education Elective (Goal 3 or 4)	3-4
	General Education Electives (Any MnTC area)	5-6
	Total Credits	**15**
	TOTAL PROGRAM REQUIREMENTS	**60**

MARKETING DESIGN SPECIALIST – DIPLOMA

GRDT1010	Adobe Photoshop I	3
GRDT1410	Adobe Illustrator I	3
GRDT1430	Adobe InDesign I	3
MKTC1000	Principles of Marketing	3
MKTC1100	Fundamentals of Sales	3
MKTC1150	Consumer & Professional Buying Behavior	3
MKTC2000	Advertising Practices & Procedures	3
MKTC2105	Marketing Communications Writing	3
MKTC2506	Digital Marketing	3
MKTC2507	Digital Media Tools	3
MKTC2520	Video Content for Marketers	2
MKTC2600	Marketing Research	3
MKTC2900	Portfolio & Interviewing	1
	Technical Elective Credits	1
	Total Credits	**37**

General Education

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
	General Education Electives (Any MnTC area)	3
	Total Credits	**9**
	TOTAL PROGRAM REQUIREMENTS	**46**

MARKETING COMMUNICATIONS SPECIALIST – CERTIFICATE

MKTC1000	Principles of Marketing	3
MKTC1100	Fundamentals of Sales	3
MKTC1150	Consumer & Professional Buying Behavior	3
MKTC2000	Advertising Practices & Procedures	3
MKTC2105	Marketing Communications Writing	3
MKTC2310	Public Relations	3
MKTC2506	Digital Marketing	3
MKTC2507	Design Media Tools	3
MKTC2600	Marketing Research	3
MKTC2900	Portfolio & Interviewing	1
	Total Credits	**28**
	TOTAL PROGRAM REQUIREMENTS	**28**

DAKOTA COUNTY TECHNICAL COLLEGE

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SALES MANAGEMENT

Delivery: Daytime and Online Classes
Start: Fall, Spring or Summer Session, Full- or Part-Time

Outcomes

Sales Management Specialist A.A.S. Degree. . . . . .60 cr.
Sales Specialist Certificate . . . . . 16 cr.

Major Description

Sales is an increasingly important position in contemporary organizations, especially with the growing global economy. Simply put, nothing happens unless something is sold! As a salesperson, you are in the enviable position to make something happen.

Sales Specialist: Every company has a salesperson. Nothing happens in a company until someone sells something. As a salesperson, you are in the enviable position to make something happen. Most business executives start in a sales career and move into a management role after positively affecting profits of their companies through sales. If you intend to follow a corporate path, a career in sales prepares you for a large portion of executive positions. This program gives students the skills associated with direct promotion of products and services to potential customers. Training includes basic and professional sales techniques, management and general marketing concepts, sales organization and operations, customer relations, and consumer buying behavior.

Sales Management Specialist: This program gives students the sales skills mentioned in the Sales Specialist certificate along with general marketing concepts including strategic planning, consumer buying behavior, event planning, e-marketing, public relations, advertising, promotions, global marketing, product and service development, logistics, and marketing research. This program is enhanced through management training.

Work Environment

It is hard to describe a typical day for a salesperson because every day can be different. One day you could search the Internet for prospective clients. The next few days may be spent calling these prospective clients and then an entire week may be in face-to-face sales calls. On other days, you could write up sales-call reports and prepare proposals for clients. Some sales positions allow you to work out of your home office while others require traveling.

Potential Job Titles

- Marketing Design Specialist
- Marketing Administrator
- Marketing Coordinator
- Special Event Coordinator
- Marketing Event Specialist
- Brand Manager
- Media Planner
- Sales Manager
- Project Manager
- Sales Specialist
- Commercial Marketing Specialist
- Online Sales Representative

Salary Data

- Average Wage: $29.05/hour
- Top Earners: $61.66/hour

SALES MANAGEMENT SPECIALIST – A.A.S. DEGREE

MKTC1000	Principles of Marketing	3
MKTC1100	Fundamentals of Sales	3
MKTC1150	Consumer & Professional Buying Behavior	3
MKTC2000	Advertising Practices & Procedures	3
MKTC2105	Marketing Communications Writing	3
MKTC2310	Public Relations	3
MKTC2506	Digital Marketing	3
MKTC2550	International Marketing	3
MKTC2600	Marketing Research	3
MKTC2815	Business Law	3
MKTC2900	Portfolio & Interviewing	1
MKTC2970	Internship	3
ACCT1010	Principles of Accounting I	4
BUSN1000	Foundations of Management	3
BUSN1020	Management Effectiveness	3
	Technical Elective*	1
	Total Credits	**45**

General Education

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
	General Education (Goal 3 or 4)	3
	General Education Electives (Any MnTC area)	6
	Total Credits	**15**
	TOTAL PROGRAM REQUIREMENTS	**60**

SALES SPECIALIST – CERTIFICATE

MKTC1000	Principles of Marketing	3
MKTC1100	Fundamentals of Sales	3
MKTC1150	Consumer and Professional Buying Behavior	3
MKTC2105	Marketing Communications Writing	3
MKTC2900	Portfolio and Interviewing	1
BUSN1000	Foundations of Management	3
	Total Credits	**16**
	TOTAL PROGRAM REQUIREMENTS	**16**

DAKOTA COUNTY
TECHNICAL COLLEGE

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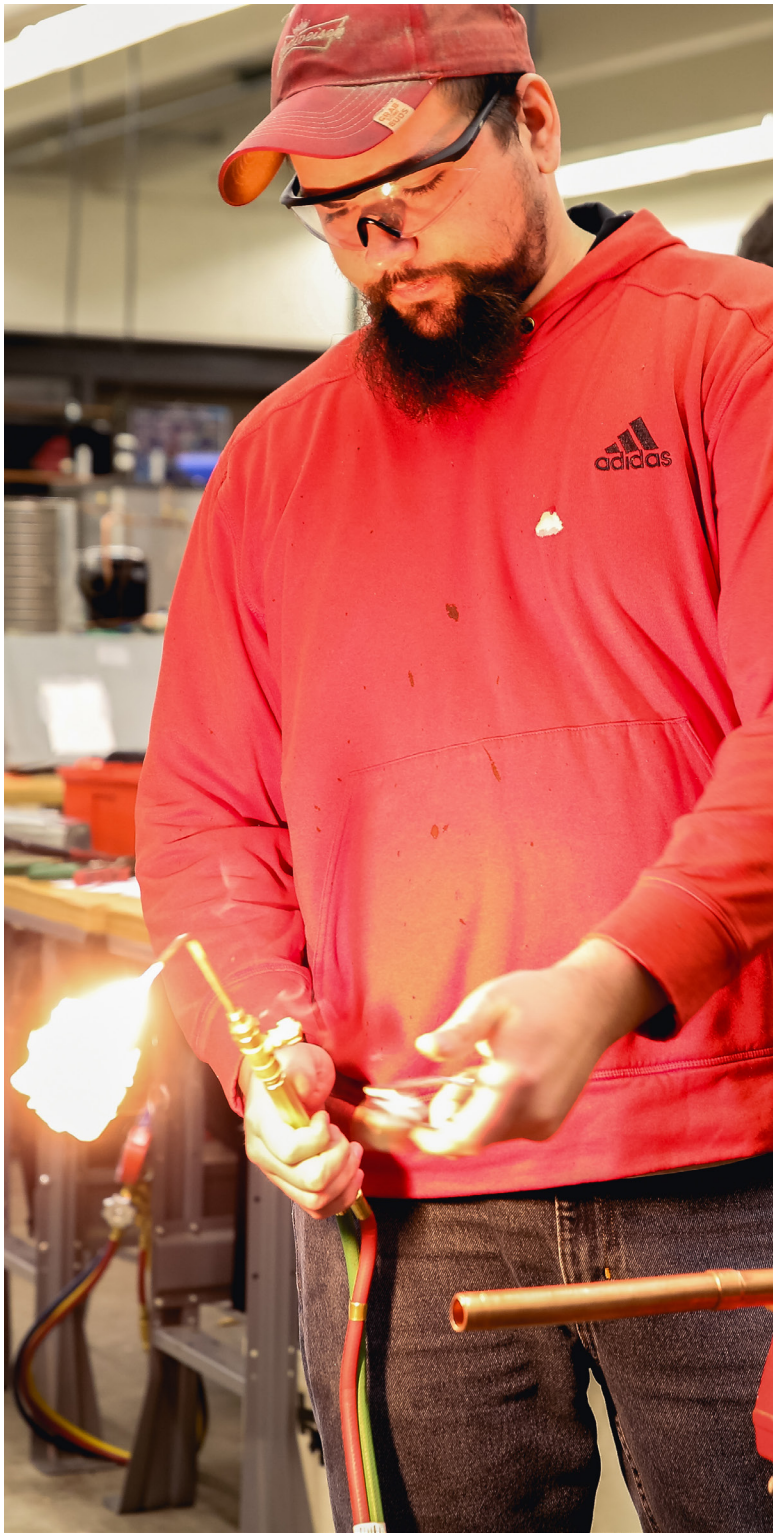
CONSTRUCTION & MANUFACTURING



PROGRAMS OF STUDY

Architectural Technology
Brewing & Beer Steward Technology
Civil Engineering Technology
Construction Management
Electrical Construction & Maintenance
Electrical Lineworker
Energy Technical Specialist
HVAC & Refrigeration Technology
Industrial & Energy Plant Maintenance
Interior Design
Welding Technology

POWER UP

Technology is fundamentally a collection of techniques. The foundation of any technical career is the mastery of those techniques. Although the tools of the trade change from field to field, the technical expert is the one constant working it all out.

Our Construction & Manufacturing programs offer a range of choices for students searching for their place in a technological world.

TRAITS OF THE TRADE

The best technicians share these essential qualities:

- Inventive nature
- Commitment to excellence
- Attention to detail
- Powerful work ethic
- Safety consciousness
- Knack for concentration
- Adaptability
- Willingness to learn
- Superior motor skills
- Common sense
- Mathematical aptitude
- Gift for spatial perception

Unless otherwise specified, salary data is sourced from careerwise.minnstate.edu.

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ARCHITECTURAL TECHNOLOGY

Delivery: Daytime Classes
Start: Fall Semester, Full-Time
Location: Rosemount Campus

Outcome

Architectural Technology A.A.S. Degree . . . . . .60 cr.
Architectural Drafting Certificate . . . . . 12 cr.

Major Description

This program prepares the student to work in architectural and construction related fields, providing training in the latest computer-aided design (CAD), building information modeling (BIM) software, and 3D visualization. Students develop drawings for residential and commercial buildings in a hands-on environment patterned after the most up-to-date architectural offices. Realistic architectural projects provide an excellent mix of technical training and creative problem solving, including effectively incorporating sustainability and green building principles.

Work Environment

Graduates of this program find employment in many related areas: architectural firms and professional design offices, construction, product sales, estimating or managerial departments of construction firms or material manufacturing companies. As architectural technicians acquire experience, they have the potential to gain more responsibility and advance into project management positions.

Potential Job Titles

- CAD Technician
- AutoCAD Technician
- Computer-aided drafting and design drafter
- Draftsperson
- Architectural drafter
- Drafter
- Architectural Designer

Salary Data

- Average Wage: $25.08/hour
- Top Earners: $35.62/hour

ARCHITECTURAL TECHNOLOGY – A.A.S. DEGREE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

ARCT1000	Architectural Studio I	5
ARCT1020	Methods and Materials I	3
ARCT1107	CAD I	3
BIOL1110	Environmental Science	3
	Total Credits	**14**

First Year - Second Semester

ARCT1207	CAD II	3
ARCT1500	Architectural Studio II	5
ARCT1520	Building Codes and Regulations	3
ARCT1540	Methods and Materials II	3
ARTS1310	History of Architecture (or ARTS1550 or HUMA1100)	3
	Total Credits	**17**

Second Year - First Semester

ARCT2000	Mechanical and Electrical Systems	3
ARCT2020	Building Structures	3
ARCT2101	Architectural Studio III	5
ARCT2107	CAD III	3
	Total Credits	**14**

Second Year - Second Semester

ARCT2200	Architectural Studio IV	5
ARCT2970	Internship	1
ENGL1150	Composition I	3
SPEE1020	Interpersonal Communications	3
	General Education Elective**	3
	Total Credits	**15**
	TOTAL PROGRAM REQUIREMENTS	**60**

*** Select General Education electives from any MnTC goal area.*

ARCHITECTURAL DRAFTING – CERTIFICATE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

ARCT1020	Methods and Materials I	3
ARCT1107	CAD I	3
ARCT1207	CAD II	3
ARCT1540	Methods and Materials II	3
	Total Credits	**12**

** Final 2018-2019 Certificate pending Minnesota State Approval.*

***This program not eligible for financial aid*

BREWING & BEER STEWARD TECHNOLOGY

Delivery: Evening and Weekend Classes
Start: Fall Semester, Full-Time
Location: Rosemount Campus

Outcome

Brewing & Beer Steward Technology Certificate . . . . . 21 cr.

Major Description

This interdisciplinary program is designed to prepare students for brewing beer, cellar operations, and other professional positions in the commercial brewery or brewpub industry. The program is also designed to provide the knowledge for those interested in the position of beer steward. The program is intended to provide an overview of all aspects of brewing, technical skills and knowledge to select raw materials, production, process management, beer care, beer service, and beer styles using food pairings. In addition, the program is designed to provide operations management, marketing and distribution, and financial management for breweries. Overall, the program will provide students with a solid understanding of brewing science, engineering, management, and service.

Work Environment

Brewing and Beer Steward graduates will set up, operate, and tend brewing equipment; control, adjust, and regulate conditions such as material flow, temperature, and pressure. They will also validate the qualities such as clarity, cleanness, consistency, and maintaining logs on instrument readings and test results and the cleaning and sterilizing of brewery equipment.

Potential Job Titles

- Brewer/Cellar Operator
- Brewing/Blender Operator
- Brewery Maintenance Technician
- Cellar Worker
- Plant Operator
- Technical Brewer
- Lead Brewer
- Shift/Assistant Brewer
- Quality Control/Lab Technician
- Packaging Operator

Salary Data

- Average Wage: $14.40/hour
- Top Earners: $18.82/hour

BREWING & BEER STEWARD TECHNOLOGY - CERTIFICATE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

BREW1000	Introduction to Brewing & Beer Steward Technology	2
BREW1100	Science of Brewing & Fermentation	4
BREW1200	Raw Materials & Brewing Process	4
	Total Credits	**10**

First Year - Second Semester

BREW1300	Beer Production & Quality Control	4
BREW1400	Packaging & Process Technology	3
BREW2970	Brewing & Beer Steward Technology Internship	4
	Total Credits	**11**
	TOTAL PROGRAM CREDITS	**21**

DAKOTA COUNTY
TECHNICAL COLLEGE

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CIVIL ENGINEERING TECHNOLOGY

Delivery: Daytime Classes
Start: Fall Semester, Full-Time
Location: Rosemount Campus

Outcome
Civil Engineering Technology A.A.S. Degree. . . . . .60 cr.
Surveying & CAD Drafting Certificate . . . . . .30 cr.

Major Description
This program incorporates state-of-the-art equipment and software programs in its labs. Working in a diverse field with excellent employment opportunities nationwide, graduates will be involved in all aspects of the construction process including the planning and design as well as project management and inspections of roads, bridges, highways, subdivisions, and conventional energy plants, including wind farms.

Work Environment
Graduates may land rewarding careers with consulting engineering companies, construction companies, and governmental agencies such as the MN Department of Transportation, or the engineering department of a local municipality.

Potential Job Titles
- Civil Engineering Technician
- Civil Engineering Designer
- Surveyor

Salary Data
- Average Wage: $28.71/hour
- Top Earners: $33.95/hour

CIVIL ENGINEERING TECHNOLOGY – A.A.S. DEGREE
This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

CIVL1131	Beginning Surveying	5
CIVL1151	Basic CAD	5
CIVL1251	Soil Mechanics Survey/Materials Testing	3
	General Education Elective**	3
	Total Credits	**16**

First Year - Second Semester

CIVL1222	Civil Engineering Technology Drafting	4
CIVL1231	Intermediate Surveying & GPS	5
CIVL1241	Construction Staking	2
CIVL1255	Hydrology and GIS	3
	Total Credits	**14**

Second Year - First Semester

CIVL2120	Construction Inspection	3
CIVL2131	Land Survey	2
CIVL2155	Eco-Sensitive Design	1
CIVL2162	Project Management	2
CIVL2970	Internship	3
MATS1300	College Algebra	4
	Total Credits	**17**

Second Year - Second Semester

CIVL2211	Project Design: Utilities Design, Road Design, Grading	3
CIVL2221	Properties of Construction Materials	2
CIVL2241	Estimating	2
ENGL1150	Composition I	3
MATS1320	College Trigonometry	2
SPEE1020	Interpersonal Communication	3
	Total Credits	**15**
	TOTAL PROGRAM CREDITS	**60**

*** Select General Education electives from any MnTC goal area.*

SURVEYING & CAD DRAFTING – CERTIFICATE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

CIVL1131	Beginning Surveying	5
CIVL1151	Basic CAD	5
CIVL1251	Soil Mechanics Survey/Materials Testing	3
	General Education Elective**	3
	Total Credits	**16**

First Year - Second Semester

CIVL1222	Civil Engineering Technology Drafting	4
CIVL1231	Intermediate Surveying & GPS	5
CIVL1241	Construction Staking	2
CIVL1255	Hydrology and GIS	3
	Total Credits	**14**
	TOTAL PROGRAM CREDITS	**30**

*** Select General Education electives from any MnTC goal area.*

DAKOTA COUNTY
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CONSTRUCTION MANAGEMENT

Delivery: Daytime Classes
Start: Fall Semester, Full-Time Recommended
Location: Rosemount Campus

Outcomes
Construction Management A.S. Degree. . . . . .60 cr.

Major Description
Construction Management prepares students for supervisory and management positions in the construction industry. The curriculum combines basic fundamentals with key courses in applied management, engineering, design and business that are required to manage complex construction projects.

Construction management is an ideal career choice if you have a strong, general interest in building and design plus an aptitude for taking the lead role on big projects from start to finish. As a construction manager, you'll oversee all phases of a project, from planning to budgeting to production.

The Associate of Science (A.S.) in Construction Management is designed to transfer to the University of Minnesota's B.A.S. in Construction Management and Minnesota State University Moorhead's B.S. in Construction Management (Twin Cities).

Work Environment
Working in this field is likely to include both office and construction site work.

Potential Job Titles
- Project Manager
- Design Manager
- Area Superintendent
- Quantity Surveyer
- Chief Estimator
- Site Manager

Salary Data
- Average Wage: $40.00/hour
- Top Earners: $70.00/hour

CONSTRUCTION MANAGEMENT – A.S. DEGREE
This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

ENG1150	Composition I	3
SPEE1020	Interpersonal Communication	3
BUSN1110	Foundations of Management	3
	CMSV Electives	3
	Goal 1 Elective	3
	Total Credits	**15**

First Year - Second Semester

CMSV1200	Construction Graphics	3
PHYS1100	College Physics I	4
PHIL1100	Ethics	3
MATS1300	College Algebra	4
	Total Credits	**14**

Second Year - First Semester

ACCT1010	Principles of Financial Accounting I	4
ECON1100	Microeconomics	3
ARTS1310	History of Architecture	3
	CMSV Electives	6
	Total Credits	**16**

Second Year - Second Semester

CMSV2875	Mechanical & Electrical Systems	4
CMSV2885	Construction Estimating	4
CMSV2890	Building Organization & Technology	3
PSYC1105	General Psychology	4
	Total Credits	**15**
	TOTAL PROGRAM REQUIREMENTS	**60**

Technical Elective Options

CMSV1000	Intro to Construction Management	1-2
CMSV2100	Soils & Concrete Technology	4
CMSV2850	Construction Safety	2
CMSV2860	Plan Reading	2
CMSV2870	Construction Management	3
CMSV2900	Construction Scheduling	3
CMSV2960	Field Project	1
CMSV2970	Internship	3
BUSN1100	Business Law and Ethics	3
BUSN1141	Human Resource Development	3

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ELECTRICAL CONSTRUCTION & MAINTENANCE TECHNOLOGY

Delivery: Daytime Classes
Start: Fall or Spring Semester, Full-Time Recommended
Location: Rosemount Campus

Outcomes
Electrical Construction & Maintenance A.A.S. Degree . . 81 cr.
Electrical Construction & Maintenance Diploma . . . . . 75 cr.

Major Description
Designed to give students hands-on experience for entry-level positions in electrical construction, installation, operation and maintenance occupations, this program delivers technical courses in electrical/electronics theory plus the installation, maintenance, wiring, and testing of electrical/electronic apparatus and control devices through the application of the National Electric Code.

Work Environment
Able to work indoors and out, electricians must be safety conscious and able to distinguish colors. They find work with electrical contractors, technology system contractors, registered employers who only perform electrical work in facilities they own or lease, and manufacturers of electrical equipment.

Potential Job Titles
- Construction Electrician
- Electrical Installer
- Electrical Maintenance Worker
- Industrial Electrician
- Electrical System Specialist
- Solar Installer

Salary Data
- Average Wage: $31.64/hour
- Top Earners: $36.46/hour

The Electrical Construction Maintenance program is approved by the Minnesota Board of Electricity.

ELECTRICAL CONSTRUCTION & MAINTENANCE TECHNOLOGY – A.A.S. DEGREE
This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

ELEC1110	D. C. Electricity Theory and Lab	3
ELEC1120	A. C. Electricity Theory and Lab	3
ELEC1130	National Electrical Code I	3
ELEC1137	Construction Site Safety	1
ELEC1139	Electrical Construction Fundamentals	2
ELEC1140	Blueprint Reading for Technicians	3
MATS1205	Math for Electricians	3
	Total Credits	**18**

First Year - Second Semester

ELEC1210	Analog/ Digital Electronics Theory	2
ELEC1220	Analog/ Digital Electronics Lab	4
ELEC1230	Construction Skills & Intro to Wiring Theory	3
ELEC1240	Construction Skills & Intro to Wiring Lab	6
SPEE1020	Interpersonal Communication	3
	Total Credits	**18**

First Year - Summer Session

ENGL1150	Composition I	3
	General Education (MnTC Goal 3 or 4)	3
	Total Credits	**6**

Second Year - First Semester

ELEC2110	Electrical Apparatus Theory	3
ELEC2120	Electrical Apparatus Lab	6
ELEC2131	Programmable Logic Controllers Theory	2
ELEC2141	Programmable Logic Controllers Lab	4
	General Education Elective**	3
	Total Credits	**18**

Second Year - Second Semester

ELEC2210	National Electrical Code II	3
ELEC2220	Electrical/Electronic Controls & Systems Theory	2
ELEC2230	Electrical/Electronic Controls & Systems Lab	4
ELEC2241	Industrial & Maintenance Wiring Theory/Lab	3
ELEC2251	Commercial Wiring Theory and Lab	3
ELEC2260	Heating, Ventilation, and Air Conditioning Wiring Theory and Lab	3
	Total Credits	**18**

Second Year - Summer Session

	General Education Elective**	3
	Total Credits	**3**
	TOTAL PROGRAM REQUIREMENTS	**81**

*** Select General Education electives from any MnTC goal area.*

ELECTRICAL CONSTRUCTION & MAINTENANCE TECHNOLOGY – DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

ELEC1110	D. C. Electricity Theory and Lab	3
ELEC1120	A. C. Electricity Theory and Lab	3
ELEC1130	National Electrical Code I	3
ELEC1137	Construction Site Safety	1
ELEC1139	Electrical Construction Fundamentals	2
ELEC1140	Blueprint Reading for Technicians	3
MATS1205	Math for Electricians	3
	Total Credits	**18**

First Year - Second Semester

ELEC1210	Analog/Digital Electronics Theory	2
ELEC1220	Analog/Digital Electronics Lab	4
ELEC1230	Construction Skills & Intro to Wiring Theory	3
ELEC1240	Construction Skills & Intro to Wiring Lab	6
SPEE1020	Interpersonal Communications	3
	Total Credits	**18**

First Year - Summer Session

	General Education Elective**	3
	Total Credits	**3**

Second Year - First Semester

ELEC2110	Electrical Apparatus Theory	3
ELEC2120	Electrical Apparatus Lab	6
ELEC2131	Programmable Logic Controllers Theory	2
ELEC2141	Programmable Logic Controllers Lab	4
ENGL1150	Composition I (or ENGL1000)	3
	Total Credits	**18**

Second Year - Second Semester

ELEC2210	National Electrical Code II	3
ELEC2220	Electrical/Electronic Controls & Systems Theory	2
ELEC2230	Electrical/Electronic Controls & Systems Lab	4
ELEC2241	Industrial & Maintenance Wiring Theory/Lab	3
ELEC2251	Commercial Wiring Theory and Lab	3
ELEC2260	Heating, Ventilation, and Air Conditioning Wiring Theory and Lab	3
	Total Credits	**18**
	TOTAL PROGRAM REQUIREMENTS	**75**

*** Select General Education electives from any MnTC goal area.*

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ELECTRICAL LINEWORKER

Delivery: Daytime Classes
Start: July, Full-Time
Location: Rosemount Campus

Outcomes
Electrical Lineworker A.A.S. Degree . . . . . .60 cr.
Electrical Lineworker Diploma . . . . . .45 cr.

Major Description
Graduates are prepared to join the electrical power industry workforce as safe and knowledgeable apprentices. Along with extensive hands-on experience building power lines, students also practice both overhead and underground techniques. Campus instruction facilities include a large outdoor training field for pole climbing, line construction, bucket-truck operation and erecting power lines using power-line construction trucks.

Work Environment
Able to perform strenuous physical duties, electrical lineworkers work outdoors building overhead power lines and/or laying underground cable. Tool use, care, and safety awareness are extremely important.

Potential Job Titles
- Construction Lineworker
- Line Crewman
- Electric Power Line Installer
- Line Erector
- Line Installer-Repairer
- Power Lineworker

Salary Data
- Average Wage: $31.35/hour
- Top Earners: $39.57/hour

ELECTRICAL LINEWORKER – A.A.S. DEGREE
This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

July Start

ELLW1110	Distribution I	4
ELLW1120	Utility Equipment and Tools	2
	Total Credits	**6**

First Year - First Semester

ELLW1130	Basic Electricity	2
ELLW1140	Distribution IIA	4
ELLW1141	Distribution IIB	4
ELLW1145	Rope and Rigging	2
ELLW1150	Construction Planning and Practices	2
ELLW1155	Equipment Operations	2
ELLW1160	Transformers I	4
	Total Credits	**20**

First Year - Second Semester

ELLW1162	Transformers II	4
ELLW1165	Pole Top and Bucket Rescue	2
ELLW1170	Line Construction and Maintenance A	4
ELLW1172	Line Construction and Maintenance B	4
ELLW1175	System Protection	2
ELLW1180	Underground Cable and Fault Locating	2
ELLW1185	Electrical Industry Search Skills	1
	Total Credits	**19**

Additional Requirements

SPEE1020	Interpersonal Communication	3
ENGL1150	Composition I	3
	General Education (MnTC Goal 3 or 4)	3
	General Education Electives**	6
	Total Credits	**15**
	TOTAL PROGRAM REQUIREMENTS	**60**

*** Select General Education electives from any MnTC goal area.*

ELECTRICAL LINEWORKER – DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

July Start

ELLW1110	Distribution I	4
ELLW1120	Utility Equipment and Tools	2
	Total Credits	**6**

First Year - Fall Semester

ELLW1130	Basic Electricity	2
ELLW1140	Distribution IIA	4
ELLW1141	Distribution IIB	4
ELLW1145	Rope and Rigging	2
ELLW1150	Construction Planning and Practices	2
ELLW1155	Equipment Operations	2
ELLW1160	Transformers I	4
	Total Credits	**20**

First Year - Spring Semester

ELLW1162	Transformers II	4
ELLW1165	Pole Top and Bucket Rescue	2
ELLW1170	Line Construction and Maintenance A	4
ELLW1172	Line Construction and Maintenance B	4
ELLW1175	System Protection	2
ELLW1180	Underground Cable and Fault Locating	2
ELLW1185	Electrical Industry Search Skills	1
	Total Credits	**19**
	TOTAL PROGRAM REQUIREMENTS	**45**

DAKOTA COUNTY
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ENERGY TECHNICAL SPECIALIST

Delivery: Daytime and Online Classes
Start: Fall Semester, Full-Time
Location: Rosemount Campus

Outcomes
Energy Technical Specialist A.A.S. Degree . . . . . .60 cr.

Major Description
The Energy Technical Specialist A.A.S. Degree has been developed using funding from a U. S. Department of Labor High Growth Job Training initiative Grant. The goal of the degree is to train students in the field of energy technology. Due to the increasing age of the current energy workforce and the growth of the renewable energy industry, it is estimated that there will be a great demand for skilled workers in the energy industry. The energy Technical Specialist, A. A. S. degree will convey the skills and knowledge necessary to be successful in both traditional and renewable energy fields. The degree will prepare students for work (primarily as technicians) in the following industries: electric power generation, natural gas distribution, ethanol production, biodiesel production, wind turbine maintenance or solar energy.

Work Environment
Energy maintenance technicians work in energy generation plants. Depending on the areas of focus, these technicians work in either traditional fossil fuel (coal-fired) plants, nuclear power generation plants, or other energy specializations. The Minnesota energy companies support and are involved with this program through the Minnesota Energy Consortium.

Students entering into the Energy Technical Specialist program should realize that the energy industry is a highly specialized industry and there are extraordinary employment characteristics associated with the power industry. Depending on the energy company, the hiring managers may require a federal background check, psychological testing, drug and alcohol testing, fingerprinting for FBI criminal investigation, and a physical if necessary for a position. The industry is solely responsible for facilitating the employment prerequisites.

Potential Job Titles
- Power Plant Technician
- Power Plant Operator
- Energy Plant Maintenance Technician
- Power Generation Technician

Salary Data
- Average Wage (U.S.): $36.41/hour
- Top Earners (U.S.): $43.49/hour

ENERGY TECHNICAL SPECIALIST – A.A.S. DEGREE
This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

ETSA1515	Intro to Industrial Safety and Health	2
ETSA1300	Intro to Trad/Renewable Energy	3
ETSA1511	Fundamentals of AC/DC Electricity I	3
ETSA1512	Fundamentals of AC/DC Electricity II	3
MATS1300	College Algebra	3
	Total Credits	**14**

First Year - Second Semester

ETSA1507	Digital Electronics	3
ETSA1523	Print Reading	3
ETSA1552	Basic Metal Joining and Fabrication	2
ETSA1541	Mechanical Fundamentals	3
PHYS1050	Introduction to Physics	3
	Total Credits	**14**

Second Year - First Semester

ETSA2516	Mechanical Systems II	4
ETSA1531	Process Controls/Instrumentation I	3
ETSA2512	Hydraulics	3
ETSA2513	Pneumatics	3
BIOL1110	Environmental Science	3
	Total Credits	**16**

Second Year - Second Semester

ETSA2543	PLC Fundamentals	3
ETSA2546	Powerplant Technology (Fossil Fuel Emphasis)	4
ETSA2547	Mechanical Fundamentals for Process Controls	3
ENGL1150	Composition I	3
SPEE1020	Interpersonal Communications	3
	Total Credits	**16**
	TOTAL PROGRAM REQUIREMENTS	**60**

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2018-2019 CATALOG

HVAC & REFRIGERATION TECHNOLOGY

Delivery: Daytime
Start: Fall Semester, Full-Time
Location: Rosemount Campus

Outcomes
HVAC & Refrigeration - Diploma . . . . . 39 cr.

Major Description
Employment of HVAC/R technicians is expected to increase faster than average for all occupations through the year 2022.* The goal of DCTC's Heating, Ventilation, Air Conditioning and Refrigeration Diploma program is to provide students with the entry level knowledge and skills required to safely install, maintain, troubleshoot and repair today's technologically advanced HVAC/R systems. Through group discussions, lectures and hands-on laboratory experience with actual HVAC/R equipment, this program helps students become successful in this exciting and challenging industry career. Interested applicants should possess strong basic math skills and mechanical aptitude. Each student will be prepared and required to pass the EPA Section 608 refrigerant handling certification exam.

Work Environment
HVAC/R technicians must be able to work independently, in extreme conditions, at all hours of the day. From the cold of winter to the heat and humidity of summer, in attics, basements, crawl spaces and on roof tops. Occasional heavy lifting, working off ladders or scaffolding and being comfortable with heights are also potential requirements. HVAC/R technicians should expect to be on call and work after hours and some weekends.

Potential Job Titles
- Residential and/or Commercial HVAC/R Service Technician
- Residential and/or Commercial HVAC/R Installer
- Sheet Metal Fabrication and Installation
- HVAC/R Equipment and Parts Salesperson

Salary Data
- Average Wage: $25.89/hour
- Top Earners: $30.48/hour

HVAC & REFRIGERATION – DIPLOMA
This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

HVAC1100	Alternative Heating and Cooling Methods	2
HVAC1110	Indoor Air Quality	1
HVAC1120	Refrigeration Principles and Applications	4
HVAC1130	Tool Usage, Brazing and Soldering Techniques	2
HVAC1140	Electric Motors/Controls/Schematics	2
HVAC1150	Halide Refrigerant Certification	2
HVAC1160	Employability, Problem Solving and Customer Relations	2
HVAC1170	Introduction to Basic Electricity	2
SPEE1020	Interpersonal Communication	3
	Total Credits	**20**

First Year - Second Semester

HVAC1200	Forced Air Heating Systems	4
HVAC1210	Hydronic Heating Systems	2
HVAC1230	Ventilating Systems and HVAC Installation	4
HVAC1240	Air Conditioning and Heat Pump Service	3
HVAC1250	Commercial Refrigeration	3
BIOL1110	Environmental Science	3
	Total Credits	**19**
	TOTAL PROGRAM REQUIREMENTS	**39**

HVAC2960 Specialized Lab - 1 credit technical elective is suggested, but not required.

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2018-2019 CATALOG

INDUSTRIAL & ENERGY PLANT MAINTENANCE

Delivery: Daytime and Online Classes
Start: Fall Semester, Full-Time
Location: Rosemount Campus

Outcome
Industrial and Energy Plant Maintenance Diploma . . . . . 45 cr.

Major Description
With training in the Industrial and Energy Plant Maintenance program you will obtain the necessary skills to maintain manufacturing, industry, and energy plants. Modern manufacturing, industry and energy plants are highly complicated and require a skilled worker to maintain them.

This program prepares students with a foundation in the theory, application and principles of these complicated environments. This includes the proper installation, maintenance and troubleshooting of mechanical, electrical, electronic, electromechanical, hydraulic and pneumatic power equipment. Our program also focuses on bearings and seals, print reading, preventative/predictive maintenance, safety, welding, laser alignment, and vibration analysis.

The Industrial and Energy Plant Maintenance program is an ideal choice for students with good mechanical aptitude who take pride in their work.

Salary Data
- Average Wage: $25.59/hour
- Top Earners: $29.77/hour

INDUSTRIAL AND ENERGY PLANT MAINTENANCE – DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

ETSA1515	Intro to Industrial Safety and Health	2
ETSA1511	Fundamentals of AC/DC Electricity I	3
ETSA1512	Fundamentals of AC/DC Electricity II	3
ETSA1300	Intro to Trad/Renewable Energy	3
	Total Credits	**11**

First Year - Second Semester

ETSA1507	Digital Electronics	3
ETSA1523	Print Reading	3
ETSA1552	Basic Metal Joining and Fabrication	2
ETSA1541	Mechanical Fundamentals	3
	Total Credits	**11**

Second Year - First Semester

ETSA2516	Mechanical Systems II	4
ETSA1531	Process Controls/Instrumentation I	3
ETSA2512	Hydraulics	3
ETSA2513	Pneumatics	3
	Total Credits	**13**

Second Year - Second Semester

ETSA2543	PLC Fundamentals	3
ETSA2546	Powerplant Technology	4
ETSA2547	Mechanical Fundamentals for Process Controls	3
	Total Credits	**10**
	TOTAL PROGRAM REQUIREMENTS	**45**

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INTERIOR DESIGN

Delivery: Daytime Classes
Start: Fall or Spring Semester, Full- or Part-Time
Location: Rosemount Campus

Outcomes

Residential Interior Design Diploma . . . . . 39 cr.
+ Technical Management A.A.S. Degree . . . . . 60 cr.
+ Individualized Studies A.S. Degree . . . . . 60 cr.

Major Description

This award-winning Interior Design program is a challenging course of study preparing students to launch a career in an exciting and dynamic profession. Emphasis is placed on acquiring the hands-on knowledge and skills to design functional and aesthetically engaging environments. The curriculum is architecturally based and explores spatial design and its' embellishment. All aspects of space—scale, proportion, configuration, and lighting, as well as textures, materials, and color—are studied in relation to their effect on human well-being. Technical skills are gained in the latest computer-aided design (CAD), building information management (BIM) software, and 3D visualization and graphics. Current software includes: Auto-Cad, Revit, Sketch-up, 20/20, Photoshop and InDesign. These skills allow students to produce professional presentations and construction documents.

The students work closely in small groups with their instructors/industry practitioners on projects that develop in size and complexity. Service-learning and inter-disciplinary projects provide a real world experience. Graduates leave the program with a solid technical foundation and have the skills to collaborate with fellow professionals and deliver sustainable interior environments matched to the needs of their clients. Students also have options to transfer Interior Design credits to a 4-year university.

Degree Options

Those wishing to earn an A.A.S. degree may combine technical credits with a custom-designed curriculum path in Technical Management. The Technical Management degree prepares students for today's modern business environment and is ideal for those wishing to enter the workforce after attending DCTC. More information on Technical Management is available in the Business & Management section of this catalog.

Accreditation

The Interior Design program is accredited by the National Kitchen and Bath Association.

Those wishing to earn an A.S. degree may combine technical credits with a custom-designed curricum path in Individualized Studies. An A.S. degree is ideal for those wishing to transfer to a four-year college or university. More information on Individualized Studies is available in the General Education section of this catalog.

For more information, contact Interior Design faculty.

Work Environment

Interior designers work closely with clients, home owners, businesses, architects, contractors, and tradespeople. They frequently work as members of a design team, primarily in architecture and interior design firms. This can be a highly competitive field, where use of the design process is critical to meeting project deadlines. Graduates will find employment in many areas, such as: residential design/architectural firms, kitchen and bath studios, furnishings, product sales, builders, and showrooms.

Potential Job Titles

- Kitchen and Bath Designer
- Residential Interior Designer
- Interior Design Coordinator
- Sales Representative
- Furniture & Textiles Consultant

Salary Data

- Average Wage: $29.96/hour
- Top Earners: $38.53/hour

RESIDENTIAL INTERIOR DESIGN – DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

ARTS1301	Design Fundamentals	3
IDES1111	Drafting I	4
IDES1121	Critical Thinking & Programming	4
IDES1137	Presentation Techniques I	3
IDES2108	Color and Light	3
	Total Credits	**17**

First Year - Second Semester

IDES1211	Drafting II	4
IDES1207	Residential Studio I	4
IDES1232	History of Architecture and Interiors	3
IDES2111	Materials & Estimating	4
	Total Credits	**15**

Second Year - Summer Semester

IDES2147	Residential Studio II	4
SPEE1020	Interpersonal Communication	3
	Total Credits	**7**
	TOTAL PROGRAM REQUIREMENTS	**39**

TECHNICAL MANAGEMENT – A.A.S. DEGREE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

	Technical Electives* or Prior Learning Credits	30
	Technical Electives* (from BUSN)	14
BUSN2010	Graduation Project (or BUSN2970 Internship)	1
	Total Credits	**45**

General Education

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
	General Education (MNTC Goal 3 or 4)	3
	General Education Electives (Any MnTC area)	6
	Total Credits	**15**
	TOTAL PROGRAM REQUIREMENTS	**60**

** Select Technical electives from any technical program, or credit for prior learning.*

INDIVIDUALIZED STUDIES – A.S. DEGREE

This degree is designed for students wishing to transfer to a four-year institution to obtain an advanced degree.

Because this degree will be custom designed to meet your education and career goals, there is no sample course sequence. Please discuss your academic goals with a program advisor so they can work with you to develop a sequence.

INDS1000	Career Exploration OR	
INDS1010	Credit for Prior Learning	1
	Technical Credits	29
	Total Credits	**30**

General Education

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
	General Education (MnTC Goal 4)	3
	General Education (MnTC Goal 3)	3
	General Education Electives*	18
	Total Credits	**30**
	TOTAL PROGRAM REQUIREMENTS	**60**

** Students must complete a minimum of 18 elective credits from at least two of the following goal areas: Goal 2: Critical Thinking, Goal 5: History and the Social and Behavioral Sciences, Goal 6: Humanities and Fine Arts, Goal 8: Global Perspective, Goal 9: Ethical and Civic Responsibility, and Goal 10: People and the Environment.*

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WELDING TECHNOLOGY

Delivery: Daytime, Afternoon, and Evening Classes
Start: Fall Semester, Full-Time
Location: Rosemount Campus

Outcome
Welding Diploma . . . . . 36 cr.

Major Description
The Welding Program offers a variety of training in different welding processes specific to our trade. Students will gain knowledge through theory in class and hands on experience in the welding lab. The major topics and welding processes will be covered in this nine-month course to ready the student for entry level positions in the industry. Subjects that are covered include: Shielded Metal Arc, Gas Metal Arc, Flux Cored Arc, Gas Tungsten Arc Welding Processes Oxy/Fuel, Plasma Arc, Carbon Air Arc Cutting and Gouging Processes. Students will work with a variety of metals which include: steel, stainless steel, and aluminum. Shop Fabrication, Blueprint Reading, Math, Visual Inspection, and Safety are covered in the curriculum.

Work Environment
Welders with the ability to fabricate and weld metal products from blueprints are in great demand in a wide range of industries. Working careers in industry consist of three major areas: Manufacturing, Construction, and Repair.

Potential Job Titles
- Welder
- Welding Assembly Technician
- Machine Operator
- Spot Welder
- Braze Operator
- Fitter-Welder
- Robot Operator
- Fabricator
- Finishing Technician

Salary Data
- Average Wage: $21.24/hour
- Top Earners: $24.67/hour

WELDING TECHNOLOGY – DIPLOMA
This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

WELD1101	Welding Safety and Theory I	3
WELD1111	Shielded Metal Arc Welding I	3
WELD1120	Gas Metal Arc Welding I	2
WELD1130	Flux Cored Arc Welding I	2
WELD1140	Gas Tungsten Arc Welding I	3
WELD1150	Print Reading I	3
MATS1000	Math for Welders	3
	Total Credits	**19**

First Year - Second Semester

WELD1200	Print Reading II	3
WELD1210	Welding Safety and Theory II	3
WELD1230	Shielded Metal Arc Welding II	3
WELD1240	Gas Metal Arc Welding II	2
WELD1250	Flux Cored Arc Welding II	2
WELD1260	Gas Tungsten Arc Welding II	3
INTS1010	Job Search Skills	1
	Total Credits	**17**
	TOTAL PROGRAM REQUIREMENTS	**36**

DAKOTA COUNTY
TECHNICAL COLLEGE

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2018-2019 CATALOG

HEALTH & EDUCATION

PROGRAMS OF STUDY

Dental Assistant
Early Childhood & Youth Development
Exercise & Sport Science
Medical Assistant
Medical Coding
Nursing Assistant
Practical Nursing
Sport Management
Veterinary Technician

SERVICE FOR LIFE

Our programs in Health and Education give students opportunities to pursue careers in fields that are essential to the care and welfare of the human condition.

From nursing to child development, professionals in health and education bring their knowledge and expertise directly to the people they serve. They are both a lifeline and a boon to human beings of every age in all walks of life.

TRAITS OF THE TRADE

People attracted to careers in health and education are generally:

- Mature
- Responsible
- Patient
- Respectful
- Supportive
- Dependable
- Collaborative
- Enthusiastic
- Empathetic
- Compassionate
- Organized
- Conscientious

Unless otherwise specified, salary data is sourced from careerwise.minnstate.edu.

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DENTAL ASSISTANT

Delivery: Daytime Classes
Start: Fall Semester, Full-Time
Location: Rosemount Campus

Outcomes
Dental Assistant A.A.S. Degree . . . . . .60 cr.
Dental Assistant Diploma . . . . . .40 cr.

Major Description
This program prepares students for employment in dentistry as a Certified Dental Assistant and a Licensed Dental Assistant. Students are trained to expose and process dental x-ray films, master a variety of chairside skills and expanded functions delegated by the Minnesota State Board of Dentistry. Students also study ways to control and prevent dental disease. Excellent communication skills are required for patient education.

Work Environment
Dental assistants provide direct and indirect patient care working under the supervision of a dentist. Potential work settings include dental practices in both general and specialty offices. Work areas are near the patient in the dental chair to permit efficient assistance to the dentist.

Potential Job Titles
- Certified Dental Assistant (CDA)
- Licensed Dental Assistant (LDA)
- Expanded Duty Dental Assistant
- Restorative Dental Assistant

Salary Data
- Average Wage: $21.67/hour
- Top Earners: $27.82/hour

Accreditation
The Dental Assistant program is accredited by the Commission on Dental Accreditation of the American Dental Association.

DENTAL ASSISTANT – A.A.S. DEGREE
This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

DENT1100	Dental Science	4
DENT1110	Pre-Clinical Dental Assisting	3
DENT1120	Dental Health	2
DENT1135	Chairside Assisting I	4
DENT1145	Dental Materials	4
	Total Credits	**17**

First Year - Second Semester

DENT1250	Radiology	5
DENT1260	Expanded Functions	5
DENT1275	Chairside Assisting II	4
DENT1280	Dental Practice Management	2
	Total Credits	**16**

First Year - Summer Session

DENT2970	Externship	7
	Total Credits	**7**

Second Year - First Semester

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
PHIL1350	Medical Ethics	3
PSYC1350	Lifespan Development	4
	General Education Elective**	3
	General Education (MnTC Goal 3 or 4)	4
	Total Credits	**20**
	TOTAL PROGRAM REQUIREMENTS	**60**

*** Select General Education electives from any MnTC goal area.*

DENTAL ASSISTANT – DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

DENT1100	Dental Science	4
DENT1110	Pre-Clinical Dental Assisting	3
DENT1120	Dental Health	2
DENT1135	Chairside Assisting I	4
DENT1145	Dental Materials	4
	Total Credits	**17**

First Year - Second Semester

DENT1250	Radiology	5
DENT1260	Expanded Functions	5
DENT1275	Chairside Assisting II	4
DENT1280	Dental Practice Management	2
	Total Credits	**16**

First Year - Summer Session

DENT2970	Externship	7
	Total Credits	**7**
	TOTAL PROGRAM REQUIREMENTS	**40**

DAKOTA COUNTY
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EARLY CHILDHOOD & YOUTH DEVELOPMENT

Delivery: Daytime, Evening and Online Classes
Start: Fall or Spring Semester, Full- or Part-Time
Location: Rosemount Campus

**All of the following outcomes require a clear MN Criminal Background Study.*

Outcomes

Early Childhood & Youth Development A.S. Degree . . . . . .60 cr.
Early Childhood & Youth Development A.A.S. Degree. . . . .60 cr.
Child Life Assistant A.A.S. Degree . . . . . .60 cr.
Early Childhood & Youth Development Diploma . . . . . .33 cr.
Early Childhood & Youth Development Certificate. . . . . 18 cr.

Major Description

There are a wide variety of career opportunities in the field of Early Childhood & Youth Development. These professions are projected to increase.

Early Childhood & Youth Development A.S./A.A.S. Degree: This program prepares students for employment in a variety of early childhood and youth settings. Courses meet Minnesota Department of Human Services educational requirements for assistant teachers and teachers in a child care setting. Students learn about child development, guidance, professional relationships, nutrition, health and safety, cultural sensitivity and techniques for promoting learning in young children. This program is available in the classroom and most courses are also available online.

Child Life Assistant A.A.S. Degree: This program delivers knowledge and skills necessary for working with children in hospital settings or with health care needs. Child life assistants are part of the team responsible for supporting children and families through health care experiences and helping them effectively cope by using developmental play and normalized activities in their environment. This program is available in the classroom and most courses are also available online.

Early Childhood & Youth Development Diploma: This program prepares individuals who would like to work in a child care center or preschool as a lead teacher or in a family child care program. This program is available in the classroom and many courses are also available online.

Early Childhood & Youth Development Certificate: This program prepares individuals for work in a child care center or preschool as an assistant teacher or in a family child care program. This program is available in the classroom and online.

Work Environment

Early Childhood & Youth Development professionals work with infants, toddlers, preschoolers, school-age children/youth, and children with differing abilities in homes, schools, and community centers/agencies. Other career options include child advocacy and social service. Child Life Assistants may work in clinical and non-clinical settings with young children or youth who have special health needs.

Potential Job Titles

- Preschool Teacher
- Child Care Teacher
- Family Child Care Provider
- Nanny
- School District Paraprofessional
- Child Life Assistant
- Head Start Teacher
- Home Visitor
- Program Director

Salary Data

Preschool Teacher
- Average Wage: $16.43/hour
- Top Earners: $20.72/hour

Child Care Teacher
- Average Wage: $11.36/hour
- Top Earners: $13.41/hour

Child Life Assistant
- Average Wage: $23.01/hour
- Top Earners: $28.09/hour

Program Director
- Average Wage: $23.01/hour
- Top Earners: $28.09/hour

Paraprofessional
- Average Wage: $15.95/hour
- Top Earners: $18.65/hour

EARLY CHILDHOOD & YOUTH DEVELOPMENT – A.S. DEGREE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

This degree is designed for students wishing to transfer to a four-year institution to obtain an advanced degree.

First Year - Fall Semester

ECYD1100	Introduction to Early Childhood Careers	3
ECYD1210	Child Growth and Development	3
ECYD1220	Health, Safety, and Nutrition	3
ENGL1150	Composition I	3
	General Education Elective**	3
	Total Credits	**15**

First Year - Spring Semester

ECYD1230	Guiding Children's Behaviors	3
ECYD1240	Learning Environment and Curriculum	3
	General Education (MnTC Goal 4)	3
	General Education Electives**	6
	Total Credits	**15**

First Year - Summer Session

	General Education Electives**	6
	Total Credits	**6**

Second Year - Fall Semester

ECYD1325	Observation and Assessment	3
ECYD1340	Curriculum Planning	3
ECYD2320	Children with Differing Abilities	3
SPEE1020	Interpersonal Communication	3
	General Education (MnTC Goal 3)	3
	Total Credits	**15**

Second Year - Spring Semester

ECYD1510	Practicum I	3
ECYD2600	Organizational Leadership and Management	3
	General Education Elective (MnTC Goal 5)	3
	Total Credits	**9**
	TOTAL PROGRAM REQUIREMENTS	**60**

*** Select General Education electives from any MnTC goal area.*

EARLY CHILDHOOD & YOUTH DEVELOPMENT – A.A.S. DEGREE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - Fall Semester

ECYD1100	Introduction to Early Childhood Careers	3
ECYD1210	Child Growth and Development	3
ECYD1220	Health, Safety, and Nutrition	3
ENGL1150	Composition I	3
	General Education Elective**	3
	Total Credits	**15**

First Year - Spring Semester

ECYD1230	Guiding Children's Behaviors	3
ECYD1240	Learning Environment and Curriculum	3
	Technical Electives*	3
	General Education (MnTC Goal 3 or 4)	3
	General Education Elective**	3
	Total Credits	**15**

First Year - Summer Session

ECYD1510	Practicum I	3
	Total Credits	**3**

Second Year - Fall Semester

ECYD1325	Observation and Assessment	3
ECYD1340	Curriculum Planning	3
ECYD2320	Children with Differing Abilities	3
	Technical Electives*	3
SPEE1020	Interpersonal Communications	3
	Total Credits	**15**

Second Year - Spring Semester

ECYD1310	Infant and Toddler Caregiving	2
ECYD1410	Infant and Toddler Field Experience	1
ECYD2510	Practicum II	3
ECYD2570	Working with Diverse Families and Children	3
ECYD2600	Organizational Leadership and Management	3
	Total Credits	**12**
	TOTAL PROGRAM REQUIREMENTS	**60**

** Select Technical electives from the following subject areas: ECYD*
*** Select General Education electives from any MnTC goal area.*

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CHILD LIFE ASSISTANT - A.A.S. DEGREE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - Fall Semester

ECYD1100	Introduction to Early Childhood Careers	3
ECYD1210	Child Growth and Development	3
ECYD1220	Health, Safety, and Nutrition	3
ENGL1150	Composition I	3
SOCY1010	Marriage and Family	3
	Total Credits	**15**

First Year - Spring Semester

ECYD1230	Guiding Children's Behaviors	3
ECYD1240	Learning Environment and Curriculum	3
HEAL1502	Medical Terminology	2
ADMS1018	Basic Computer Applications	3
BIOL1310	Introduction to Anatomy and Physiology	4
	Total Credits	**15**

First Year - Summer Session

PSYC1300	Child/Adolescent Psychology	3
	Total Credits	**3**

Second Year - Fall Semester

ECYD1325	Observation and Assessment	3
ECYD2320	Children with Differing Abilities	3
ECYD2501	Experiential Learning	1
PHIL1350	Medical Ethics	3
PSYC1450	Death and Dying	2
	Total Credits	**12**

Second Year - Spring Semester

ECYD2600	Organizational Leadership & Management	3
ECYD2713	Culture, Family and Providers	1
ECYD2715	Sign Language in Early Childhood	1
ECYD2950	Field Experience	3
MATS	(1300, 1350 or 1251)	4
SPEE1020	Interpersonal Communication	3
	Total Credits	**15**
	TOTAL PROGRAM REQUIREMENTS	**60**

EARLY CHILDHOOD & YOUTH DEVELOPMENT - DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - Fall Semester

ECYD1100	Introduction to Early Childhood Careers	3
ECYD1210	Child Growth and Development	3
ECYD1220	Health, Safety, and Nutrition	3
ENGL1150	Composition I	3
	Total Credits	**12**

First Year - Spring Semester

ECYD1230	Guiding Children's Behaviors	3
ECYD1240	Learning Environment and Curriculum	3
SPEE1020	Interpersonal Communication	3
	Total Credits	**12**

First Year - Summer Session

ECYD1510	Practicum I	3
	Total Credits	**3**

Second Year - Fall Semester

ECYD1325	Observation and Assessment	3
ECYD1340	Curriculum Planning	3
	Technical Electives*	3
	Total Credits	**9**
	TOTAL PROGRAM REQUIREMENTS	**33**

** Select Technical electives from the following subject areas: ECYD*

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EARLY CHILDHOOD & YOUTH DEVELOPMENT - CERTIFICATE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - Fall Semester

ECYD1100	Introduction to Early Childhood Careers	3
ECYD1210	Child Growth and Development	3
ECYD1220	Health, Safety, and Nutrition	3
	Total Credits	**9**

First Year - Spring Semester

ECYD1230	Guiding Children's Behaviors	3
ECYD1240	Learning Environment and Curriculum	3
ECYD2560	Language and Literacy Development (or ECYD1310 AND ECYD1410)	3
	Total Credits	**9**
	TOTAL PROGRAM REQUIREMENTS	**18**

EXERCISE & SPORT SCIENCE

Delivery: Daytime Classes
Start: Fall or Spring Semester, Full- or Part-Time
Location: Rosemount Campus

Outcomes

Exercise & Sport Science A.S. Degree . . . . . .60 cr.
Exercise & Sport Science A.A.S. Degree . . . . . .60 cr.
Personal Training Certificate . . . . . 16 cr.
Group Fitness Certificate . . . . . 16 cr.
Geriatric Health & Fitness Certificate . . . . . 16 cr.

Major Description

Exercise & Sport Science A.S./A.A.S Degree: This program offers two different 60-credit degree outcomes: Associate in Science and Associate in Applied Science. Both programs include technical courses in Exercise and Sport Science and general education courses. The A.S. degree is intended to prepare students to transfer to a four-year college or university. The A.A.S. degree prepares students to go directly into the workforce.

Personal Training Certificate: This program provides the student with hands-on, practical experience in the area of personal training. The certificate consists of 16 credits of coursework. All of the courses are offered during fall semester. EXER2020 Personal Training and Exercise Leadership I is offered in partnership with the American Council on Exercise (ACE). Students will be prepared for the ACE Personal Training certification exam following successful completion of the course.

Group Fitness Certificate: This program contains 16 credits of coursework and provides students with the knowledge and skills to gain employment as a group fitness instructor. EXER 2250 Group Fitness Instruction is offered in partnership with the American Council on Exercise (ACE). Students will be prepared for the ACE Group Fitness Instructor certification exam following successful completion of the course.

Geriatric Health and Fitness Certificate: This 16 credit certificate program provides students with the knowledge and skills needed to work safely and effectively with an aging population. This field continues to grow and skilled workers are needed in increasing numbers.

Work Environment

Exercise and Sport Science graduates become valuable employees in fitness centers, YMCA/YWCA facilities, corporate fitness centers, collegiate and hospital-based wellness centers, cruise lines and cardiac rehab centers.

Potential Job Titles

- Coach
- Fitness Specialist
- Personal Trainer
- Group Fitness Instructor

Salary Data

Fitness Trainer
- Average Wage: $18.29/hour
- Top Earners: $22.91/hour

Coach
- Average Wage: $15.58/hour
- Top Earners: $21.83/hour

Recreation Worker
- Average Wage: $12.77/hour
- Top Earners: $16.27/hour

EXERCISE & SPORT SCIENCE – A.S. DEGREE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - Fall Semester

EXER1000	Introduction to Human Performance Studies	3
EXER1020	Strength Training	2
CHEM1500	Introduction to Chemistry	4
ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
	Total Credits	**15**

First Year - Spring Semester

EXER1015	Personal Health and Wellness	3
EXER1050	Nutrition for Health and Human Performance	3
	Technical Elective (EXER or PHED)	2
BIOL1500	General Biology	4
PSYC1105	General Psychology	4
	Total Credits	**16**

Second Year - Fall Semester

EXER2115	Applied Exercise Physiology	3
BIOL2000	Anatomy and Physiology I	4
ENGL2000	Composition II	3
SOCY1110	Intro to Sociology	3
	General Education (MnTC Goal 5 or 10)	3
	Total Credits	**16**

Second Year - Spring Semester

BIOL2010	Anatomy and Physiology II	4
MATS1251	Statistics	4
	General Education (MnTC Goal 6 or 8)	4
	General Education (MnTC Goal 6)	1
	Total Credits	**13**
	TOTAL PROGRAM REQUIREMENTS	**60**

EXERCISE & SPORT SCIENCE – A.A.S. DEGREE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Aid/CPR certification is a requirement for graduation.

First Year - Fall Semester

EXER1000	Introduction to Human Performance Studies	3
EXER1020	Strength Training	2
EXER1065	Psychology of Sport and Performance	3
BIOL1310	Intro Anatomy and Physiology	4
ENGL1150	Composition I	3
	Total Credits	**15**

First Year - Spring Semester

EXER1015	Personal Health and Wellness	3
EXER1025	Physical Conditioning	2
EXER1050	Nutrition for Health & Human Performance	3
	Technical Elective*	3
PSYC1105	General Psychology	4
	Total Credits	**15**

Second Year - Fall Semester

EXER2020	Personal Training and Exercise Leadership I	2
EXER2090	Exercise for Special Populations	2
EXER2115	Applied Exercise Physiology	3
EXER2260	Recruiting and Retaining Clients	1
ADMS1025	Computer Basics	1
SPEE1020	Interpersonal Communication	3
	Technical Elective *	2
	Total Credits	**14**

Second Year - Spring Semester

EXER2060	Personal Training and Exercise Leadership II	2
EXER2275	Sport Marketing	3
EXER2295	Social and Ethical Aspects of Sport	3
EXER2975	Practicum	3
SOCY1110	Introduction to Sociology (or SOCY1010)	3
	Technical Elective*	2
	Total Credits	**16**
	TOTAL PROGRAM REQUIREMENTS	**60**

** Select Technical electives from the following subject areas: EXER*

PERSONAL TRAINING – CERTIFICATE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Aid/CPR certification is a requirement for graduation.

First Year - Fall Semester

EXER1020	Strength Training	2
EXER1065	Psychology of Sport and Performance	3
EXER2020	Personal Training and Exercise Leadership I	2
EXER2260	Recruiting and Retaining Clients	1
EXER2975	Practicum	1
BIOL1310	Introduction to Anatomy and Physiology (or HEAL1101 Anatomy and Physiology)	4
SPEE1020	Interpersonal Communication	3
	Total Credits	**16**
	TOTAL PROGRAM REQUIREMENTS	**16**

GROUP FITNESS – CERTIFICATE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Aid/CPR certification is a requirement for graduation.

First Year - Fall Semester (every other year)

EXER1020	Strength Training	2
EXER1065	Psychology of Sport and Performance	3
EXER2020	Personal Training and Exercise Leadership I	2
EXER2250	Group Fitness Instruction	2
EXER2260	Recruiting and Retaining Clients	1
EXER2975	Practicum	2
BIOL1310	Introduction to Anatomy and Physiology (or HEAL1101 Anatomy and Physiology)	4
	Total Credits	**16**
	TOTAL PROGRAM REQUIREMENTS	**16**

GERIATRIC HEALTH & FITNESS – CERTIFICATE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Aid/CPR certification is a requirement for graduation.

First Year - Fall Semester (every other year)

EXER1020	Strength Training	2
EXER2020	Personal Training and Exercise Leadership I	2
EXER2090	Exercise for Special Populations	2
EXER2250	Group Fitness Instruction	2
EXER2260	Recruiting and Retaining Clients	1
EXER2280	Health and Aging	3
BIOL1310	Introduction to Anatomy and Physiology (or HEAL1101 Anatomy and Physiology)	4
	Total Credits	**16**
	TOTAL PROGRAM REQUIREMENTS	**16**

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2018-2019 CATALOG

MEDICAL ASSISTANT

Delivery: Daytime and Online Classes
Start: Fall Semester (classroom) or Spring Semester
Hybrid, Full- or Part-time options available
Location: Rosemount Campus

Outcomes

Medical Assistant A.A.S. Degree . . . . . .60 cr.
Medical Assistant Diploma . . . . . .42 cr.

Major Description

This program trains students to be professional medical assistants dedicated to patient care management. Graduates are equipped to assist physicians with examinations and treatments, take medical histories, perform diagnostic tests, expose X-ray films, sterilize instruments and supplies, assist with minor surgery and administer medications. The program goal is to prepare competent entry-level medical assistants in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains.

Work Environment

Graduates assist primary care physicians and specialists in clinics ranging in size from single-doctor to large, multi-specialty. Opportunities are also present in a variety of other health care areas.

Potential Job Titles

- Certified Medical Assistant
- Medical Assistant
- Clinical Assistant

Salary Data

- Average Wage: $17.05/hour
- Top Earners: $19.00/hour

Accreditation

The Medical Assistant program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) on recommendation of the Curriculum Review Board of the American Association of Medical Assistants Endowment (AAMAE).

MEDICAL ASSISTANT – A.A.S. DEGREE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

HEAL1101	Anatomy and Physiology	4
HEAL1502	Medical Terminology	2
MDAS1125	Laboratory Skills I	4
MDAS1131	Clinical Procedures I	3
MDAS 1150	Medical Documentation	2
	Total Credits	**15**

First Year - Second Semester

MDAS1211	Disease/Medical Treatment including Nutrition	4
MDAS1223	Laboratory Skills II	4
MDAS1231	Clinical Procedures II	3
MDAS1271	Administrative Procedures	3
MDAS1702	Pharmacology & Math for Medical Assistants	4
	Total Credits	**18**

First Year - Summer Session

MDAS1250	Fundamentals of Radiographic Imaging	2
MDAS2970	Practicum	6
MDAS 2990	Capstone	1
	Total Credits	**9**

Second Year - First Semester

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
	General Education Electives**	3
	Total Credits	**9**

Second Year - Second Semester

	General Education Elective (MnTC Goal 3 or 4)	3
	General Education Electives**	6
	Total Credits	**9**
	TOTAL PROGRAM REQUIREMENTS	**60**

*** Select General Education electives from any MnTC goal area.*

MEDICAL ASSISTANT – DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

HEAL1101	Anatomy and Physiology	4
HEAL1502	Medical Terminology	2
MDAS1125	Laboratory Skills I	4
MDAS1131	Clinical Procedures I	3
MDAS 1150	Medical Documentation	2
	Total Credits	**15**

First Year - Second Semester

MDAS1211	Disease/Medical Treatment including Nutrition	4
MDAS1223	Laboratory Skills II	4
MDAS1231	Clinical Procedures II	3
MDAS1271	Administrative Procedures	3
MDAS1702	Pharmacology & Math for Medical Assistants	4
	Total Credits	**18**

First Year - Summer Session

MDAS1250	Fundamentals of Radiographic Imaging	2
MDAS2970	Practicum	6
MDAS 2990	Capstone	1
	Total Credits	**9**
	TOTAL PROGRAM REQUIREMENTS	**42**

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MEDICAL CODING SPECIALIST

Delivery: Daytime, Online and Hybrid Classes
Start: Fall or Spring Semester, Full- or Part-Time
Location: Rosemount Campus

Outcomes
Medical Coding Specialist Diploma. . . . . 40cr.

Major Description
The Medical Coding Specialist prepares students to assume an entry-level position as a medical coder in an acute care hospital, clinic or physician's office. Medical coding specialists play a vital role in the health care industry. Students gain knowledge in electronic health record software systems and in the legal and managerial aspects of health information. Other duties include coding diagnoses, processing reimbursements, managing release of medical information, maintaining quality assurance, and protecting patient data privacy.

Work Environment
Medical coding specialists work in physician offices, surgery centers, specialty clinics, hospital, insurance companies, government agencies, research foundations, long-term care facilities, dental offices, consulting firms, rehabilitation centers or health care facilities.

Potential Job Titles
- Medical Coding Specialist
- Clinical documentation Specialist
- Health Information Analyst
- Coding Analyst
- Medical Records Technician

Salary Data
- Average Salary: $20.95/hour
- Top Earners: $24.28/hour

MEDICAL CODING SPECIALIST – DIPLOMA
This is a sample course sequence for a full-time student. All courses are not offered every semester. Please contact your program advisor regarding your academic plans.

First Year - First Semester

ADMS1045	Medical Terminology	2
ADMS1360	Healthcare Documentation Essentials	4
ADMS1400	ICD-10-CM/PCS Coding	3
ADMS1430	Legal Principles of Health Information	3
ADMS1390	Intro to Pharmacology	2
	Total Credits	**14**

First Year - Second Semester

ADMS1049	Applied Medical Terminology	3
ADMS1018	Basic Computer Applications	3
ADMS1410	CPT Coding	3
HEAL1101	Anatomy & Physiology	4
	Total Credits	**13**

Second Year - First Semester

ADMS1370	Medical Billing & Insurance	3
ADMS1380	Quality & Healthcare Statistics	3
ADMS1440	Advanced Coding	2
ADMS1051	Human Diseases	3
ADMS1285	Oral Business Communications/ Job Seeking Skills	2
	Total Credits	**13**
	TOTAL PROGRAM REQUIREMENTS	**40**

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2018-2019 CATALOG

NURSING ASSISTANT

Delivery: Daytime or Evening Classes
Start: Fall, Spring or Summer Session
Location: Rosemount Campus

Outcome
Nursing Assisting Certificate . . . . . 5 cr.

Major Description
Nursing Assistant Certificate: This course prepares students to assist dependent elderly persons, home-care clients and hospital patients with their personal care needs. This course combines home health aide content with the nursing assistant course. The Minnesota State Certification examination is administered following course completion.

Work Environment
Nursing assistants and nursing assistants/registered, or NA/R, provide care under the direct supervision of licensed nurses. Employment is primarily in long-term care facilities, home health agencies and hospitals.

Potential Job Titles
- Certified Nurse Aide
- Health Care Aide
- Patient Care Technician
- Hospital Aide
- Certified Nursing Assistant
- Nursing Assistant/Registered

Salary Data
- Average Wage: $14.46/hour
- Top Earners: $17.09/hour

Accreditation
The Nursing Assistant program is accredited by the Minnesota Department of Health.

NURSING ASSISTANT – CERTIFICATE

First Year - First Semester

HEAL1060	Nursing Assistant	5
	Total Credits	**5**
	TOTAL PROGRAM REQUIREMENTS	**5**

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2018-2019 CATALOG

PRACTICAL NURSING

Delivery: Daytime Classes
Start: Summer, Fall or Spring Semester
Location: Rosemount Campus

Outcome
Practical Nursing Diploma . . . . . 42 cr.

Major Description
The program equips graduates with the knowledge and skill set to administer safe, ethical, patient-centered nursing care in traditional and alternative health care settings. The Practical Nurse (PN) role within the nursing process is taught through classroom learning, simulated client care, and instructor-supervised clinical experiences in health care settings.

Work Environment
Graduates of the Practical Nurse program must pass the NCLEX examination to become licensed. Licensed Practical Nurses (LPNs), provide direct patient care under the supervision of a registered nurse (RN), advanced practice nurse (APN), physical assistant (PA), or physician (MD). Potential employers include hospitals, long-term care facilities, health care clinics, schools, home health agencies, and homes for special populations.

Potential Job Titles
- Clinic Nurse
- Hospital Staff Nurse
- Charge Nurse
- Home Health Nurse
- Nursing Technician
- Office Nurse

Salary Data
- Average Wage: $21.62/hour
- Top Earners: $23.56/hour

Program Approval
The Practical Nursing program is approved by the Minnesota Board of Nursing.

PRACTICAL NURSING – DIPLOMA
This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Semester

HEAL1101	Anatomy and Physiology	4
HEAL1150	Health Career Mathematics	1
HEAL1060	Nursing Assistant	5
PSYC1350	Lifespan Development	4
	Total Credits	**14**

Second Semester

PNSG1010	Foundations of Nursing Practice	4
PNSG1355	Pharmacology	3
PNSG1400	Adult Health I	4
PNSG1600	Clinical I	4
	Total Credits	**15**

Third Second Semester

PNSG1410	Adult Health II	4
PNSG1620	Clinical II	4
PNSG1755	Behavioral Health Concepts	2
PNSG1805	Maternal and Child Health	2
PNSG2000	Nursing Capstone	1
	Total Credits	**13**
	TOTAL PROGRAM REQUIREMENTS	**42**

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2018-2019 CATALOG

SPORT MANAGEMENT

Delivery: Daytime Classes
Start: Fall or Spring Semester, Full- or Part-Time
Location: Rosemount Campus

Outcome

Sport Management Diploma . . . . . 48 cr.

Major Description

This program offers training and development directly related to positions in a variety of sport and recreation occupations. Coursework in Exercise and Sport Science, business and communication prepare graduates for careers in sport, recreation, and related facilities management. A practical experience in the field provides the opportunity for students to actively engage in application of sport management principles.

Work Environment

Sport management graduates become valuable employees in community centers, sports arenas/fields/courts, youth sport organizations, fitness centers, camps, parks and cruise ships.

Potential Job Titles

- Coach
- Sport Instructor
- Officials
- Recreation Worker
- Recreation Supervisor
- Camp Counselor

Salary Data

Coach

- Average Wage: $15.58/hour
- Top Earners: $21.83/hour

Recreation Worker

- Average Wage: $12.77/hour
- Top Earners: $16.27/hour

SPORT MANAGEMENT - DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year – Fall Semester (every other year)

EXER1000	Introduction to Human Performance Studies	3
EXER1065	Psychology of Sport and Performance	3
ACCT1010	Principles of Accounting I	4
ADMS1025	Computer Basics	1
ENGL1150	Composition I	3
	General Education Elective **	3
	Total Credits	**17**

First Year – Second Semester

EXER1045	Organization and Management of Sport	3
EXER2275	Sport Marketing	3
EXER2295	Social and Ethical Aspects of Sport	3
PSYC1105	General Psychology	4
	Technical Elective*	2
	Total Credits	**15**

Second Year – First Semester

EXER2285	Sports Facilities Management	3
EXER2290	Legal Aspects of Sport	3
EXER2975	Practicum	1
SOCY1010	Marriage and Family (or SOCY1110)	3
SPEE1020	Interpersonal Communications	3
	General Education Elective**	3
	Total Credits	**16**
	Total Program Requirements	**48**

** Select Technical electives from the following subject areas: EXER*

*** Select General Education electives from two of the following MnTC goal areas: 2, 3, 4, 6, 8, 9 or 10.*

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VETERINARY TECHNICIAN

Delivery: Daytime Classes
Start: Fall and Spring Semester, Full-Time
Location: Lakeville

Outcome

Veterinary Technician A.A.S.. . . . . .60 cr.

Major Description

A veterinary technician is a key component of the animal healthcare team. Veterinary technicians perform medical tests under the supervision of a licensed veterinarian to assist in diagnosing injuries and illnesses of animals. Veterinary technicians are able to perform vital tasks from evaluating an animal's condition to collecting and evaluating biological samples, to educating clients on nutrition and behavior, to administering and monitoring anesthesia. The Veterinary Technician Program will prepare students for a career caring for animals in vet clinics, animal research, or wildlife rescue. The program will provide the opportunity for hands-on learning needed to do pharmacology, surgical preparation, and animal care which will prepare students with the skills needed to find a career in the veterinary technician field. A certified veterinary technician has passed the Veterinary Technician National Examination or VTNE given by the American Association of Veterinary State Boards.

Work Environment

Veterinary technicians perform medical tests in a laboratory environment under the supervision of a licensed veterinarian. These tests are used to diagnose and treat illnesses in animals. They prepare tissue samples and take blood. They also clean and sterilize instruments. Typical working conditions include frequent contact with others while working within a team.

Potential Job Titles

- Registered Veterinary Technician (RVT)
- Veterinary Assistant
- Veterinary Nurse

Salary Data

- Average Wage: $16.56/hour
- Top Earners: $23.47/hour

This salary data based on information from the Minnesota Department of Employment and Economic Development (DEED), for the seven-county metro area.
https://mn.gov/deed/data/

Accreditation Notice

The American Veterinary Medical Association (AVMA) has accepted the Veterinary Technician program's application for accreditation, and has scheduled a site visit for September 12-14, 2018.

VETERINARY TECHNICIAN - A.A.S. DEGREE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Semester

BIOL1310	Introduction to Anatomy & Physiology	4
PHIL1350	Medical Ethics	3
HEAL1502	Medical Terminology	2
VTEC1100	Veterinary Technology Procedures	3
VTEC1110	Veterinary Laboratory Skills I	3
	Total Credits	**15**

Second Semester

VTEC1200	Comparative Anatomy & Physiology	1
VTEC1210	Veterinary Pharmacology	3
VTEC1220	Fundamentals of Veterinary Imaging	3
VTEC1230	Veterinary Laboratory Skills II	3
VTEC1240	Lab and Exotic Animal	3
VTEC1250	Veterinary Nursing Techniques	3
	Total Credits	**16**

Third Semester

VTEC2100	Animal Diseases and Nutrition	3
VTEC2110	Large Animal	3
VTEC2120	Anesthesia and Pain Management	3
VTEC2130	Veterinary Surgical Nursing and Dentistry	5
	Total Credits	**14**

Fourth Semester

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
GE	General Education Elective	2
VTEC2970	Veterinary Technology Internship	6
VTEC2980	Capstone	1
	Total Credits	**15**
	Total Program Requirements	**60**

** Pending AVMA Accreditation*
***Veterinary Technican students are required to obtain a C- or higher on required and elective general education courses.*

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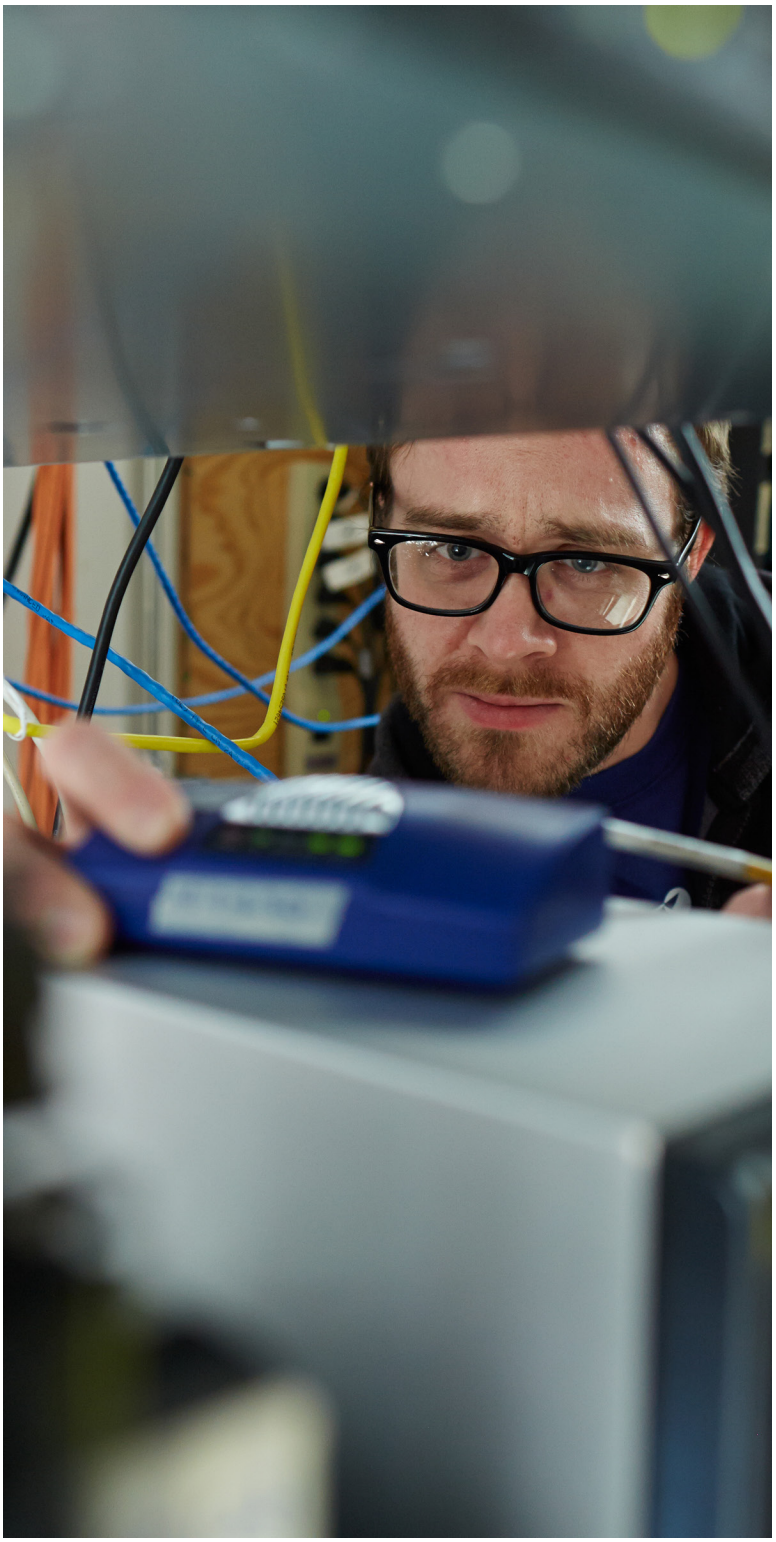
STEM



PROGRAMS OF STUDY

Biomedical Equipment Technology

IT Careers

- Information Systems Management
- Networking Administration
- Software Development

STEM CAREERS

Careers in STEM (science, technology, engineering and math) are ideal for those with great attention to detail. Successful professionals see challenges as an opportunity to learn and thrive through creative problem-solving using inductive and deductive reasoning.

Successful STEM professionals have personalities that are:

- Self-disciplined with attention to detail
- Adept at using technology
- Curious

Unless otherwise specified, salary data is sourced from careerwise.minnstate.edu.

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BIOMEDICAL EQUIPMENT TECHNOLOGY

Delivery: Daytime Classes
Start: Fall Semester, Full-Time Recommended
Location: Rosemount Campus

Outcomes

Biomedical Equipment Technology A.A.S. Degree . . . . . 70 cr.
Biomedical Equipment Technology Certificate . . . . . 27 cr.

Major Description

Students are trained to work in the Healthcare Technology Management field as biomedical equipment technicians, more commonly known as BMETs. They test the performance and operating characteristics of medical electronic/electro-mechanical equipment of moderate to high complexity to ensure compliance with established performance and safety standards. Graduates are qualified to maintain equipment found in hospitals and medical centers.

Work Environment

BMETs find employment with hospitals, clinics, universities, equipment manufacturers and contract service providers. They generally work indoors and some travel may be required. BMETs work with medical professionals at all levels to assure the safe and effective use of sophisticated electronic medical devices.

Potential Job Titles

- Biomedical Electronics Technician
- Biomedical Engineering Technician
- Biomedical Equipment Specialist
- Electromedical Equipment Repairer
- Medical Equipment Repairer
- Field Service Technician

Salary Data *(Bureau of Labor Statistics)*

- Average Wage: $23.34/hour
- Top Earners: $35.94/hour

BIOMEDICAL EQUIPMENT TECHNOLOGY – A.A.S. DEGREE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

BMET1112	DC Electricity	3
BMET1123	AC Electricity	3
BMET1140	Solid State Electronics	4
HEAL1502	Medical Terminology	2
ISTC1010	Microcomputer Maintenance	3
MATS1300	College Algebra	4
	Total Credits	**19**

First Year - Second Semester

BMET1122	Administrative Functions	4
BMET1530	Digital and Microprocessor	3
ISTC1045	Network Systems I: Introduction to Networking	3
CHEM1500	Introduction to Chemistry	4
ENGL1150	Composition I	3
	Total Credits	**17**

First Year - Summer Session

BMET2940	BMET Field Experience	1

Second Year - First Semester

BMET1220	Medical Device Technology	4
BMET2110	Professional Skills	2
ISTC2006	Network Systems II: Routing and Switching Essentials	3
BIOL1310	Introduction to Anatomy and Physiology	4
PHYS1050	Introduction to Physics	3
	Total Credits	**16**

Second Year - Second Semester

BMET2210	Biomedical Instrumentation I	4
BMET1114	Wireless Communication	1
BMET1231	Biomedical Instrumentation II	4
ISTC2011	Network Systems III: Scaling Networks	3
SPEE1020	Interpersonal Communication	3
	Total Credits	**15**

Second Year - Summer Session

BMET2970	Internship	2

TOTAL PROGRAM REQUIREMENTS	**70**

*** Select General Education electives from any MnTC goal area.*

BIOMEDICAL EQUIPMENT TECHNOLOGY – CERTIFICATE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

This certificate is designed for students with a degree in Electronics.

First Year - First Semester

BMET1220	Medical Device Technology	4
BMET2110	Professional Skills	2
HEAL1502	Medical Terminology	2
BIOL1310	Introduction to Anatomy and Physiology	4
	Total Credits	**12**

First Year - Second Semester

BMET1114	Wireless Communication	1
BMET1122	Administrative Functions	4
BMET2210	Biomedical Instrumentation I	4
BMET1231	Biomedical Instrumentation II	4
	Total Credits	**13**

Summer Session

BMET2970	Internship	2

TOTAL PROGRAM REQUIREMENTS	27

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INFORMATION SYSTEMS MANAGEMENT

Delivery: Daytime, Evening and Weekend Classes
Start: Fall or Spring Semester, Full- or Part-Time
Location: Rosemount Campus

Outcomes

Information Systems Mgmt. A.A.S. Degree . . . . . 69 cr.
Information Systems Mgmt. Diploma . . . . . 60 cr.

Major Description

This interdisciplinary program combines courses from Networking Administration, Software Development and Information Systems Management to teach a unique blend of networking, programming and management skills. Graduates are prepared to function in small business firms as the sole computer resource person or, matched with entrepreneurial knowledge, start their own computer consulting firms.

Work Environment

Information systems managers experience a high level of social interaction where they use well-developed analytical skills. Job duties generally keep them indoors, and they typically work a regular business week.

Potential Job Titles

- Computer Network Support Technician
- Network Administrator, IT
- System Administrator, Computer/Network
- Information Technology Specialist
- Systems Administrator
- Programmer Analyst

Salary Data

- Average Wage: $25.29/hour
- Top Earners: $36.31/hour

INFORMATION SYSTEMS MANAGEMENT – A.A.S. DEGREE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

ISTC1015	Supporting Business Applications	3
ISTC1030	Operating Systems I	3
ISTC1045	Network Systems I: Introduction to Networking	3
ISTC1100	Business Communications	3
SPEE1020	Interpersonal Communication	3
	Total Credits	**15**

First Year - Second Semester

ISTC1000	Introduction to Information Systems Mgmt.	3
ISTC1010	Microcomputer Maintenance	3
ISTC1033	Operating Systems II	3
ISTC1050	Database Systems	3
ISTC1060	Security I	3
ENGL1150	Composition I	3
	Total Credits	**18**

Second Year - First Semester

ISTC1300	Introduction to Programming	3
ISTC1400	Wireless Systems	3
ISTC2035	Operating System III	3
ISTC2040	Database Management	3
MATS1251	Statistics (or MATS1300 or PHIL1250)	3
	General Education Elective**	3
	Total Credits	**18**

Second Year - Second Semester

ISTC1230	System Analysis and Design	3
ISTC2065	Security II: Firewalls	3
ISTC2100	Project Management (or ISTC2970 Internship)	3
ISTC2120	Financial Accounting for Information Systems	3
ISTC2150	Virtualization, Storage, and Cloud Technologies	3
	General Education Electives**	3
	Total Credits	**18**
	TOTAL PROGRAM REQUIREMENTS	**69**

*** Select General Education electives from any MnTC goal area.*

INFORMATION SYSTEMS MANAGEMENT – DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

ISTC1015	Supporting Business Applications	3
ISTC1030	Operating Systems I	3
ISTC1045	Network Systems I: Introduction to Networking	3
ISTC1100	Business Communications	3
SPEE1020	Interpersonal Communication	3
	Total Credits	**15**

First Year - Second Semester

ISTC1000	Introduction to Information Systems Mgmt.	3
ISTC1010	Microcomputer Maintenance	3
ISTC1033	Operating Systems II	3
ISTC1050	Database Systems	3
ISTC1060	Security I	3
	Total Credits	**15**

Second Year - First Semester

ISTC1300	Introduction to Programming	3
ISTC1400	Wireless Systems	3
ISTC2035	Operating System III	3
ISTC2040	Database Management	3
ENGL1150	Composition I	3
	Total Credits	**15**

Second Year - Second Semester

ISTC1230	System Analysis and Design	3
ISTC2065	Security II: Firewalls	3
ISTC2120	Financial Accounting for Information Systems	3
ISTC2150	Virtualization, Storage, and Cloud Technologies	3
	General Education Elective**	3
	Total Credits	**15**
	TOTAL PROGRAM REQUIREMENTS	**60**

*** Select General Education electives from any MnTC goal area.*

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NETWORKING ADMINISTRATION

Delivery: Daytime, Evening and Weekend Classes
Start: Fall or Spring Semester, Full- or Part-Time
Location: Rosemount Campus

Outcomes

Networking Administration A.A.S. Degree . . . . . .69 cr.
Networking Administration Diploma . . . . . .60 cr.
PC Technician Certificate . . . . . .30 cr.

Major Description

This program provides students with the knowledge and experience to install and maintain computers, servers, networks and other networking equipment to function in a variety of network environments. Combining a theory-based foundation with hands-on work, students build and manage networks, install software, configure a variety of networking devices, including switches and routers, and troubleshoot problems related to both hardware and software.

Work Environment

Graduates secure employment in entry-level positions such as network installation, network management, network maintenance, computer technician and help desk.

Potential Job Titles

- Network Administrator
- Network Manager
- Network Security Administrator
- Network Services Supervisor
- Network Specialist
- Network Systems Coordinator

Salary Data

- Average Wage: $34.05/hour
- Top Earners: $46.79/hour

NETWORKING ADMINISTRATION – A.A.S. DEGREE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

ISTC1015	Supporting Business Applications	3
ISTC1030	Operating Systems I	3
ISTC1045	Network Systems I: Introduction to Networking	3
ISTC1100	Business Communications	3
SPEE1020	Interpersonal Communication	3
	Total Credits	**15**

First Year - Second Semester

ISTC1010	Microcomputer Maintenance	3
ISTC1033	Operating Systems II	3
ISTC1050	Database Systems	3
ISTC1060	Security I	3
ISTC1400	Wireless Systems	3
ENGL1150	Composition I	3
	Total Credits	**18**

Second Year - First Semester

ISTC2006	Network Systems II: Routing and Switching Essentials	3
ISTC2011	Network Systems III: Scaling Networks	3
ISTC2035	Operating System III	3
ISTC2040	Database Management	3
	General Education Elective**	6
	Total Credits	**18**

Second Year - Second Semester

ISTC2016	Network Systems IV: Connecting Networks	3
ISTC2065	Security II: Firewalls	3
ISTC2070	Security III: Forensics	3
ISTC2100	Project Management (or ISTC2970 Internship)	3
ISTC2150	Virtualization, Storage, and Cloud Technologies	3
MATS1251	Statistics (or MATS1300 or PHIL1250)	3
	Total Credits	**18**
	TOTAL PROGRAM REQUIREMENTS	**69**

*** Select General Education electives from any MnTC goal area.*

NETWORKING ADMINISTRATION – DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

ISTC1015	Supporting Business Applications	3
ISTC1030	Operating Systems I	3
ISTC1045	Network Systems I: Introduction to Networking	3
ISTC1100	Business Communications	3
SPEE1020	Interpersonal Communication	3
	Total Credits	**15**

First Year - Second Semester

ISTC1010	Microcomputer Maintenance	3
ISTC1033	Operating Systems II	3
ISTC1050	Database Systems	3
ISTC1060	Security I	3
ISTC1400	Wireless Systems	3
	Total Credits	**15**

Second Year - First Semester

ISTC2006	Network Systems II: Routing and Switching Essentials	3
ISTC2011	Network Systems III: Scaling Networks	3
ISTC2035	Operating System III	3
ISTC2040	Database Management	3
ENGL1150	Composition I	3
	Total Credits	**15**

Second Year - Second Semester

ISTC2016	Network Systems IV: Connecting Networks	3
ISTC2065	Security II: Firewalls	3
ISTC2070	Security III: Forensics	3
ISTC2150	Virtualization, Storage, and Cloud Technologies	3
	General Education Elective**	3
	Total Credits	**15**
	TOTAL PROGRAM REQUIREMENTS	**60**

*** Select General Education electives from any MnTC goal area.*

PC TECHNICIAN – CERTIFICATE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

ISTC1015	Supporting Business Applications	3
ISTC1030	Operating Systems I	3
ISTC1045	Network Systems I: Introduction to Networking	3
ISTC1100	Business Communications	3
SPEE1020	Interpersonal Communication	3
	Total Credits	**15**

First Year - Second Semester

ISTC1010	Microcomputer Maintenance	3
ISTC1033	Operating Systems II	3
ISTC1050	Database Systems	3
ISTC1060	Security I	3
ISTC1400	Wireless Systems	3
	Total Credits	**15**
	TOTAL PROGRAM REQUIREMENTS	**30**

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SOFTWARE DEVELOPMENT

Delivery: Daytime, Evening and Weekend Classes
Start: Fall or Spring Semester, Full- or Part-Time
Location: Rosemount Campus

Outcomes

Software Development A.A.S. Degree . . . . . 69 cr.
Software Development Diploma . . . . . 60 cr.
Desktop Programming Certificate. . . . . 27 cr.
Web Programming Certificate . . . . . 27 cr.

Major Description

This program prepares students to become computer programmers. Learning an array of programming languages used for software development. Students design, write, debug and test application software. Individual effort and teamwork are developed. Skilled graduates are prepared to provide software solutions for employers.

Work Environment

Working conditions are generally indoors in offices or laboratories. Programmers convert data from project specifications and problem statements to develop computer programs. Often employed in a team setting, programmers are also working more from home or other remote locations as telecommuting becomes more prevalent.

Potential Job Titles

- Computer Programmer
- Computer Software Specialist
- Software Architect
- Software Developer
- Software Development Engineer
- Software Quality Assurance Specialist

Salary Data

- Average Wage: $34.65/hour
- Top Earners: $49.30/hour

SOFTWARE DEVELOPMENT – A.A.S. DEGREE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

ISTC1015	Supporting Business Applications	3
ISTC1030	Operating Systems I	3
ISTC1045	Network Systems I: Introduction to Networking	3
ISTC1100	Business Communications	3
ISTC1300	Introduction to Programming	3
SPEE1020	Interpersonal Communication	3
	Total Credits	**18**

First Year - Second Semester

ISTC1033	Operating Systems II	3
ISTC1050	Database Systems	3
ISTC1060	Security I	3
ISTC1510	Web Programming I	3
ISTC2320	.NET I	3
ENGL1150	Composition I	3
	Total Credits	**18**

Second Year - First Semester

ISTC2110	Web Programming II	3
ISTC1230	System Analysis and Design	3
	Certificate Dependent***	6
MATS1251	Statistics (or MATS1300 or PHIL1250)	3
	General Education Elective**	3
	Total Credits	**18**

Second Year - Second Semester

ISTC2100	Project Management (or ISTC2970)	3
ISTC2330	Cross-Platform Mobile App. Development	3
ISTC2610	Web Programming III	3
	Certificate Dependent***	3
	General Education Elective**	3
	Total Credits	**15**
	TOTAL PROGRAM REQUIREMENTS	**69**

*** Select General Education electives from any MnTC goal area.*
****Students must choose one of the following certificates to complete the Software Development AAS: Desktop Programming or Web Programming.*

SOFTWARE DEVELOPMENT – DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

ISTC1015	Supporting Business Applications	3
ISTC1030	Operating Systems I	3
ISTC1045	Network Systems I: Introduction to Networking	3
ISTC1100	Business Communications	3
ISTC1300	Introduction to Programming	3
	Total Credits	**15**

First Year - Second Semester

ISTC1033	Operating Systems II	3
ISTC1050	Database Systems	3
ISTC1060	Security I	3
ISTC1510	Web Programming I	3
ISTC2320	.NET I	3
	Total Credits	**15**

Second Year - First Semester

ISTC2110	Web Programming II	3
ISTC1230	System Analysis and Design	3
	Certificate Dependent***	6
SPEE1020	Interpersonal Communication	3
	Total Credits	**15**

Second Year - Second Semester

ISTC2330	Cross-Platform Mobile App. Development	3
ISTC2610	Web Programming III	3
	Certificate Dependent***	3
ENGL1150	Composition I	3
	General Education Elective**	3
	Total Credits	**15**
	TOTAL PROGRAM REQUIREMENTS	**60**

*** Select General Education electives from any MnTC goal area.*
****Students must choose one of the following certificates to complete the Software Development AAS: Desktop Programming or Web Programming.*

DESKTOP PROGRAMMING - CERTIFICATE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

Technical Courses

ISTC1300	Introduction to Programming	3
ISTC1510	Web Programming I	3
ISTC2050	Data Structures	3
ISTC2110	Web Programming II	3
ISTC2315	Java II	3
ISTC2320	.NET I	3
ISTC2325	.NET II	3
ISTC2330	Cross-Platrofm Mobile App. Development	3
ISTC2610	Web Programming III	3
	Total Credits	**27**
	TOTAL PROGRAM REQUIREMENTS	**27**

WEB PROGRAMMING - CERTIFICATE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

Technical Courses

ISTC1300	Introduction to Programming	3
ISTC1510	Web Programming I	3
ISTC2110	Web Programming II	3
ISTC2320	.NET I	3
ISTC2330	Cross-Platrofm Mobile App. Development	3
ISTC2610	Web Programming III	3
GRDT1016	Typography and Layout I	3
WEBD1032	Web Fundamentals	2
WEBD2675	Design for Mobile Apps	2
WEBD2705	JavaScript for Designers	2
	Total Credits	**27**
	TOTAL PROGRAM REQUIREMENTS	**27**

DAKOTA COUNTY
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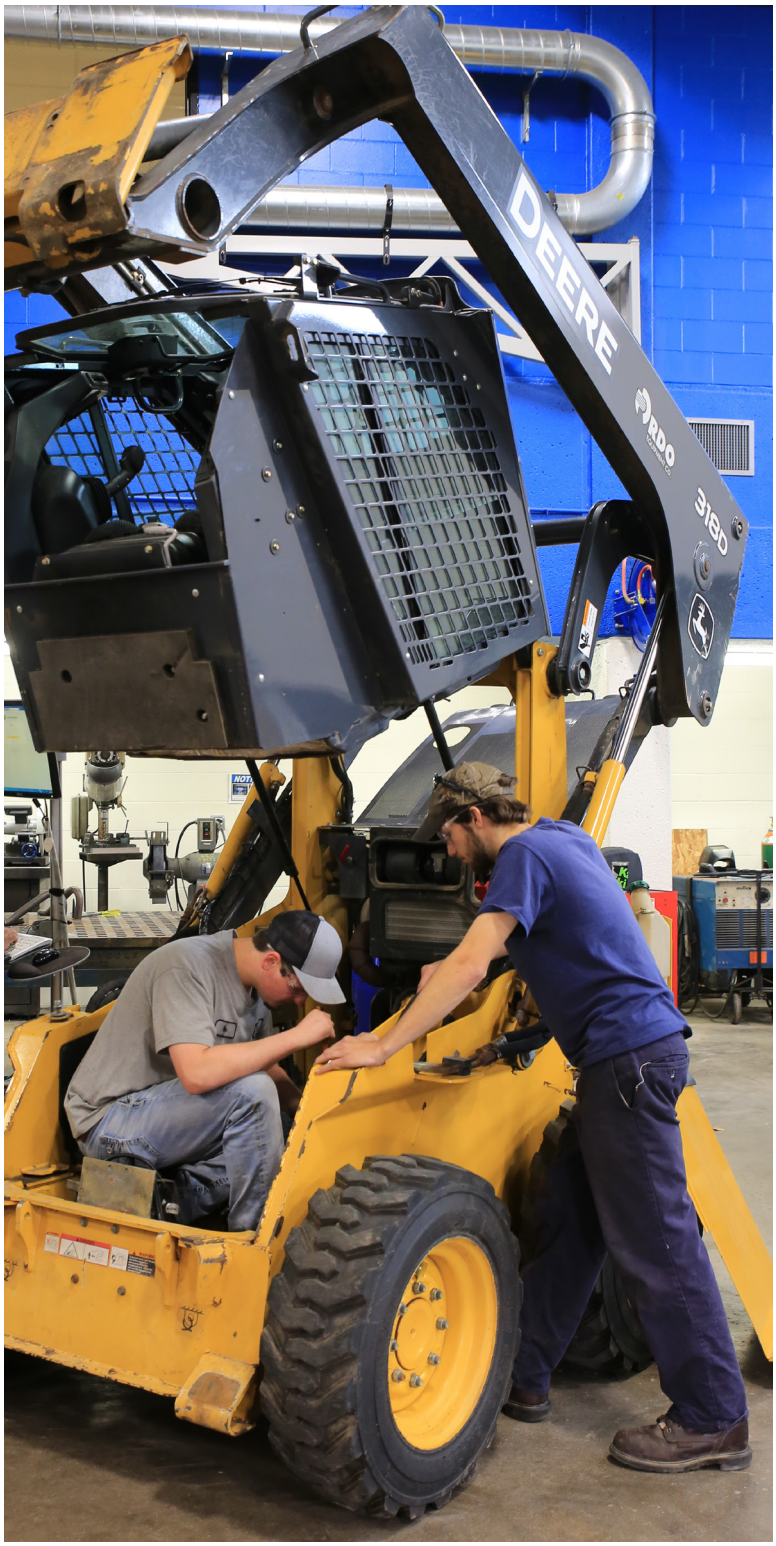
TRANSPORTATION



PROGRAMS OF STUDY

Auto Body Collision Technology

Automotive Technician

GM Automotive Service Educational Program

Heavy Construction Equipment Technology

Heavy Duty Truck Technology

Individualized Studies B.A. with focus on
Transportation Management
From Metropolitan State University on DCTC campus

WHEELS IN MOTION

People and goods are constantly on the move. Transportation began with human power, but today's modes of transport are literally all over the map—with road and rail covering much of the ground.

Transportation programs provide students with the knowledge and skills to get rolling in the career direction of their choice. Whether your repairing and maintaining personal vehicles or a heavy equipment mechanic servicing a Caterpillar track loader, our graduates always get where they're going.

TRAITS OF THE TRADE

People drawn to careers in the transportation fields are typically:

- Innovative
- Adaptable
- Strong-minded
- Analytical
- Troubleshooters
- Good with hands-on tools
- Mechanically inclined
- Handy with figures
- Natural communicators
- Independent
- Alert to their surroundings
- Attuned to all things on wheels

Unless otherwise specified, salary data is sourced from careerwise.minnstate.edu.

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AUTO BODY COLLISION TECHNOLOGY

*** All students applying for the transportation programs are REQUIRED to attend a Tuesday Campus Visit**

Delivery: Daytime Classes
Start: Fall Semester, Full-Time
Location: Rosemount Campus

Outcomes

Auto Body Collision Technology A.A.S. Degree . . . . . 72 cr.
Auto Body Collision Technology Diploma . . . . . 64 cr.
Body Technician Certificate . . . . . 28 cr.
Paint Prep Certificate . . . . . 21 cr.
Estimator Certificate . . . . . 14 cr.

Major Description

Auto body collision technicians are the skilled professionals who accurately diagnose and repair collision-damaged vehicles. Repairing today's advanced passenger vehicles requires knowledge and training in metals, plastics, structural repairs and refinishing. Instruction involves classroom theory, demonstrations and the hands-on repair of customer vehicles. Classroom presentation includes I-CAR Enhanced Delivery Collision Repair Training.

Work Environment

Skilled graduates find rewarding careers as body, frame or paint technicians, adjusters, appraisers and managers in franchise or independent body shops, dealerships, specialty shops and insurance companies.

Potential Job Titles

- Collision Repair Technician
- Detailer
- Estimator
- Glass Installer
- Paint Prepper
- Paint Technician

Salary Data

- Average Wage: $24.12/hour
- Top Earners: $33.53/hour

Accreditation

This program is accredited by the National Automotive Technician Education Foundation (NATEF) and the Inter-Industry Conference on Auto Collision Repair (I-CAR).

AUTO BODY COLLISION TECHNOLOGY – A.A.S. DEGREE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

ABCT1111	Collision Repair Welding I	2
ABCT1120	Sheet Metal Repair	5
ABCT1130	Refinishing Preparation I	2
ABCT1142	Glass, Trim and Hardware	4
ABCT1150	Reconditioning and Detailing	2
ENGL1150	Composition I (or ENGL1200)	3
	Total Credits	**18**

First Year - Second Semester

ABCT1212	Collision Repair Welding II	2
ABCT1214	Refinishing Preparation II	3
ABCT1216	Refinishing Application	5
ABCT1230	Auto Body Plastic Repair	2
PHIL1200	Critical Thinking	3
SPEE1020	Interpersonal Communication	3
	Total Credits	**18**

Second Year - First Semester

ABCT2103	Damage Analysis, Estimating, & Customer Service	2
ABCT2106	Collision Damage Repair/Replacement	6
ABCT2108	Unibody/Frame/Wheel Alignment I	4
ABCT2230	Body Mechanical and Air Conditioning	3
BIOL1110	Environmental Science	3
	Total Credits	**18**

Second Year - Second Semester

ABCT2100	Body Electrical	2
ABCT2212	Unibody/Frame/Wheel Alignment II	6
ABCT2240	Emerging Technologies	2
ABCT2970	Autobody Internship	5
HIST1450	The History of Minnesota	3
	Total Credits	**18**

TOTAL PROGRAM REQUIREMENTS 72

AUTO BODY COLLISION TECHNOLOGY – DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

ABCT1111	Collision Repair Welding I	2
ABCT1120	Sheet Metal Repair	5
ABCT1130	Refinishing Preparation I	2
ABCT1142	Glass, Trim and Hardware	4
ABCT1150	Reconditioning and Detailing	2
ENGL1150	Composition I (or ENGL1200)	3
	Total Credits	**18**

First Year - Second Semester

ABCT1212	Collision Repair Welding II	2
ABCT1214	Refinishing Preparation II	3
ABCT1216	Refinishing Application	5
ABCT1230	Auto Body Plastic Repair	2
PHIL1200	Critical Thinking	3
SPEE1020	Interpersonal Communication	3
	Total Credits	**18**

Second Year - First Semester

ABCT2103	Damage Analysis, Estimating, & Customer Service	2
ABCT2106	Collision Damage Repair/Replacement	6
ABCT2108	Unibody/Frame/Wheel Alignment I	4
ABCT2230	Body Mechanical and Air Conditioning	3
	Total Credits	**15**

Second Year - Second Semester

ABCT2100	Body Electrical	2
ABCT2212	Unibody/Frame/Wheel Alignment II	6
ABCT2970	Autobody Internship	5
	Total Credits	**13**
	TOTAL PROGRAM REQUIREMENTS	**64**

BODY TECHNICIAN – CERTIFICATE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

ABCT1111	Collision Repair Welding I	2
ABCT1120	Sheet Metal Repair	5
ABCT1142	Glass, Trim and Hardware	4
ABCT1212	Collision Repair Welding II	2
ABCT2100	Body Electrical	2
ABCT2106	Collision Damage Repair/Replacement	6
ABCT2108	Unibody/Frame/Wheel Alignment I	4
ABCT2230	Body Mechanical and Air Conditioning	3
	Total Credits	**28**
	TOTAL PROGRAM REQUIREMENTS	**28**

PAINT PREPARATION – CERTIFICATE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

ABCT1130	Refinishing Preparation I	2
ABCT1142	Glass, Trim and Hardware	4
ABCT1150	Reconditioning and Detailing	2
ABCT1214	Refinishing Preparation II	3
ABCT1216	Refinishing Application	5
ABCT1230	Auto Body Plastic Repair	2
	General Education (SPEE1020 or ENGL1200)	3
	Total Credits	**21**
	TOTAL PROGRAM REQUIREMENTS	**21**

ESTIMATOR – CERTIFICATE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

ABCT1120	Sheet Metal Repair	5
ABCT2103	Damage Analysis, Estimating, & Customer Service	2
ABCT2108	Unibody/Frame/Wheel Alignment I	4
	General Education (SPEE1020 or ENGL1200)	3
	Total Credits	**14**
	TOTAL PROGRAM REQUIREMENTS	**14**

DAKOTA COUNTY
TECHNICAL COLLEGE

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AUTOMOTIVE TECHNICIAN

*** All students applying for the transportation programs are REQUIRED to attend a Tuesday Campus Visit**

Delivery: Daytime Classes
Start: Fall or Spring Semester, Full-Time
Location: Rosemount Campus

Outcomes

Automotive Technician A.A.S. Degree . . . . . 72 cr.
Automotive Technician Diploma . . . . . 66 cr.
Automotive Maintenance & Light Repair Diploma. . . . . 36 cr.
Automotive Electronics & HVAC Diploma . . . . . 35 cr.
Automotive Engine Performance Diploma . . . . . 35 cr.
Automotive Powertrain Diploma. . . . . 35 cr.
Automotive Vehicle Maintenance Certificate . . . . . 18 cr.

Major Description

As skilled professionals, automotive technicians accurately diagnose mechanical problems related to engine, transmission, fuel injection, suspension and electrical systems. Students learn to maintain and repair engine, chassis, drive train, front-wheel drive, fuel injection, and electrical and emission systems. Instruction involves classroom theory, demonstrations, computer applications and hands-on car repair.

The Maintenance & Repair and Vehicle Maintenance programs are designed to introduce students to the automotive industry and provide opportunities to obtain the entry level fundamental knowledge, skills, training and credentials needed for employment and advancement in transportation career pathways. The curriculum follows the standards defined by the National Automotive Technician Education Foundation (NATEF) which ensures all training meets the highest standards. Students who graduate from this program will be able to work for independent repair facilities and dealerships in maintenance and light repair.

Work Environment

Automotive technicians land jobs at dealerships, independent shops and specialty shops. They generally work indoors with good ventilation and lighting as well as strong safety precautions.

Potential Job Titles

- Automotive Technician
- Automobile Service Advisor
- Automotive Repair Technician
- Automotive Engineer
- Service Manager
- Light Duty Maintenance Technician
- Fleet Repair Technician
- Lube Technician
- Tire Technician

Salary Data

- Average Wage: $19.30/hour
- Top Earners: $23.92/hour

Accreditation

This program is accredited by the National Automotive Technician Education Foundation (NATEF).

AUTOMOTIVE TECHNICIAN – A.A.S. DEGREE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

AUTM1003	Automotive Fundamentals	2
AUTM1013	Automotive Starting and Charging Systems	3
AUTM1023	Automotive Suspension Systems	3
AUTM1033	Automotive Brake Systems	3
AUTM1043	Vehicle Maintenance	4
ENGL1150	Composition I or	
ENGL1200	Technical Writing	3
	Total Credits	**18**

First Year - Second Semester

AUTM2117	Automotive Electronics 1	3
AUTM2127	Automotive Electronics 2	3
AUTM2137	Automotive HVAC Systems	3
AUTM2147	Advanced Automotive Electronics	5
PHIL1200	Critical Thinking	3
	Total Credits	**17**

Second Year - First Semester

AUTM2218	Automotive Engine Fundamentals	3
AUTM2228	Automotive Transmission Fundamentals	3
AUTM2238	Automotive Driveline Fundamentals	3
AUTM2248	Advanced Powertrain	5
BIOL1110	Environmental Science	3
	Total Credits	**17**

Second Year - Second Semester

AUTM2314	Engine Performance 1	3
AUTM2324	Engine Performance 2	3
AUTM2334	Engine Performance 3	3
AUTM2344	Advanced Engine Performance	5
SPEE1020	Interpersonal Communication	3
	Total Credits	**17**
SOCY1010	Marriage and the Family	3
	TOTAL PROGRAM REQUIREMENTS	**72**

AUTOMOTIVE TECHNICIAN – DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

AUTM1003	Automotive Fundamentals	2
AUTM1013	Automotive Starting and Charging Systems	3
AUTM1023	Automotive Suspension Systems	3
AUTM1033	Automotive Brake Systems	3
AUTM1043	Vehicle Maintenance	4
ENGL1150	Composition I or	
ENGL1200	Technical Writing	3
	Total Credits	**18**

First Year - Second Semester

AUTM2117	Automotive Electronics 1	3
AUTM2127	Automotive Electronics 2	3
AUTM2137	Automotive HVAC Systems	3
AUTM2147	Advanced Automotive Electronics	5
	Total Credits	**14**

Second Year - First Semester

AUTM2218	Automotive Engine Fundamentals	3
AUTM2228	Automotive Transmission Fundamentals	3
AUTM2238	Automotive Driveline Fundamentals	3
AUTM2248	Advanced Powertrain	5
BIOL1110	Environmental Science (recommended)	3
	Total Credits	**17**

Second Year - Second Semester

AUTM2314	Engine Performance 1	3
AUTM2324	Engine Performance 2	3
AUTM2334	Engine Performance 3	3
AUTM2344	Advanced Engine Performance	5
SPEE1020	Interpersonal Communication	3
	Total Credits	**17**
	TOTAL PROGRAM REQUIREMENTS	**66**

DAKOTA COUNTY
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AUTOMOTIVE MAINTENANCE AND LIGHT REPAIR – DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

AUTM1003	Automotive Fundamentals	2
AUTM1013	Automotive Starting and Charging Systems	3
AUTM1023	Automotive Suspension Systems	3
AUTM1033	Automotive Brake Systems	3
AUTM1043	Vehicle Maintenance	4
ENGL1150	Composition I or	
ENGL1200	Technical Writing	3
	Total Credits	**18**

First Year - Second Semester

AUTM1053	MLR Engine Repair	4
AUTM1063	MLR Engine Performance	4
AUTM1073	MLR Advanced Lab	5
AUTM2970	Automotive Internship	2
BIOL1110	Environmental Science	3
	Total Credits	**18**

TOTAL PROGRAM REQUIREMENTS 36

** Final 2018-2019 Diploma pending Minnesota State Approval.*

AUTOMOTIVE ELECTRONICS & HVAC –DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

AUTM1003	Automotive Fundamentals	2
AUTM1013	Automotive Starting and Charging Systems	3
AUTM1023	Automotive Suspension Systems	3
AUTM1033	Automotive Brake Systems	3
AUTM1043	Vehicle Maintenance	4
ENGL1150	Composition I or	
ENGL1200	Technical Writing	3
	Total Credits	**18**

First Year - Second Semester

AUTM2117	Automotive Electronics 1	3
AUTM2127	Automotive Electronics 2	3
AUTM2137	Automotive HVAC Systems	3
AUTM2147	Advanced Automotive Electronics	5
BIOL1110	Environmental Science	3
	Total Credits	**17**
	TOTAL PROGRAM REQUIREMENTS	**35**

AUTOMOTIVE ENGINE PERFORMANCE – DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

AUTM1003	Automotive Fundamentals	2
AUTM1013	Automotive Starting and Charging Systems	3
AUTM1023	Automotive Suspension Systems	3
AUTM1033	Automotive Brake Systems	3
AUTM1043	Vehicle Maintenance	4
ENGL1150	Composition I or	
ENGL1200	Technical Writing	3
	Total Credits	**18**

Second Year - Second Semester

AUTM2314	Engine Performance 1	3
AUTM2324	Engine Performance 2	3
AUTM2334	Engine Performance 3	3
AUTM2344	Advanced Engine Performance	5
SPEE1020	Interpersonal Communication	3
	Total Credits	**17**
	TOTAL PROGRAM REQUIREMENTS	**35**

AUTOMOTIVE POWERTRAIN – DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

AUTM1003	Automotive Fundamentals	2
AUTM1013	Automotive Starting and Charging Systems	3
AUTM1023	Automotive Suspension Systems	3
AUTM1033	Automotive Brake Systems	3
AUTM1043	Vehicle Maintenance	4
ENGL1150	Composition I or	
ENGL1200	Technical Writing	3
	Total Credits	**18**

First Year - Second Semester

AUTM2218	Automotive Engine Fundamentals	3
AUTM2228	Automotive Transmission Fundamentals	3
AUTM2238	Automotive Driveline Fundamentals	3
AUTM2248	Advanced Powertrain	5
BIOL1110	Environmental Science	3
	Total Credits	**17**

TOTAL PROGRAM REQUIREMENTS 35

AUTOMOTIVE VEHICLE MAINTENANCE – CERTIFICATE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

AUTM1003	Automotive Fundamentals	2
AUTM1013	Automotive Starting and Charging Systems	3
AUTM1023	Automotive Suspension Systems	3
AUTM1033	Automotive Brake Systems	3
AUTM1043	Vehicle Maintenance	4
ENGL1150	Composition I or	
ENGL1200	Technical Writing	3
	Total Credits	**18**
	TOTAL PROGRAM REQUIREMENTS	**18**

** Final 2018-2019 Diploma pending Minnesota State Approval.*

DAKOTA COUNTY
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GM AUTOMOTIVE SERVICE EDUCATIONAL PROGRAM (ASEP)

*** All students applying for the transportation programs are REQUIRED to attend a Tuesday Campus Visit**

Delivery: Daytime Classes
Start: Fall Semester, Full-Time
Location: Rosemount Campus

Outcome
Automotive Service A.A.S. Degree . . . . . 82 cr.

Major Description
Through DCTC's unique cooperation with General Motors and AC Delco, ASEP trains highly skilled service technicians for GM dealers and AC Delco Professional Service Centers. ASEP labs are equipped with the latest GM technology, including vehicles, components, training aids and technical information. Trained to handle GM'S computer-oriented product line, ASEP technicians are prepared to keep pace with future technology.

Work Environment
ASEP graduates work as service technicians in General Motors dealerships, including Buick, Cadillac, Chevrolet, GMC or an AC Delco Professional Service Center.

Potential Job Titles
- Automotive Technician
- Automotive Repair Technician
- Automotive Service Advisor
- Automotive Engineer
- Automotive Service Manager
- Automotive Mechanic

Salary Data
- Average Wage: $19.30/hour
- Top Earners: $23.92/hour

Accreditation
This program is accredited by the National Automotive Technician Education Foundation (NATEF).

AUTOMOTIVE SERVICE – A.A.S. DEGREE
This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

ASEP1101	Automotive Fundamentals	3
ASEP1102	Electrical and Fuel Systems	3
ASEP1201	Dealer Work Experience I	8
BIOL1110	Environmental Science	3
	Total Credits	**17**

First Year - Second Semester

ASEP1103	Driveability	3
ASEP1105	Heating and Air Conditioning	3
ASEP1202	Dealer Work Experience II	8
SPEE1020	Interpersonal Communication	3
	Total Credits	**17**

First Year - Summer Session

ASEP1104	Body Electronics	3
ASEP2110	Automatic Transmissions	3
ASEP2303	Dealer Work Experience III	5
ENGL1150	Composition I or	
ENGL1200	Technical Writing	3
	Total Credits	**14**

Second Year - First Semester

ASEP1204	Dealer Work Experience IV	8
ASEP2111	Engines	3
ASEP2209	Driveline and Four-Wheel Drive	3
PHIL1200	Critical Thinking	3
	Total Credits	**17**

Second Year - Second Semester

ASEP1108	Brake Systems	3
ASEP1205	Dealer Work Experience V	8
ASEP1212	Advanced Diagnostics/New Model Update	1
ASEP2107	Steering and Suspension	2
SOCY1010	Marriage and Family	3
	Total Credits	**17**
	TOTAL PROGRAM REQUIREMENTS	**82**

DAKOTA COUNTY
TECHNICAL COLLEGE

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2018-2019 CATALOG

HEAVY CONSTRUCTION EQUIPMENT TECHNOLOGY

*** All students applying for the transportation programs are REQUIRED to attend a Tuesday Campus Visit**

Delivery: Daytime Classes
Start: Fall Semester, Full-Time
Location: Rosemount Campus

Outcomes

Heavy Construction Equip. Technology A.A.S. Degree. . 72 cr.
Heavy Construction Equip. Mechanic Diploma. . . . . .64 cr.
Heavy Construction Equip. Maintenance Certificate. . . . 29 cr.

Major Description

Coursework prepares students to succeed as well-trained, mechanically minded, hard-working technicians with heavy equipment dealers and contractors. Instruction involves classroom theory, live shop demonstrations, and repair of heavy equipment currently used in industry. Making repairs on actual equipment is vital to skill development.

Work Environment

Heavy equipment dealers and earth-moving contractors are top employers. Jobs are also available with mining and logging companies. Most mechanics work in indoor shops, but experienced field service technicians travel to job sites to perform repairs.

Potential Job Titles

- Mobile Heavy Equipment Technician
- Construction Equipment Technician
- Field Service Technician
- Dealer Service Technician

Salary Data

- Average Wage: $26.40/hour
- Top earners: $29.64/hour

Accreditation

This program is accredited by the Associated Equipment Distributors Foundation (AED).

HEAVY CONSTRUCTION EQUIPMENT TECHNOLOGY – A.A.S. DEGREE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

HCEM1102	General Shop Mechanics - Introduction	3
HCEM1110	Welding and Flame Cutting	2
HCEM1132	Heavy Duty Electrical	3
HCEM1140	Diesel Engine Overhaul I	4
HCEM1150	Applied Failure Analysis	2
ENGL1150	Composition I (OR ENGL1200)	3
	Total Credits	**17**

First Year - Second Semester

HCEM1234	Heavy Duty Electronics	3
HCEM1246	Diesel Engine Overhaul II	3
HCEM1250	Brakes	2
HCEM1256	Diesel Engine Tune-up	3
HCEM1262	Preventative Maintenance	2
HCEM1271	CAT Basics Training	2
PHIL1200	Critical Thinking	3
SPEE1020	Interpersonal Communication	3
	Total Credits	**21**

Second Year - First Semester

HCEM2115	Transmissions	4
HCEM2135	Hydraulics I	3
HCEM2177	Machine Electronics I	2
HCEM2238	Hydraulics II	3
HCEM2265	Differentials	2
BIOL1110	Environmental Science	3
	Total Credits	**17**

Second Year - Second Semester

HCEM2145	Hydrostatic Systems	3
HCEM2225	Track Drive Systems	3
HCEM2256	Steering Systems	2
HCEM2260	Machine Electronics II	2
HCEM2271	CAT Advanced Training	2
HCEM2280	Climate Control	2
HIST1450	The History of Minnesota	3
	Total Credits	**17**
	TOTAL PROGRAM REQUIREMENTS	**72**

HEAVY CONSTRUCTION EQUIPMENT MECHANIC – DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

HCEM1102	General Shop Mechanics - Introduction	3
HCEM1110	Welding and Flame Cutting	2
HCEM1132	Heavy Duty Electrical	3
HCEM1140	Diesel Engine Overhaul I	4
HCEM1150	Applied Failure Analysis	2
ENGL1150	Composition I (OR ENGL1200)	3
	Total Credits	**17**

First Year - Second Semester

HCEM1234	Heavy Duty Electronics	3
HCEM1246	Diesel Engine Overhaul II	3
HCEM1250	Brakes	2
HCEM1256	Diesel Engine Tune-up	3
HCEM1262	Preventative Maintenance	2
HCEM1271	CAT Basics Training	2
PHIL1200	Critical Thinking	3
SPEE1020	Interpersonal Communication	3
	Total Credits	**21**

Second Year - First Semester

HCEM2115	Transmissions	4
HCEM2135	Hydraulics I	3
HCEM2177	Machine Electronics I	2
HCEM2238	Hydraulics II	3
HCEM2265	Differentials	2
	Total Credits	**14**

Second Year - Second Semester

HCEM2145	Hydrostatic Systems	3
HCEM2225	Track Drive Systems	3
HCEM2256	Steering Systems	2
HCEM2260	Machine Electronics II	2
HCEM2280	Climate Control	2
	Total Credits	**12**
	TOTAL PROGRAM REQUIREMENTS	**64**

HEAVY CONSTRUCTION EQUIPMENT MAINTENANCE – CERTIFICATE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

HCEM1102	General Shop Mechanics - Introduction	3
HCEM1110	Welding and Flame Cutting	2
HCEM1132	Heavy Duty Electrical	3
HCEM1140	Diesel Engine Overhaul I	4
HCEM1150	Applied Failure Analysis	2
	Total Credits	**14**

First Year - Second Semester

HCEM1234	Heavy Duty Electronics	3
HCEM1246	Diesel Engine Overhaul II	3
HCEM1250	Brakes	2
HCEM1256	Diesel Engine Tune-up	3
HCEM1262	Preventative Maintenance	2
HCEM1271	CAT Basics Training	2
	Total Credits	**15**
	TOTAL PROGRAM REQUIREMENTS	**29**

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HEAVY DUTY TRUCK TECHNOLOGY

*** All students applying for the transportation programs are REQUIRED to attend a Tuesday Campus Visit**

Delivery: Daytime Classes
Start: Fall & Spring Semester, Full-Time
Location: Rosemount Campus

Outcomes

Heavy Duty Truck Technology A.A.S. Degree . . . . . 72 cr.
Heavy Duty Truck Technology Diploma . . . . . 64 cr.
Truck Fleet Maintenance Certificate . . . . . 29 cr.

Major Description

Students learn all aspects of heavy-duty truck repair and maintenance. The program focuses on large trucks, typically class 7 and 8. Areas of instruction include electrical and electronic systems, steering/alignment, foundation brakes, air brakes and anti-lock brake systems. Students perform diesel engine troubleshooting, overhauls and tune-ups on both mechanical and electronic engines. Clutch, transmission, drive axle repair and overhaul are taught along with welding instruction, preventive maintenance, and HVAC. Students will be given the opportunity to obtain a commercial drivers license (CDL) and become a state of MN certified commercial vehicle inspector.

This program is accredited by the National Automotive Technicians Education Foundation (NATEF). Programs must undergo extensive evaluation and site visits by NATEF to receive and retain program accreditation.

Work Environment

Technicians generally work a standard 40-hour week in well-lighted and well-ventilated shops. Truck fleet companies, dealerships and truck repair shops are major employers.

Potential Job Titles

- Diesel Mechanic
- Diesel Technician
- Fleet Mechanic
- Heavy Duty Mechanic
- Truck Engine Technician
- Transportation Mechanic

Salary Data

- Average Wage: $22.68/hour
- Top Earners: $27.20/hour

HEAVY DUTY TRUCK TECHNOLOGY – A.A.S. DEGREE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

HDTT1100	Truck Technology Fundamentals	4
HDTT1106	Welding Procedures	2
HDTT1212	Preventive Maintenance	4
HDTT1218	Electrical Systems	4
ENGL1200	Technical Writing or	3
ENGL1150	Composition I	
	Total Credits	**17**

First Year - Second Semester

HDTT1103	Air Brake Systems	6
HDTT1109	Fluid Power Systems	2
HDTT1215	Suspensions and Steering Systems	4
HDTT1223	Truck A/C	3
PHIL1200	Critical Thinking	3
SPEE1020	Interpersonal Communication	3
	Total Credits	**21**

Second Year - First Semester

HDTT2101	Drive Train I	6
HDTT2104	Drive Train II	4
HDTT2107	Diesel Fundamentals	3
HDTT2110	Diesel Fuel Systems	1
BIOL1110	Environmental Science	3
	Total Credits	**17**

Second Year - Second Semester

HDTT2213	Diesel Engine Fundamentals	4
HDTT2216	Diesel Electronics	3
HDTT2230	Heavy Truck Industry Training	2
HDTT2970	Internship	5
HIST1450	History of Minnesota	3
	Total Credits	**17**
	TOTAL PROGRAM REQUIREMENTS	**72**

HEAVY DUTY TRUCK TECHNOLOGY – DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

HDTT1100	Truck Technology Fundamentals	4
HDTT1106	Welding Procedures	2
HDTT1212	Preventive Maintenance	4
HDTT1218	Electrical Systems	4
ENGL1200	Technical Writing or	3
ENGL1150	Composition I	
	Total Credits	**17**

First Year - Second Semester

HDTT1103	Air Brake Systems	6
HDTT1109	Fluid Power Systems	2
HDTT1215	Suspensions and Steering Systems	4
HDTT1223	Truck A/C	3
SPEE1020	Interpersonal Communication	3
	Total Credits	**18**

Second Year - First Semester

HDTT2101	Drive Train I	6
HDTT2104	Drive Train II	4
HDTT2107	Diesel Fundamentals	3
HDTT2110	Diesel Fuel Systems	1
BIOL1110	Environmental Science	3
	Total Credits	**17**

Second Year - Second Semester

HDTT2213	Diesel Engine Fundamentals	4
HDTT2216	Diesel Electronics	3
HDTT2970	Internship	5
	Total Credits	**12**
	TOTAL PROGRAM REQUIREMENTS	**64**

TRUCK FLEET MAINTENANCE – CERTIFICATE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

HDTT1100	Truck Technology Fundamentals	4
HDTT1106	Welding Procedures	2
HDTT1212	Preventive Maintenance	4
HDTT1218	Electrical Systems	4
	Total Credits	**14**

First Year - Second Semester

HDTT1103	Air Brake Systems	6
HDTT1109	Fluid Power Systems	2
HDTT1215	Suspensions and Steering Systems	4
HDTT1223	Truck A/C	3
	Total Credits	**15**
	TOTAL PROGRAM REQUIREMENTS	**29**

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INDIVIDUALIZED STUDIES B.A. WITH FOCUS ON
TRANSPORTATION MANAGEMENT
DEGREE THROUGH METROPOLITAN STATE UNIVERSITY DELIVERED ON THE DCTC CAMPUS

Delivery: Evening, Weekend, Online, Hybrid Classes
Start: Fall Semester, Part-Time
Location: Rosemount Campus

Outcomes
Individualized Studies B.A. with focus on
Transportation Management . . . . . .60 cr.

Major Description
The Individualized Studies B.A. with focus on Transportation Management, offered by Metropolitan State University on the DCTC campus, enables you to combine your technical knowledge with management skills and fast-track your career. Specifically designed to leverage your transportation A.A.S. or industry experience, you will learn from industry professionals through accelerated, hands-on training.

The accelerated, part-time schedule allows students to finish in as little as 18 months while making it manageable to balance work, family and classes.

Work Environment
Professionals in this field may find themselves working in a wide variety of environments, including dealerships, repair shops, transportation hubs and more.

Potential Job Titles
- Field Services Manager
- Field Representative
- Service Training Instructor
- Fleet Manager
- Fixed Operations Manager/Director
- Traffic & Transportation Manager

Admission to Program
Students must have the equivalent of a 2-year A.A.S. degree. Credit for industry experience may be applied on a case-by-case basis. Contact admissions for more information.

INDIVIDUALIZED STUDIES B.A. WITH FOCUS ON TRANSPORTATION MANAGEMENT
This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

TMGT2500	Fixed Operations Management	3
TMGT2510	Principles of Management and Supervision	3
METRO	PRSP301 - Perspectives: Educational Philosophy and planning	4
	Total Credits	**10**

First Year - Second Semester

TMGT2520	Transportation Industry Economics and Finance	3
TMGT2530	Fixed Operations Computer Applications	3
METRO	GELS*	4
	Total Credits	**10**

Second Year - First Semester

TMGT2540	Transportation Facilities and Operations	3
TMGT2550	Risk Management and Safety	3
METRO	GELS*	4
	Total Credits	**10**

Second Year - Second Semester

TMGT2560	Transportation Production and Aftermarket Environments	3
TMGT2570	Marketing, Sales and Advertising	3
METRO	GELS*	4
	Total Credits	**10**

Third Year - First Semester

TMGT2580	Negotiations, Contracts, Warranty and Customer Relations	3
TMGT2590	Business Law I	4
METRO	GELS*	4
	Total Credits	**11**

Third Year - Second Semester

METRO	Senior Capstone	4
METRO	GELS*	4
	Human Resources Management	2
	Total Credits	**9**
	TOTAL PROGRAM REQUIREMENTS	**60**

**GELS: General Education and Liberal Studies*
***Course sequence subject to change*

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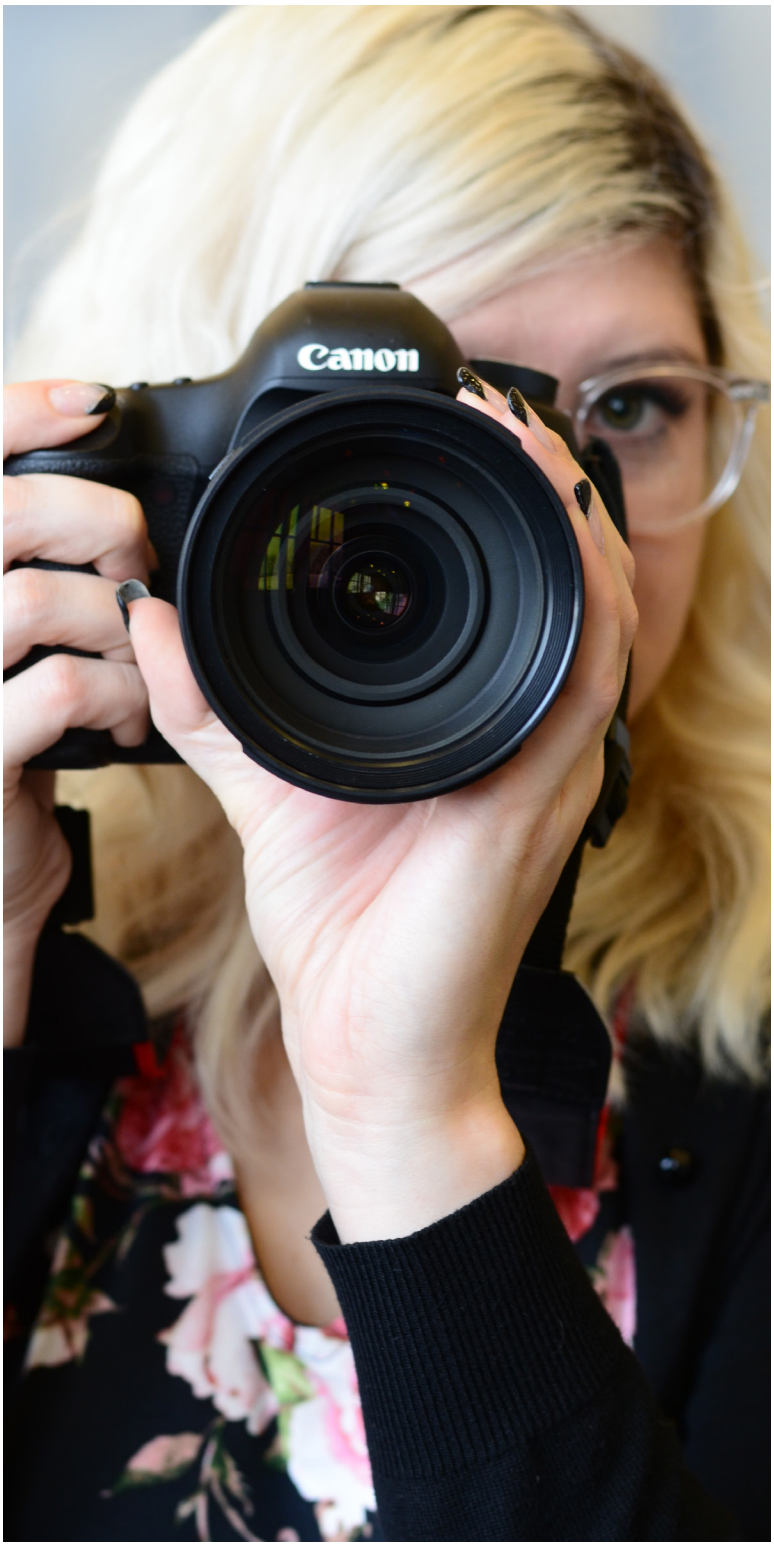
VISUAL ARTS & COMMUNICATION



PROGRAMS OF STUDY

Graphic Design Technology
Photography
Web Design

DESIGN

Our programs unite the beauty of ancient traditions with modern technology. Our instructors use their industry experience to bring unique and valuable perspectives to the classroom. Our Visual Arts & Communications programs produce graduates who not only possess superb technical skills and strong design fundamentals, but also have experience in critical thinking, sustainability, civic engagement and collaborative projects.

Successful professionals in the design fields have personalities that are:

- Creative
- Attuned to shape and symmetry
- At ease with dimensional thinking
- Self-disciplined with attention to detail
- Computer savvy
- Inquisitive and individualistic

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GRAPHIC DESIGN TECHNOLOGY

Delivery: Daytime Classes
Start: Recommended Fall Semester, Spring Semester options available, Full- or Part-Time
Location: Rosemount Campus

Outcomes

Graphic Design Technology A.A.S. Degree . . . . . 70 cr.

Major Description

This program prepares students to explore, plan, design and produce visual solutions to graphic design communications problems. Graphic designers work to discover the most effective way to communicate in print, web, and interactive media. Students develop skills and knowledge in design concepts, typography, layout, illustration, animation, web content and computer software to create graphic designs for a variety of purposes.

Work Environment

Performing much of their work on a computer, graphic designers work closely with internal and external clients on advertising, marketing, and promotional projects for a myriad of organizations and businesses.

Potential Job Titles

- Advertising Designer
- Graphic Art Designer
- Graphic Artist
- Visual Designer
- Graphic Design Specialist
- Studio Designer
- Production Assistant
- Web Content Designer
- Motion Graphic Designer
- Animator

Salary Data

- Average Wage: $22.53/hour
- Top Earners: $34.76/hour

GRAPHIC DESIGN TECHNOLOGY – A.A.S. DEGREE

Please contact your program advisor regarding your academic plans.

Fall		
GRDT1001	Technical Foundations	2
GRDT1016	Typography and Layout I	3
GRDT1030	Graphic Design Fundamentals	3
GRDT1410	Adobe Illustrator I	3
WEBD1650	Web Content I	3
Spring		
GRDT1010	Adobe Photoshop I	3
GRDT1053	Design Drawing	3
GRDT1430	Adobe InDesign I	3
GRDT2420	Adobe Illustrator II	3
WEB2685	Web Page Construction I	3
Fall		
GRDT1096	Illustration Fundamentals	2
GRDT1423	Print Processes and Production	3
GRDT2400	Adobe Photoshop II	3
PHOT1100	Intro to Photography	3
WEBD2681	Multimedia	3
Spring		
WEBD1750	Web Content II	3
GRDT2016	Typography and Layout II	3
GRDT2415	Adobe InDesign II	3
GRDT2721	Career and Portfolio Preparation for Graphic Design	3
	Total Credits	**55**

General Education		
SPEE1020	Interpersonal Communication	3
ENGL1150	Composition I	3
	General Education (MnTC Goal 3 or 4)	3
	General Education Electives*	6
	Total Credits	**15**

	TOTAL PROGRAM REQUIREMENTS	**70**

**Select General Education electives from any MnTC goal area.*

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2018-2019 CATALOG

PHOTOGRAPHY

Delivery: Daytime and Evening Classes
Start: Fall or Spring Semester, Full- or Part-Time
Location: Rosemount Campus

Outcomes

Photography Diploma . . . . . 32 cr.
+ Technical Management A.A.S. Degree . . . . . .60 cr.
+ Individualized Studies A.S. Degree . . . . . .60 cr.

Major Description

Photography is a creative visual industry that requires highly trained people. The unique program at DCTC provides opportunities for students to learn all major aspects of photography through hands-on application of image capture, lighting, computer software, portraiture and print production. Required courses in design skills, video, color management, and business principles round out your experience as you get ready to enter the industry as a professional photographer. Whether you choose to start your own home-based business, or work for a large organization, you will find that your education at DCTC will provide both the foundational and advanced technical skills you need.

Degree Options

Those wishing to earn an A.A.S. degree may combine technical credits with a custom-designed curriculum path in Technical Management. The Technical Management degree prepares students for today's modern business environment and is ideal for those wishing to enter the workforce after attending DCTC. More information on Technical Management is available in the Business & Management section of this catalog.

Those wishing to earn an A.S. degree may combine technical credits with a custom-designed curricum path in Individualized Studies. An A.S. degree is ideal for those wishing to transfer to a four-year college or university. More information on Individualized Studies is available in the General Education section of this catalog.

For more information, contact Photographic Imaging faculty.

Camera Requirement

Effective fall semester 2015 all students enrolling in the Photograph program will be required to own a DSLR (digital single lens reflex) at the start of their first semester.

Recommended camera: Nikon D5300 with 18-55MM lens
Students entering the program who already own a DSLR camera must obtain instructor consent that their camera is a reasonable equivalent within the first week of class.

Work Environment

Graduates become photographers of all types as well as traditional and digital imaging specialists. Opportunities in new technologies and niche areas continue to grow as clients expect a more sophisticated variety of products and services. Advanced computer and software skills along with solid equipment operation provide the graduate with the foundation needed to advance and grow with the industry.

Potential Job Titles

- Studio Photographer
- Commercial Photographer / Assistant
- Digital Production Assistant
- Digital Printing Specialist
- Digital Asset Management Technician
- Freelance Photographer

Salary Data

- Average Wage: $24.48/hour
- Top Earners: $40.80/hour

PHOTOGRAPHY – DIPLOMA

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

First Year - First Semester

PHOT1050	Camera Skills	2
PHOT1110	Lighting Basics	2
PHOT1120	Natural Light Portraits	1
PHOT1310	Adobe Lightroom	2
PHOT1320	Photoshop for Photographers	2
PHOT1420	Studio Portraits	2
PHOT1510	Color Management	2
ENGL 1150	Composition I or	
SPEE 1020	Interpersonal Communication	3
	Total Credits	**16**

First Year - Second Semester

PHOT1550	DSLR Video	2
PHOT1610	Advanced Software	2
PHOT1651	Product Photography	2
PHOT1680	Photo Business Preparation	2
PHOT1830	Location Portraits	2
PHOT2560	Digital Printing	2
PHOT2651	Advanced Photo Projects	2
PHOT2710	Portfolio Development	2
	Total Credits	**16**
	TOTAL PROGRAM REQUIREMENTS	**32**

TECHNICAL MANAGEMENT – A.A.S. DEGREE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

	Technical Electives* or Prior Learning Credits	30
	Technical Electives* (from BUSN)	14
BUSN2010	Graduation Project (or BUSN2970 Internship)	1
	Total Credits	**45**

General Education

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
	General Education (MNTC Goal 3 or 4)	3
	General Education Electives (Any MnTC area)	6
	Total Credits	**15**
	TOTAL PROGRAM REQUIREMENTS	**60**

** Select Technical electives from any technical program, or credit for prior learning.*

INDIVIDUALIZED STUDIES – A.S. DEGREE

This degree is designed for students wishing to transfer to a four-year institution to obtain an advanced degree.

Because this degree will be custom designed to meet your education and career goals, there is no sample course sequence. Please discuss your academic goals with a program advisor so they can work with you to develop a sequence.

INDS1000	Career Exploration OR	
INDS1010	Credit for Prior Learning	1
	Technical Credits	29
	Total Credits	**30**

General Education

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
	General Education (MnTC Goal 4)	3
	General Education (MnTC Goal 3)	3
	General Education Electives*	18
	Total Credits	**30**
	TOTAL PROGRAM REQUIREMENTS	**60**

** Students must complete a minimum of 18 elective credits from at least two of the following goal areas: Goal 2: Critical Thinking, Goal 5: History and the Social and Behavioral Sciences, Goal 6: Humanities and Fine Arts, Goal 8: Global Perspective, Goal 9: Ethical and Civic Responsibility, and Goal 10: People and the Environment.*

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WEB DESIGN

Delivery: Daytime and Online Classes
Start: Fall or Spring Semester, Full- or Part-Time
Location: Rosemount Campus

Outcomes

Web Design A.A.S. Degree . . . . . 60 cr.
Web Design Certificate . . . . . 24 cr.

Major Description

Web Design A.A.S. Degree: This program prepares students to create html-based interfaces and content for websites and mobile applications. Using industry standard software, students design and develop images, 2D and 3D animations, audio, video, page layouts and navigation for use in the advertising, educational and entertainment industries. They also study interface design, user interactions, basic web page coding including HTML, CSS and JavaScript, usability, testing, and project management. General education courses are taken to create a well-rounded web designer.

Web Design Certificate: This program emphasizes web page architecture for the graphic designer or those just looking for basic web design skills. User interface design concepts, HTML, CSS and JavaScript as well as Content Management Systems are used to create web page structures. Image creation and optimization, basic animation in 2d and 3d environments, and audio and video editing for web content are also taught to create a complete set of web design skills.

Work Environment

Like graphic designers and desktop publishers, web designers usually work in comfortable office environments. They frequently adhere to strict deadlines and spend considerable time seated before computer monitors.

Potential Job Titles

- Web Designer
- Web Developer
- Multimedia Specialist
- Multimedia Designer
- Multimedia Developer
- Web Specialist

Salary Data

- Average Wage: $25.88/hour
- Top Earners: $39.49/hour

WEB DESIGN – A.A.S. DEGREE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

Required Technical Courses

Fall		
GRDT1001	Technical Foundations	2
GRDT1016	Typography and Layout I	3
WEBD1650	Web Content I	3
WEBD2685	Web Page Construction I	3
WEBD1032	Web Fundamentals	2
Spring		
WEBD1750	Web Content II	3
WEBD2690	Web Page Construction II	3
WEBD2705	Javascript for Designers	2
WEBD2675	Designing for Mobile Apps	2
WEBD2710	Web Page Construction III	3
Fall		
GRDT1010	Adobe Photoshop I	3
GRDT1410	Adobe Illustrator I	3
WEBD2681	Multimedia	3
WEBD2695	UX/UI Design	3
Spring		
WEBD2650	Multimedia Project Management	2
WEBD2700	Web Capstone Project	2
WEBD2722	Career and Portfolio Preparation for Multimedia and Web Design	3
	Total Credits	**45**

Required General Education Courses

SPEE1020	Interpersonal Communication	3
ENGL1150	Composition I	3
	General Education (MnTC Goal 3 or 4)	3
	General Education Electives*	6
	Total Credits	**15**
	TOTAL PROGRAM REQUIREMENTS	**60**

** Select General Education electives from any MnTC goal area.*

WEB DESIGN – CERTIFICATE

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

Required Technical Courses

GRDT1016	Typography and Layout I	3
WEBD1650	Web Content I	3
WEBD1032	Web Fundamentals	2
WEBD2685	Web Page Construction I	3
WEBD1750	Web Content II	3
WEBD2690	Web Page Construction II	3
WEBD2705	JavaScript for Designers	2
WEBD2675	Designing for Mobile Apps	2
WEBD2710	Web Page Construction III	3
	Total Credits	**24**
	TOTAL PROGRAM REQUIREMENTS	**24**

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

One year in-class option

Fall

GRDT1016	Typography and Layout I	3
WEBD1650	Web Content I	3
WEBD2685	Web Page Construction I	3
WEBD1032	Web Fundamentals	2

Spring

WEBD1750	Web Content II	3
WEBD2690	Web Page Construction II	3
WEBD2705	JavaScript for Designers	2
WEBD2675	Designing for Mobile Apps	2
WEBD2710	Web Page Construction III	3
	TOTAL PROGRAM REQUIREMENTS	**24**

This is a sample course sequence.
Please contact your program advisor regarding your academic plans.

Fast Track - One Year Hybrid or Full Online option

Fall - First 8 weeks

GRDT1016	Typography and Layout I	3
WEBD1032	Web Fundamentals	2

Fall - Second 8 weeks

WEBD1650	Web Content I	3
WEBD2685	Web Page Construction I	3

Spring - First 8 weeks

WEBD1750	Web Content II	3
WEBD2690	Web Page Construction II	3

Spring - Second 8 weeks

WEBD2675	Designing for Mobile Apps	2
WEBD2705	JavaScript for Designers	2
WEBD2710	Web Page Construction III	3
	TOTAL PROGRAM REQUIREMENTS	**24**

DAKOTA COUNTY
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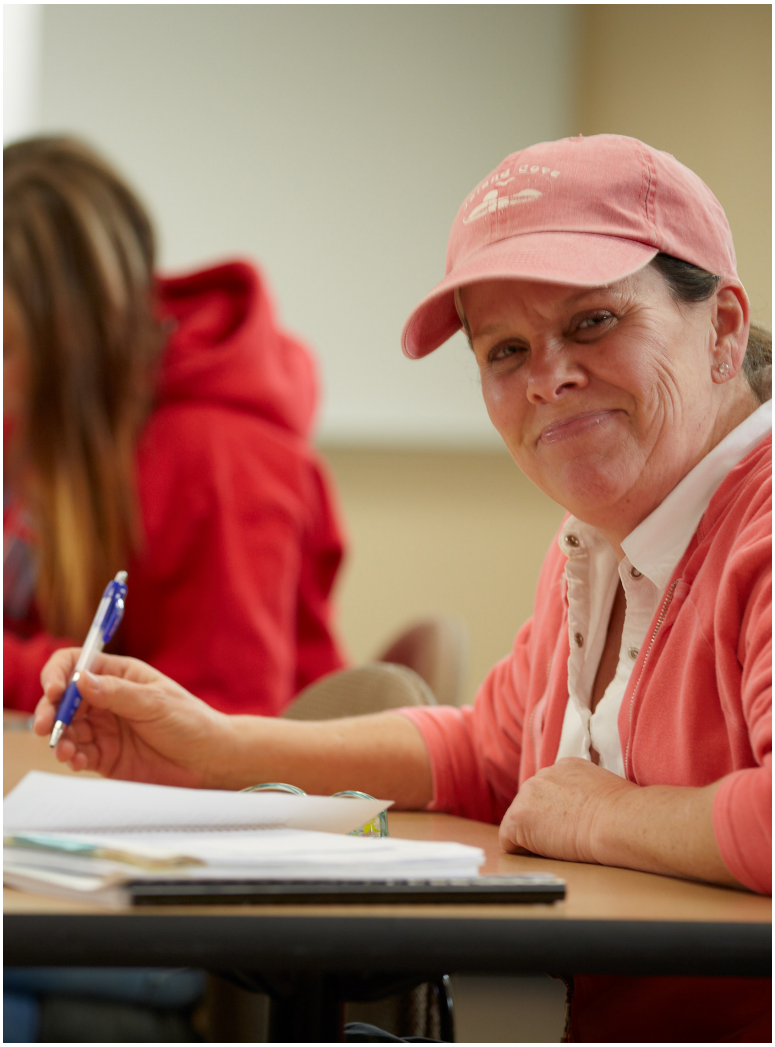
LIBERAL ARTS & SCIENCES



PROGRAMS OF STUDY

General Education & Transfer Curriculum

Individualized Studies

PHILOSOPHY OF LIBERAL ARTS & SCIENCES

Dakota County Technical College incorporates Liberal Arts & Sciences into its curriculum because it firmly believes that higher education involves breadth as well as depth of study and because General Education also achieves an important goal of the college's mission. The mission of Dakota County Technical College is to provide collegiate-level education for employment that will empower individuals to enhance their opportunities for career advancement and success in a global economy.

OUTCOME STATEMENT

Liberal Arts & Sciences is a requirement of all programs of 45 or more semester credits in length and is an integral part of the formal technical and/or professional preparation of students. This "general" education provides the kind of intellectual concepts and common knowledge that is expected of an educated person.

DELIVERY OF COURSES

Traditional: DCTC offers a variety of day and evening transferable general education courses in the classroom.

Online: DCTC offers transferable general education courses online for those who need flexibility.

Hybrid: DCTC offers transferable general education courses in a blended format that includes both face to face and online components for increased flexibility.

For a current schedule of course offerings, visit, dctc.edu/go/courses.

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GENERAL EDUCATION & TRANSFER CURRICULUM

A.S. DEGREE REQUIREMENTS

An Associate in Science degree requires a minimum of 30 semester credits of general education as outlined below. See your program's page in this catalog or your academic advisor for program-specific requirements.

REQUIRED COURSES

Communication		
ENGL1150	Composition I	3
Human Diversity		
SPEE1020	Interpersonal Communication	3
Mathematics *(choose one course numbered over 1000)*		
MATS	any Math course (except 1000 and 1205)	3-4
Science *(choose one course numbered over 1000)*		
BIOL	any Biology course (except 1200)	3-4
CHEM	any Chemistry course	4
PHYS	any Physics course	3
	Total Credits	**12-14**

ELECTIVE COURSES

Students must complete a minimum of 16-18 elective credits from at least two of the following Goal Areas listed on the following Minnesota Transfer Curriculum pages:

Goal 2	Critical Thinking	
Goal 5	History and the Social and Behavioral Sciences	
Goal 6	Humanities and Fine Arts	
Goal 8	Global Perspective	
Goal 9	Ethical and Civic Responsibility	
Goal 10	People and the Environment	
	Total Credits	**16-18**
	TOTAL REQUIREMENTS	**30**

A.A.S. DEGREE REQUIREMENTS

An Associate in Applied Science degree requires a minimum of 15 credits of general education as outlined below. See the program page in this catalog for program-specific requirements.

REQUIRED COURSES

Communication		
ENGL1150	Composition I	3
Human Diversity		
SPEE1020	Interpersonal Communication	3
Mathematics or Science *(choose one course numbered over 1000)*:		
BIOL	any Biology course (except BIOL1200)	3-4
CHEM	any Chemistry course	4
PHYS	any Physics course	3-4
MATS	any Math course (except 1000 and 1205)	3-4
	Total Credits	**9-10**

ELECTIVE COURSES

Students may be required to complete additional credits beyond what is listed above. Choose from the courses listed on the following Minnesota Transfer Curriculum pages:

Goal 2	Critical Thinking	
Goal 3	Natural Sciences	
Goal 4	Mathematical/Logical Reasoning	
Goal 5	History and the Social and Behavioral Sciences	
Goal 6	Humanities and Fine Arts	
Goal 8	Global Perspective	
Goal 9	Ethical and Civic Responsibility	
Goal 10	People and the Environment	
	Total Credits	**5-6**
	TOTAL REQUIREMENTS	**15**

DIPLOMA REQUIREMENTS

For students enrolled in diploma programs over 45 credits in length, a minimum of nine credits is required as outlined below. See your program's page in this catalog or your academic advisor for program-specific requirements.

REQUIRED COURSES

Communication

ENGL1150 Composition I 3

Human Diversity

SPEE1020 Interpersonal Communication 3

General Education Elective (from any MnTC goal area) 3

Total Credits	**9**
TOTAL REQUIREMENTS	9

MINNESOTA TRANSFER CURRICULUM

The Minnesota Transfer Curriculum (MnTC) is the format in which general education is defined and accomplished within the public two- and four-year colleges and universities in Minnesota. Completion of an MnTC course at one institution enables a student to receive credit for lower division general education MnTC coursework upon admission to other Minnesota State colleges and universities as well as the University of Minnesota.

DCTC provides general education in the MnTC format and accepts MnTC courses from other Minnesota State colleges and universities and from the University of Minnesota campuses.

Students who complete the entire general education transfer curriculum have shown competency in 10 goal areas. DCTC offers courses that meet all of the 10 goal areas. Students transferring these courses to other colleges transfer on a course-by-course basis. Courses approved for the Minnesota Transfer Curriculum are identified in DCTC publications by MnTC goal numbers.

Minnesota Transfer Curriculum Completion

Completion of the Minnesota Transfer Curriculum (MnTC) may require additional courses beyond those required for the A.S., A.A.S., or diploma. If the intent is to transfer to another college, it is advisable to contact the transfer college for course selection recommendations and transfer admission process information. If a transfer college has not yet been identified, then use the Minnesota Transfer Curriculum courses listed on the following pages as a guide for course selection.

Successful completion of at least 40 credits within the accepted 10 goal areas as outlined below constitutes completion of the Minnesota Transfer Curriculum at DCTC. The goal area completion requirement is listed in italicized text after the description of each goal area. Notation of MnTC completion can be added to a student's transcript upon request after completion.

COMMUNICATIONS (GOAL 1)

To develop writers and speakers who use the English language effectively and who read, write, speak and listen critically. As a base, all students should complete introductory communication requirements early in their collegiate studies. *MnTC completion requires three courses, one must be ENGL1150, and one SPEE.*

ENGL1125 Business Writing . . . . . 3 cr.
ENGL1150 Composition I . . . . . 3 cr.
ENGL1200 Technical Writing . . . . . 3 cr.
ENGL2000 English Composition II . . . . . 3 cr.
SPEE1015 Fundamentals of Public Speaking . . . . . 3 cr.
SPEE1020 Interpersonal Communication . . . . . 3 cr.
SPEE1042 Small Group Communication . . . . . 3 cr.
SPEE1050 Nonverbal Communication . . . . . 2 cr.

CRITICAL THINKING (GOAL 2)

Students will be able to gather and use factual information to make logical assumptions, interpretations or connections. Critical thinking will be taught and used throughout the general education and technical curriculum to develop student's awareness of their own thinking and problem-solving procedures. This goal can be met in one of the following three ways: **1)** by completion of one course; **2)** by completion of Goal 1 and a technical program; **3)** by completion of the entire MnTC.

BIOL1250 Biology of Women and Men . . . . . 4 cr.
ENGL1675 Children's Literature . . . . . 3 cr.
PHIL1200 Critical Thinking . . . . . 3 cr.
PHIL1450 Philosophy of the Arts . . . . . 2 cr.
PSYC1105 General Psychology . . . . . 4 cr.

NATURAL SCIENCES (GOAL 3)

To improve students' understanding of natural science principles and of the methods of scientific inquiry, i.e., the ways in which scientists investigate natural science phenomena. By studying the problems that engage today's scientists, students learn to appreciate the importance of science in their lives and to understand the value of a scientific perspective. *MnTC Completion requires two courses of two different disciplines; at least one must be a lab course.*

Lab Sciences

BIOL1250 Biology of Women and Men . . . . . 4 cr.
BIOL1310 Introduction to Anatomy & Physiology . . . . . 4 cr.
BIOL1400 Ecology Field Studies . . . . . 4 cr.
BIOL1500 General Biology . . . . . 4 cr.
BIOL2020 Microbiology . . . . . 4 cr.
BIOL2000 Anatomy & Physiology I . . . . . 4 cr.
BIOL2010 Anatomy & Physiology II . . . . . 4 cr.
CHEM1500 Introduction to Chemistry . . . . . 4 cr.
PHYS1050 Introduction to Physics . . . . . 3 cr.
PHYS1100 College Physics I . . . . . 4 cr.
PHYS1200 College Physics II . . . . . 4 cr.

Lab-like Sciences

BIOL1110 Environmental Science . . . . . 3 cr.

MATHEMATICAL/LOGICAL REASONING (GOAL 4)

To increase students' knowledge about mathematical and logical modes of thinking. This will enable students to appreciate the breadth of applications of mathematics, evaluate arguments, and detect fallacious reasoning. *MnTC completion requires one course that is at least three credits.*

MATS1251	Statistics	4 cr.
MATS1300	College Algebra	4 cr.
MATS1320	College Trigonometry	2 cr.
MATS1350	Math for Liberal Arts	4 cr.
PHIL1250	Introduction to Logic	3 cr.

HISTORY AND THE SOCIAL AND BEHAVIORAL SCIENCES (GOAL 5)

To increase students' knowledge of how historians and social and behavioral scientists discover, describe, and explain the behaviors and interactions among individuals, groups, institutions, events, and ideas. Such knowledge will better equip students to understand themselves and the roles they play in addressing the issues facing humanity. *MnTC completion requires three courses from at least two disciplines.*

ECON1100	Principles of Microeconomics	3 cr.
ECON1200	Principles of Macroeconomics	3 cr.
HIST1100	History of United States to 1877	4 cr.
HIST1200	History of US from 1877 to Present	4 cr.
HIST1250	Women in America 1490 to Present	3 cr.
HIST1300	World History	4 cr.
HIST1350	World War II	3 cr.
HIST1360	World History to 1500	4 cr.
HIST1361	World History Since 1500	4 cr.
HIST1400	American Environmental History	3 cr.
HIST1450	The History of Minnesota	3 cr.
HIST1600	America, the Civil War, and the 19th Century	3 cr.
PSYC1105	General Psychology	4 cr.
PSYC1200	Abnormal Psychology	3 cr.
PSYC1300	Child/Adolescent Psychology	3 cr.
PSYC1350	Lifespan Development	4 cr.
PSYC 1450	Death & Dying	2 cr.
SOCY1010	Marriage and Family	3 cr.
SOCY1110	Introduction to Sociology	3 cr.
SOCY1150	Race and Gender	2 cr.
SOCY1210	Social Issues in a Changing World	3 cr.
SOCY1250	Juvenile Delinquency	2 cr.
SOCY1400	Introduction to Criminal Justice	3 cr.

HUMANITIES AND FINE ARTS (GOAL 6)

To expand students' knowledge of the human condition and human cultures, especially in relation to behavior, ideas and values expressed in works of human imagination and thought. Students will engage in critical analysis, form aesthetic judgments, and develop an appreciation of the arts and humanities. *MnTC completion requires two courses from two different disciplines.*

ARTS1001	Introduction to Visual Communication	3 cr.
ARTS1101	History of Photography	3 cr.
ARTS1201	The Creative Process	3 cr.
ARTS1300	History of Architecture	4 cr.
ARTS1301	Design Fundamentals	3 cr.
ARTS1550	Art History, Renaissance to Modern	3 cr.
ENGL1300	Intro to Creative Writing	3 cr.
ENGL1400	American Short Story	3 cr.
ENGL1550	Intro to Literature	3 cr.
ENGL1570	The Literature of Nature	2-3 cr.
ENGL1625	Film Studies	4 cr.
ENGL1630	Genre Film	1 cr.
ENGL1650	Greek Mythology	4 cr.
ENGL1675	Children's Literature	3 cr.
ENGL1725	Selected Works in Literature	3 cr.
ENGL1850	Introduction to Graphic Novels	3 cr.
ENGL1900	Creative Writing Workshop	3 cr.
HUMA1100	Introduction to the Humanities	4 cr.
HUMA1125	The Humanities in Modern Minnesota	3 cr.
PHIL1003	Philosophy of Sex and Love	3 cr.
PHIL1100	Ethics	3 cr.
PHIL1300	Introduction to Philosophy	3 cr.
PHIL1350	Medical Ethics	3 cr.
PHIL1450	Philosophy of the Arts	2 cr.

HUMAN DIVERSITY (GOAL 7)

To increase students' understanding of individual and group differences (e.g., race, gender, class) and their knowledge of the traditions and values of various groups in the United States. Students should be able to evaluate the United States' historical and contemporary responses to group differences. *MnTC completion requires one course.*

PSYC1350	Lifespan Development	4 cr.
SOCY1150	Race and Gender	2 cr.
SPEE1020	Interpersonal Communication	3 cr.
SPEE1030	Intercultural Communication	3 cr.
HIST1550	America in the Vietnam Era	3 cr.

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GLOBAL PERSPECTIVE (GOAL 8)

To increase students' understanding of the growing interdependence of nations and peoples and develop their ability to apply a comparative perspective to cross-cultural social, economic and political experiences. *MnTC completion requires one course.*

HIST1300	World History	4 cr.
HIST1360	World History to 1500	4 cr.
HIST1361	World History since 1500	4 cr.
HUMA1100	Introduction to the Humanities	4 cr.
SOCY1210	Social Issues in a Changing World	3 cr.
SPAN1100	Beginning Spanish I	4 cr.
SPAN1200	Beginning Spanish II	4 cr.
SPEE1030	Intercultural Communication	3 cr.

ETHICAL AND CIVIC RESPONSIBILITY (GOAL 9)

To develop students' capacity to identify, discuss, and reflect upon the ethical dimensions of political, social, and personal life and to understand the ways in which they can exercise responsible and productive citizenship. *MnTC completion requires one course.*

BIOL1250	Biology of Women and Men	4 cr.
ENGL1570	The Literature of Nature	2-3 cr.
HIST1550	America in the Vietnam Era	3 cr.
PHIL1003	Philosophy of Sex and Love	3 cr.
PHIL1100	Ethics	3 cr
PHIL1300	Introduction to Philosophy	3 cr.
PHIL1350	Medical Ethics	3 cr.
SOCY1110	Introduction to Sociology	3 cr.
SOCY1250	Juvenile Delinquency	2 cr.
SOCY1400	Introduction to Criminal Justice	3 cr.

PEOPLE AND THE ENVIRONMENT (GOAL 10)

To improve students' understanding of today's complex environmental challenges. Students will examine the interrelatedness of human society and the natural environment. Knowledge of both biophysical principles and sociocultural systems is the foundation for integrative and critical thinking about environmental issues. *MnTC completion requires one course.*

BIOL1110	Environmental Science	3 cr.
BIOL1200	Biology and Society	3 cr.
HIST1400	American Environmental History	3 cr.

DEVELOPMENTAL EDUCATION

- General Education at the developmental level is designed to prepare students for transfer-level coursework and to enhance success within technical training programs.
- Developmental courses often help students improve test scores in order to qualify for entry into general education or technical coursework.
- Developmental course numbers begin with a zero. They cannot be used to satisfy graduation requirements.

Communications

ENGL0140	Developing College Writing Skills	4 cr.
ENGL0150	English Writing Essentials	3 cr.
READ0140	Developing College Reading Skills	4 cr.
READ0150	English Reading Essentials	3 cr.

Mathematical/Logic Reasoning

MATS0100	Mathematics Skills Lab.	3 cr.
MATS0310	Algebra Skills Lab	4 cr.
MATS0600	Intermediate Algebra	4 cr.

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TECHNICAL COLLEGE

Real Education. Real Results.

INDIVIDUALIZED STUDIES

Delivery: Daytime, Evening and Online Classes
Start: Fall, Spring or Summer Session, Full- or Part-Time

Outcome

Individualized Studies A.S. Degree . . . . . .60 cr.

Major Description

This degree enables students to custom-design a program to meet educational and career goals that cannot otherwise be accomplished through existing college programs. The program is suited for students:

- Who wish to explore potential occupational/technical courses in one or more areas of study
- Who are working and wishing to advance their careers
- Who are undecided about their future
- Who are seeking to pursue a baccalaureate degree
- Who have started a technical program but wish to change direction

Work Environment

Graduates of this program will have the opportunity to be employed or achieve advancement in occupations related to their selected areas of study.

Potential Job Titles

Graduates will obtain positions that will vary according to the individual design of their degrees.

Salary Data

Salaries will vary according to the custom design of each degree.

INDIVIDUALIZED STUDIES – A.S. DEGREE

This degree is designed for students wishing to transfer to a four-year institution to obtain an advanced degree.

Because this degree will be custom designed to meet your education and career goals, there is no sample course sequence. Please discuss your academic goals with a program advisor so they can work with you to develop a sequence.

INDS1000	Career Exploration OR	
INDS1010	Credit for Prior Learning	1
	Technical Credits	29
	Total Credits	**30**

General Education

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
	General Education (MnTC Goal 4)	3
	General Education (MnTC Goal 3)	3
	General Education Electives*	18
	Total Credits	**30**
	TOTAL PROGRAM REQUIREMENTS	**60**

** Students must complete a minimum of 18 elective credits from at least two of the following goal areas: Goal 2: Critical Thinking, Goal 5: History and the Social and Behavioral Sciences, Goal 6: Humanities and Fine Arts, Goal 8: Global Perspective, Goal 9: Ethical and Civic Responsibility, and Goal 10: People and the Environment.*

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COURSE DESCRIPTIONS

AUTO BODY REPAIR

ABCT1111 Collision Repair Welding I 2
This course covers welding safety, familiarization with oxyacetylene equipment and MIG welder operations.Prerequisites: None.

ABCT1120 Sheet Metal Repair 5
This course covers the tools and processes used for repairing minor damage on sheet metal panels. Safe and proper use of body fillers are included in this course. Prerequisites: ABCT1111

ABCT1130 Refinishing Preparation I 2
This course covers refinishing safety, refinishing equipment, masking and surface preparation procedures.Prerequisite: ABCT1120 and ABCT1142

ABCT1142 Glass, Trim, and Hardware 4
This course covers the procedures for the removal and replacement of stationary glass, moveable glass and most component of a vehicle. Prerequisite: None.

ABCT1150 Reconditioning and Detailing 2
This course covers various methods of vehicle cleanup and reconditioning. Prerequisites: None

ABCT1212 Collision Repair Welding II 2
This course covers aluminum welding, resistance type spot welding, weld bonding and the I-CAR welding qualification test.Prerequisites: ABCT1111

ABCT1214 Refinishing Preparation II 3
This course covers procedures for preparation and application of undercoat systems. Panel preparation techniques are also covered. Prerequisites: ABCT1120, ABCT1130, and ABCT1142

ABCT1216 Refinishing Application 5
This course covers the application of undercoats and topcoats in refinishing. Color theory, adjustment, and blending will be covered. Prerequisites: ABCT1142, ABCT1150, ABCT1130, ABCT1214 or BSEP1301.

ABCT1230 Auto Body Plastic Repair 2
This course covers the different methods of repairing automotive plastics. Prerequisites: ABCT1130, ABCT1142, ABCT1214 or BSEP1301, and ABCT1216.

ABCT2100 Body Electrical 2
This course will focus on electrical troubleshooting and repair problems and procedures relating to collision electrical damage problems. Prerequisites: None

ABCT2103 Damage Analysis, Estimating, and Customer Service 2
This course will focus on management duties related to personnel, shop flow and monetary tasks. This course will contain and require handwritten and computer driven estimation procedures and understanding of estimating terminology.Prerequisite: ABCT1230.

ABCT2106 Collision Damage Repair/Replacement 6
This course will focus on sheetmetal, unitized body and full frame sectioning and replacement of parts and components.Prerequisites: ABCT1111, ABCT1212 or BSEP1301, and ABCT1120.

ABCT2108 Unibody/Frame/Wheel Alignment I 4
This course will focus on unibody, full frame repair and alignment using various alignment, measuring and pulling equipment. This course will also contain wheel alignment procedures and terminology relating to collision damaged vehicles.Prerequisites: ABCT1111, ABCT1212 or BSEP1301, and ABCT1120.

ABCT2212 Unibody/Frame/Wheel Alignment II 6
This course is a continuation of ABCT2108 with additional technical information and procedures. Students will be using frame repair equipment, various measuring equipment to include universal measuring, centerline gauges, and laser measuring and applying all previous training on damaged vehicle repairs.Prerequisites: ABCT1111, ABCT1212 or BSEP1301, ABCT1120, ABCT2108, and ABCT2106.

ABCT2230 Body Mechanical and Air Conditioning 3
This course will focus on auto collision related minor mechanical failures. The course will also focus on typical air conditioning procedures related to auto collision such as reclaim, recharge and replace parts as result of a collision contains subject matter related to mechanical repairs as a result of a collision. Prerequisites: None

ABCT2240 Emerging Technologies 2
This course covers emerging automotive technologies and how they will impact the collision repair field.

ABCT2960 Auto Body Collision Tech: Skill Development
Auto Body Collision Tech: Skill Development

ABCT2970 Autobody Internship
This course is required and can be for two to five credits. The intern will perform duties related to and to include duties that were performed and learned thus far. Prerequisites: ABCT1100, ABCT1111, ABCT1120, ABCT1130, ABCT1142, ABCT1150, ABCT1212, ABCT1216, ABCT1230, AABCT2102, ABCT2230, ABCT2106, and ABCT2108.

ABCT2980 Auto Body Special Topics
Auto Body Special Topics

ABCT2990 Autobody Independent Study
Autobody Independent Study

ACCOUNTING

ACCT1010 Principles of Financial Accounting I 4
This introductory course covers the fundamental accounting concepts and principles which are used in a business environment. These concepts are consistent with generally accepted accounting principles. The phrase "generally accepted accounting principles" (or "GAAP" consists of three important sets of rules: (1) the basic accounting principles and guidelines, (2) rules and standards issued by FASB and (3) the generally accepted industry practices. The course explores the role of accounting as a primary business information system.

ACCT1013 Principles of Financial Accounting II 4
This course continues to explore fundamental accounting concepts and principles. Topics include current and fixed assets, and current and long-term liabilities. Corporations and partnership business types are

also explained and defined. Prereq: ACCT 1010 Principles of Financial Accounting II.

ACCT1100 Business Law and Ethics 3
This course is an introductory course in the principles of law as they apply to citizens and business.

ACCT1106 Accounting Mathematics 3
This course includes a review of the basics of arithmetic and algebra. The focus is on business and financial operations concepts with a strong emphasis on problem solving.

ACCT1206 Payroll Accounting 2
This course covers the various state and federal laws pertaining to computation and payment of salaries and wages. Topics include preparation of employment records, payroll registers, employee earnings records, and state and federal reports.
Prerequisite: ACCT1010 Principles of Financial Accounting I

ACCT1306 Spreadsheets 3
This course covers the use of a computer spreadsheet program for accounting applications. Topics include managing multiple-sheet spreadsheets, creating and using charts and graphs, creating complex formulas, and creating and printing reports. Prerequisites: NONE

ACCT1406 Income Tax 4
This course covers the major Internal Revenue Code sections that apply to the filing of individual and business income tax returns. Major topics covered include a history of income tax law, the tax formula, gross income and exclusions, business and personal deductions, and tax credits. Income tax form preparation is an integral part of this course.

ACCT2000 Intermediate Accounting I 4
This course is a comprehensive study of accounting theory and concepts with an analysis of the influence on financial accounting by various boards, associations, and governmental agencies. Topics include the income statement, balance sheet, cash, marketable securities, notes and accounts receivable, plant and intangible assets, and bonds and leases. Prerequisites: ACCT1013

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ACCT2003 Intermediate Accounting II 4
This course is part two of a two-part course of study of accounting theory and concepts. Topics include long-term investments, current and contingent liabilities, bonds payable, leases, pension plans, owner's equity, and accounting for income taxes and earnings per share. Prerequisites: ACCT 2000

ACCT2110 Managerial Accounting I 4
This course covers accounting for materials, labor, and factory overhead for a manufacturing entity. Other topics include the job order cost system, the process cost system, and accounting for scrap, spoiled goods, by-products, and joint products. Prerequisites: ACCT1010

ACCT2113 Managerial Accounting II 4
Topics include cost-volume-profit relationships, differential costs and revenues, budgeting, standard costing, and cost analysis. Also included are quantitative techniques used for inventory control. Prerequisites: ACCT 2110 Managerial Accounting I.

ACCT2200 Accounting Computer Applications I 3
This course is an introduction to computerized applications. Students will learn to prepare financial statements, setup both service and merchandise companies, analyze transactions, make payroll entries, reconcile bank accounts, journalize and post adjusting and closing entries.
Prerequisites: ACCT 1010

ACCT2203 Accounting Computer Applications II 3
This course involves the use of a commercial accounting software package to complete an accounting simulation. Topics include depreciation and fixed assets.
Prerequisites: ACCT 2000

ACCT2206 Fund/Nonprofit Accounting 3
This course covers the application of generally accepted accounting principles for state and local governmental units. Topics include accounting for states, municipalities, and not-for-profit organizations with some federal government accounting. Prerequisites: ACCT1013

ACCT2306 Auditing 3
This course is the fundamental course in external auditing. The course will be a practical application of external auditing as it applies to public accounting. Prerequisites: ACCT1000

ACCT2400 Personal Financial Management 2
This course covers the major aspects of personal finance including budgeting, credit, insurance, tax planning, investing and retirement and estate planning.

ACCT2980 Special Topics: Accounting Careers
Special Topics: Accounting Careers

ADMINISTRATIVE SUPPORT

ADMS1000 Basic Keyboarding 1
This course is an introduction to basic keyboarding with emphasis on developing touch typing skills.

ADMS1005 Keyboarding/Formatting 3
This course covers basic formatting for business documents, including letters, memos, reports, and tables. Straight-copy skill development for speed and accuracy will also be included. Prerequisites: A typing speed of 35 words per minute with five or fewer errors

ADMS1010 Business English Skills 2
This course is an extensive, comprehensive study of English grammar, spelling, word usage, punctuation, number usage, capitalization and abbreviation rules, and proofreading.

ADMS1017 Technology for the Business Professional 3
This course is designed to advance the training of business and office students in the use of desktop publishing documents, real world business projects, web site analysis, and web browser.

ADMS1018 Basic Computer Applications 3
This course covers basic information on the history of computers and their impact on society, computer hardware and desk application software. Students will learn the fundamentals of word processing, database, spreadsheet, and presentation applications. Students will also be introduced to use of the Internet and e-mail. This course meets the Dakota County Technical College's computer literacy requirement.

ADMS1019 Receptionist Skills 2
This course incorporates the skills that are needed to be an effective receptionist. Topics such as: scheduling techniques using various software, typing skills, interpersonal communications, and customer service.

ADMS1020 Office Procedures 4
This course covers areas that develop skill in understanding and performing typical office tasks: office communication, setting up meetings and conferences, travel arrangements, handling mail, records management, and understanding cultural diversity.

ADMS1040 Integrated Office Skills 3
This course is designed to integrate and reinforce the skills and knowledge learned in previous courses in the program. Project emphasis will develop the students' awareness of work flow, chain of command, and creation/integration of office documents. The use of electronic tools and the integration of documents created in various Microsoft Office Suite programs is the primary focus of this course.

ADMS1045 Medical Terminology 2
This course is an introduction to building medical terms and learning the meanings. Students will learn combining forms, word roots, prefixes and suffixes, and how these word parts apply to building medical terms. Students will also learn common medical abbreviations and symbols. THIS COURSE IS THE SAME AS HEAL1502.

ADMS1049 Applied Medical Terminology 3
This advanced medical terminology course is a continuation of ADTC1045 Medical Terminology with a focus on word analysis, spelling, pronunciation, and usage of medical terms. Word roots/combining forms, prefixes, suffixes, abbreviations and medical terms will be addressed for the medical specialty areas including oncology, radiology, psychiatry and pharmacology. There will be an emphasis placed on diagnostic terms, laboratory and clinical procedures assigned to each of the body systems. In addition, students will apply medical terminology usage to common healthcare documentations. Prerequisites: ADMS1045

ADMS1051 Human Diseases 3
This course provides basic information about common disease conditions affecting various body systems. There is a focus on the general principles of disease and signs and symptoms of specific disease processes. Major concepts include diagnostic tests, treatment modalities, and medication protocols related to specific disease processes.

ADMS1057 Medical Office Procedures 4
This course is an overview of duties that are performed by a medical administrative assistant and a medical assistant. Emphasis will be on medical/legal issues, patient registration, standard patient forms, medical forms, telephone/communication skills, appointment procedures, medical records. Other topics included in the course will be accounting statements, professional reports/manuscripts, preparing meeting announcements, agendas and minutes. Prerequisites: ADMS1018 or ADMS1030

ADMS1250 Project Management I 3
In this introduction project management course, students will be exposed to the fundamentals of general project management principles. Topics include project management functions, project manager roles and responsibilities, the project life cycle, and conflict resolution.

ADMS1260 Certification Basics - Word 3
This course covers training in the preparation for students to take the Microsoft Office Specialist Exam for Word.

ADMS1265 Certification Basics - Excel 3
This course covers training in the preparation for students to take the Microsoft Office Specialist Exam for Excel.

ADMS1270 Certification Basics - Access 3
This course covers training in the preparation for students to take the Microsoft office Specialist Exam for Access.

ADMS1275 Certification Basics - PowerPoint 3
This course covers training in the preparation for students to take the Microsoft Office Specialist Exam for PowerPoint.

ADMS1285 Oral Business Communications and Job Seeking Skills 2
This course covers the development of oral communication skills in the following areas: one-to-one communication, oral presentations to groups, use of MS PowerPoint in presentations and student evaluation of speeches. Students will also learn successful employment interview strategies as well as how to find various job leads, write a successful resume, application letter, and follow-up letter.

ADMS1290 Written Business Communications 2
This course covers the process of communication, including writing techniques and strategies. Students learn by completing a range of writing exercises and critical thinking cases. Specific applications focus on letter and memorandum writing and formal and informal reports. Communication skills are emphasized along with e-mail usage.

ADMS1340 QuickBooks PRO Basics 2
This online course introduces the basics of using Intuit's QuickBooks Pro PC software for business transactions and basic accounting purposes. Topics covered will include navigating QuickBooks, company setup, entering sales transactions, receiving payments, paying bills, managing bank accounts, managing inventory and running standard QuickBooks reports.

ADMS1360 Healthcare Documentation Essentials 4
This beginning course provides an orientation to the healthcare delivery system, health records, and the health information profession. Basic concepts of medical records are explored in different healthcare settings, including hospitals, nursing homes, clinics, and physician's offices. This course addresses the various forms which comprise a medical record, assembly of records, record analysis and medical record terminology.

ADMS1370 Medical Billing and Insurance 3
This advanced course provides a study of various health plans, reimbursement methodologies, and compliance strategies. Students will continue using principles of ICD-10-CM and CPT coding and advanced concepts of coding to ensure proficiency in coding. Prerequisites: ADMS1045 Medical Terminology, ADMS1400 ICD-10-CM/PCS Coding, ADMS1410 CPT Coding

ADMS1380 Quality & Healthcare Statistics 3
This course covers the components of quality improvement for problem-solving, decision-making, time management and implementation of quality concepts, and applying quality tools. This course also covers collecting, analyzing, interpreting, and presenting numerical data relating to healthcare services. Students will apply computer software skills using spreadsheet, database, and presentation software to convey healthcare information. Prerequisites: ADMS1360 Healthcare Documentation Essentials

ADMS1390 Introduction to Pharmacology 2
This course covers the various medications commonly used for all body systems. Topics covered will be drug classification, modes of administration, treatment means, and characteristics of typical drug effects.

ADMS1400 ICD-10-CM/PCS Coding 3
This course will introduce the student to the ICD-10-CM classification system and ICD-10-PCS inpatient procedural coding system. Emphasis will be placed on the correct process of utilizing the alphabetic index and tabular list for code assignment. The focus will be on rules, conventions, and instructions of ICD-10-CM as well as chapter specific guidelines (e.g. circulatory, injury, pregnancy), including criteria for assignment of principal and additional diagnoses in the inpatient and outpatient setting. Prerequisites: ADMS1360 Healthcare Documentation Essentials, ADMS1045 Medical Terminology

ADMS1410 CPT Coding 3
This course provides a study of the Current Procedural Terminology (CPT) coding system using sample exercises and medical records to develop skill and accuracy in coding. Students will continue using the

principles of ICD-10-CM coding to ensure proficiency in coding using patient records and advanced concepts of coding. Students will adhere to current regulations and established guidelines in code assignment. Prerequisites: ADMS1400 ICD-10-CM/PCS Coding, ADMS1360 Healthcare Documentation Essentials, ADMS1045 Medical Terminology

ADMS1420 Supervision of Health Information 3
This course is a study of the principles of management, communication, and interpersonal relationships in creating a productive work environment in a healthcare facility. Fundamentals of team leadership will be explored, as well as organizational skills and employee training and development. Cultural issues and its effect on health, healthcare quality, cost and HIM will be explored, as well as creating programs and policies that support a culture of diversity. Prerequisites: NONE

ADMS1430 Legal Principles of Health Information 3
This course covers the application of legal principles, policies, regulations, and standards for the control and usage of consent and release of Information forms used in medical facilities. Ethical and bio ethical practices will be explored. An overview of current health legislation will be included. Prerequisites: NONE

ADMS1440 Advanced Coding 2
This advanced course provides a study of various health insurance plans, reimbursement methodologies and compliance strategies. Students will continue to use the principles of ICD-10-CM and CPT coding to ensure proficiency in coding patient records and advanced concepts of coding. Students will follow current regulations and established guidelines in coding assignments. An overview of health insurance plans and reimbursement systems will be discussed, along with the basics of completing insurance claim forms. Prerequisites: ADMS1360 Healthcare Documentation Essentials, ADMS1400 ICD-10-CM/PCS Coding, ADMS1410 CPT Coding, ADMS1045 Medical Terminology

ADMS1450 Internship and Review 2
This course provides the student with practical application of theories learned during the course of study. Under the supervision of a qualified health information professional at affiliation site, the student will gain professional practice experience, when available, in a healthcare facility. Students will be required to meet written goals and objectives and undergo evaluations. Affiliation sites are organizations that agree to take medical coding students for a non-paid period of time in order to aid the student in blending classroom theory with practical application. The student should be supervised and considered a contributing member of the affiliation site staff. The internship and review will prepare the student to sit for the Certified Professional Coder (CPC) national exam. Prerequisite: Students should be in their last semester of coursework.

ADMS2980 Special Topics
Special topics.

ARCHITECTURE

ARCT1000 Architectural Technology Studio I 5
This course will introduce the beginning architectural technology student to drafting standards and techniques used in both hand and CAD drafting. Students will learn to draw plans, sections, elevations and details for residential projects and the graphic conventions used to communicate information on these drawings. Sustainable building principles will be applied to the commercial projects.

ARCT1020 Methods and Materials I 3
This course will introduce the beginning architectural technology student to the properties and applications of common, as well as new and sustainable residential building materials. This class will cover materials and methods such as: current sustainable practices in home building, wood stud construction, window installation, roofing, foundations, flashing, etc. These materials and construction methods then be applied in the Studio I projects.

ARCT1107 CAD I 3
This course will introduce the beginning architectural technology student to computer-aided design programs currently being used in professional design offices. Fundamental concepts, commands, and tools of a C.A.D. environment will be taught with a hands-on approach to learning. Students will complete self-paced drafting exercises.

ARCT1207 CAD II 3
This course builds on the student's knowledge of AutoCAD. The student will use intermediate AutoCAD techniques to develop construction drawings to supplement the work in ARCT 1500. Prerequisites: ARCT1107

ARCT1500 Architectural Technology Studio II 5
This course will guide students through the production of construction drawings for light commercial buildings. The larger scale and scope of the projects will build upon skills acquired in Studio I and drawings will be more comprehensive as students learn to integrate building codes and regulations into their designs. Students will apply sustainable practices along with industry standards to complete drawings for residential projects.Prerequisites: ARCT1000
Corequisites: ARCT1540 and ARCT1207

ARCT1520 Building Codes and Regulations 3
The goal of this class is to provide you with a fundamental understanding of the International Building Code (IBC), the Americans with Disabilities Act and Energy Codes. The class emphasizes Health, Safety, Welfare (HSW) topics such as: building codes, fire codes, accessibility issues, and environmental issues.Prerequisites: Prior to, or currently enrolled in, ARCT1500, ARCT1207 and ARCT1540.

ARCT1540 Methods and Materials II 3
This course will examine the characteristics and properties of common, as well as new and sustainable, commercial building materials such as: concrete materials, formwork, reinforcement, steel frame construction, lightweight steel framing, metals, curtainwalls, etc. These methods and materials, including sustainable principles, will be applied to Studio II projects.Corequisite: ARCT1500.

ARCT2000 Mechanical and Electrical Systems 3
This course will introduce the student to electrical/lighting, plumbing, HVAC, and fire protection. The course will examine the integration of various building systems into building design and look at energy efficiency and other means of contributing to a building's sustainability.

ARCT2020 Building Structures 3
This course provides a basic understanding of the structural design for beams, columns and joists in wood, steel and concrete. It emphasizes the nature of frame structures and is intended to provide an architectural technician with the knowledge necessary to work and communicate effectively with a structural engineer.

ARCT2101 Architectural Studio III 5
Students prepare architectural drawings for multi-story commercial buildings. This course builds upon the students' architectural technology skills as they prepare construction drawings for more complex buildings. Content from prior courses and sustainability will be integrated into comprehensive studio projects.

ARCT2107 CAD III 3
This course builds on the student's knowledge of AutoCAD. The student will use advanced AutoCAD techniques to develop construction drawings to supplement the work in ARCT 2101. Prerequisites: ARCT1207 or equivalent

ARCT2200 Architectural Studio IV 5
This course provides an opportunity for the student to demonstrate previously-learned architectural technology skills by independently preparing computer-aided design working drawings of a small commercial project. Students will incorporate the completed drawings into their portfolios for internship interviews with future employers. Prerequisites: ARCT2100

ARCT2970 INTERNSHIP: Architecture Technology 1
This course is taught throughout internship with students making the transition from school to work. Internship events will begin with job seeking and interview activities. Upon acceptance of an internship agreement with an internship employer, the internee will begin productive work in a professional design office workplace. The internship coordinator will visit the workplace. The student internee and internship employer will complete an evaluation form. In addition, students will pursue special topics technology research in the field of architecture during the internship period. Prerequisites: ARCT2101.

ARCT2980 SPECIAL TOPICS:: Architectural Technology
SPECIAL TOPICS:: Architectural Technology

ARCT2990 INDEPENDENT STUDY: Architecture Technology
INDEPENDENT STUDY: Architecture Technology

AUTO RESTORATION

ARES1000 Introduction to Auto Restoration Welding/Sheet Metal 3
This course covers basic tools and techniques for the restoration of older vehicles. Topics will include: welding, rust repair, metal straightening, plastic filler application, and corrosion protection.Prerequisites: None.

ARES2960 Auto Restoration - Skill Development
This course covers basic tools and techniques for the restoration of older vehicles. Topics will include: welding, rust repair, metal straightening, plastic filler application, corrosion protection and some priming and light painting.

AUTO RESTORATION (AUTO BODY TECH)

ARES1000 Introduction to Auto Restoration Welding/Sheet Metal 3
This course covers basic tools and techniques for the restoration of older vehicles. Topics will include: welding, rust repair, metal straightening, plastic filler application, and corrosion protection.

ARES2960 Auto Restoration - Skill Development
This course covers basic tools and techniques for the restoration of older vehicles. Topics will include: welding, rust repair, metal straightening, plastic filler application, corrosion protection and some priming and light painting.

ART

ARTS1001 Intro to Visual Arts 3
We live in a world that often places us in a position of visual overload. Images flood into our lives through television, print and social media. Although we innately interact with and react to the visual world, it is critical that the educated student learns to appreciate the production, history and the cultural relevance of visual art. This study includes perspectives on art from ancient times to present, but an emphasis is placed on the cultural significance of art from the modern era to the present time. By studying and making visual art, students will become more connected to the visual world around them and to their own avenues of artistic expression. Meets MnTC Goal 6,

ARTS1101 History of Photography 3
This course will allow students to explore photography and its affects on culture by examining the origins of the medium. While it may seem that photography belongs only to the twentieth century, students will learn that the origins of the first camera date back hundreds of years. Early photographers were often "frustrated painters," and affected strongly by art and art history movements. This class then will begin with a review of the camera's beginnings and of the artistic cultural milieu that helped to bring the medium into adulthood in the twentieth century. Meets MnTC Goal 6,

ARTS1201 The Creative Process 3
Much of the thinking learned in school and in the work environment place an emphasis on learning how to understand claims, follow or create a logical argument, figure out the answer, eliminate the incorrect paths and focus on the correct one. There is, however, another kind of thinking, centered on exploring ideas, generating possibilities, looking for many right answers rather than just the "correct" one. There is, however, another kind of thinking, centered on exploring ideas, generating possibilities, looking for many right answers rather than just the "correct" one. Both of these kinds of thinking are vital to success in the work place, yet the creative approach tends to be ignored until after the formal education is complete. In this course, we will explore the creative thought process and develop systems to encourage and develop new idea generation.Meets MnTC Goal 6

ARTS1301 Design Fundamentals 3
This course covers the elements and principles of design: line, shape and form, space, texture, color and balance, proportion and scale, unity and harmony, and emphasis, in two dimensional and three dimensional formats through application. Color will be a focus, including the study of hue, saturation, and intensity, and how color affects people demonstrated through project work. Meets MnTC Goal 6

ARTS1310 History of Architecture 3
This course will cover architecture from prehistory up to today, looking at examples throughout history and examining the issues that help shape them. The course will not only look at who designed the buildings, but who built them, who used them, and why. Beginning with the earliest manmade shelters and ending with issues influencing architecture today, the course will introduce students to different ways of seeing building and architecture as cultural artifacts.Meets MnTC Goal 6

ARTS1550 Art History, Renaissance to Modern 3
This introductory course gives students a deeper appreciation and knowledge of Western art and the cultures that created it. This course focuses on the fascinating changes that occurred in the Italian Renaissance and continues through to modern artists and influences of the 20th century. Meets MnTC Goal 6

ASEP

ASEP1101 Automotive Fundamentals 3
This course is designed to develop the basic concepts needed for the General Motors Automotive Service Educational Program. This unit covers basic automotive safety and procedures in the shop. Different types and uses of fasteners, including thread repair, will be covered. The proper procedures for writing repair orders and parts requisitions

will be covered. The use of General Motors service bulletins as well as service and repair manuals will be examined in detail, including wiring schematics. Instruction and GM certification in the General Motors Specialized Electronics Training program (GM-SET) is also a part of this unit. Prerequisites: None

ASEP1102 Electrical and Fuel Systems 3
This course begins by examining batteries, charging systems, and starting systems used by General Motors. Proper testing methods utilizing various types of equipment will be stressed, followed by unit repair procedures. All General Motors ignition systems and emission controls will be examined. The fundamentals of GM engine computer systems and related sensors will be addressed. Diagnosis, adjustments, and repair of component parts will be covered. An introduction to oscilloscopes and four-gas analysis will also be covered. Prerequisites: ASEP1101

ASEP1103 Driveability 3
This course will cover General Motors engine control systems. Included will be a thorough examination of automotive microprocessors, sensor and actuator operation, DIS ignitions, TBI, PFI, and other GM fuel systems. The proper use of service manual diagnostic information and trouble charts will be covered. The use of scan tools, including TECH 1, TECH 2, and GM-PC for diagnosis, will be covered in detail. This unit includes a continuation of scope and infra-red operating and diagnosis. Prerequisites: ASEP1101 and ASEP1102; or instructor approval

ASEP1104 Body Electronics 3
This course will cover General Motors body electrical systems. A study of the theory, diagnosis, and repair of electric windows, door locks, power seats, mirrors, electronic and conventional instrumentation, windshield wipers, cruise controls, theft deterrent systems, and microprocessor-controlled body electronics is included. The automatic and electronic climate control systems will be addressed in this unit. The Supplemental Inflatable Restraint system (SIR) and its various applications and functions will also be examined. Prerequisites: ASEP1101, ASEP1102, ASEP1103; or instructor approval.

ASEP1105 Heating and Air Conditioning 3
This course is a study of the theory, operation, maintenance, diagnosis, and repair of General Motors heating and air conditioning systems. The basic refrigerant cycle will be addressed as well as system components and controls used by GM. Emphasis will be on GM CCOT and VDOT systems. Included will be an examination of manual controls used in conjunction with GM heating and air conditioning systems. Reclaiming and recycling of R-12 and R-134A and retrofitting will also be covered in this unit. Prerequisites: ASEP1101

ASEP1108 Brake Systems 3
This course covers theory and practice of servicing brake systems on General Motor's cars. Included will be disc/drum brakes, power brakes, diagonal split, anti-lock brakes, and four-wheel disc brakes. Prerequisites: ASEP1101

ASEP1201 Dealer Work Experience I 8
This is on-the-job training at a GM dealership. The dealer provides coordinated work experience in accordance with the program schedule. Work experience is supervised by the college's ASEP staff and ASEP coordinator at the dealership. Prerequisites: Enrollment in GM ASEP and successful completion of the previous semester.

ASEP1202 Dealer Work Experience II 8
This is on-the-job training at a GM dealership. The dealer provides coordinated work experience in accordance with the program schedule. Work experience is supervised by the college's ASEP staff and ASEP coordinator at the dealership. Prerequisites: Enrollment in GM ASEP and successful completion of the previous semester.

ASEP1204 Dealer Work Experience IV 8
This is on-the-job training at a GM dealership. The dealer provides coordinated work experience in accordance with the program schedule. Work experience is supervised by the college's ASEP staff and ASEP coordinator at the dealership. Prerequisites: Enrollment in GM ASEP and successful completion of the previous semester.

ASEP1205 Dealer Work Experience V 8
This is on-the-job training at a GM dealership. The dealer provides coordinated work experience in accordance with the program schedule. Work experience is supervised by the college's ASEP staff and ASEP coordinator at the dealership. Prerequisites: Enrollment in GM ASEP and successful completion of the previous semester.

ASEP1212 Advanced Diagnostics/New Model Update 1
This course provides the student with additional electronic fuel and body systems diagnosis and repair procedures. The most current factory diagnostic procedures will be stressed. Emphasis will be on GM-PC, TECH 1, and TECH 2, as well as additional lab scope and infra-red analysis. Also, any new products or systems introduced on GM vehicles that have not been previously covered will be addressed. Prerequisites: ASEP1101, ASEP1102, ASEP1103, and ASEP1104

ASEP2107 Steering and Suspension 2
This course covers the principles of operation, removal, reconditioning, installation, and adjustments of GM steering and suspension systems. It includes comprehensive training on power/manual steering gears, power/manual rack and pinion systems, suspension repairs, wheel alignment, wheel balance, and vibration diagnosis. Prerequisites: None

ASEP2110 Automatic Transmissions 3
This course covers the removal, disassembly, operation, reconditioning, assembly, installation, and diagnosis of General Motors automatic transaxles and transmission. Prerequisites: None

ASEP2111 Engines 3
This course covers the operation, diagnosis, removal, assembly, reconditioning, and installation of General Motors gas engines. Oil and coolant leak diagnosis and repair will also be covered. Prerequisites: ASEP1102

ASEP2209 Driveline and Four-Wheel Drive 3
This course covers the disassembly, operation, reconditioning, assembly, and adjustments of General Motors front and rear axles, driveaxles, and driveshafts. Prerequisites: None

ASEP2212 Advanced Diagnostics/New Model Update 1
This course provides the student with additional electronic fuel and body systems diagnosis and repair procedures. The most current factory diagnostic procedures will be stressed. Emphasis will be on GM-PC, TECH1, and TECH 2, as well as additional lab scope and infra-red analysis. Also, any new products or systems introduced on GM vehicles that have not been previously covered will be addressed.

ASEP2303 Dealer Work Experience III 5
This is on-the-job training at a GM dealership. The dealer provides coordinated work experience in accordance with the program schedule. Work experience is supervised by the college's ASEP staff and ASEP coordinator at the dealership. Prerequisites: Enrollment in GM ASEP and successful completion of the previous semester.

ASEP2502 GM Global Electric Systems 1.5
This course begins with practice exercises related to the diagnosis and repair of body control systems that are performed by students working in groups. Each student will then complete test exercises requiring the same job skills. Prerequisites: None.

ASEP2507 GM Supplemental Restraint System 1
GM Supplemental Restraint System

ASEP2511 HVAC Systems and Operation 1
This course covers the operation and diagnosis of GM air conditioning systems. Proper usage of special tools will also be covered.

ASEP2521 GM Powertrain Performance 1.5
This course covers GM powertrain systems operation, and diagnosis. Proper usage of special tools and procedures will also be covered.

ASEP2526 Foundation Brakes/ABS Systems Service 1
This course covers foundation brakes/ABS system service procedures performed in GM Dealerships. Proper use of special tools and procedures will also be covered.

ASEP2527 GM Braking Systems 1
This course covers foundation brakes/ABS system service procedures performed in GM Dealerships. Proper use of special tools and procedures will also be covered.

ASEP2528 Intermittent Electrical Concerns Diagnosis 1
This course is designed to provide the technician with the skills necessary to properly diagnose vehicle platforms, using diagnostic tools and techniques. The course will challenge the learner to think about a diagnostic strategy and be able to implement it into action.

ASEP2532 Engine Mechanical Diagnosis and Measurement 1.5
This course consists of a WBT, IDL and Hands-on component. This course covers the proper techniques and fundamental knowledge necessary to correctly isolate and diagnose abnormal engine conditions. Topics include recommended diagnostic, measurement, and overhaul/repair procedures for GM engines.

ASEP2538 Entertainment Systems 1.5
This course consists of a CBT and Hands-on component. Intended for experienced service technicians, this course covers methods of operation and procedures for diagnosis of both GM audio systems and video entertainment systems.

ASEP2540 Global Diagnostic System/Multiple Diagnostic Interface 1
This course has been designed to provide the technician with the skills necessary to properly diagnose current and future vehicle platforms, using GDS (Global Diagnostic System) and the MDI (Multiple Diagnostic Interface).

ASEP2542 Noise, Vibration and Harshness 1
This course covers vibration correction procedures performed in GM Dealerships. Proper use of special tools and procedures will also be covered.

ASEP2547 Manual Gearbox Service 1.5
This course begins with practice exercises related to the diagnosis and repair of GM Manual Gearbox systems that are performed by students working in groups. Prerequisites: Six on-line GM courses.

ASEP2548 Rear Axle and Propeller Shaft 1.5
This course consists of a CBT, IDL and Hands-on component. Intended for driveline service technicians, this course provides participants with the fundamentals of rear axle and propeller shaft operation. Topics include propeller shafts and limited-slip differentials. Also included are proper maintenance, service procedures, basic vibration, and noise diagnosis.

ASEP2551 Chassis Electronics 1
This course covers chassis electronics procedures performed in GM Dealerships. Proper use of special tools and procedures will also be covered. Prerequisites: None.

ASEP2552 GM Chassis Control Systems 1
This course covers chassis electronics procedures performed in GM Dealerships. Proper use of special tools and procedures will also be covered.

ASEP2557 Automatic Transmission and Transaxle 1.5
This course consists of a WBT, IDL and Hands-on component. Intended for experienced transmission service technicians, this course will assist in developing the knowledge and skills needed to properly diagnose transmission faults related to hydraulic, mechanical, and electrical systems that effect transmission operation.

ASEP2558 6-Speed Automatic Transmission/Transaxle 1.5
This course begins with practice exercises related to the diagnosis and repair of GM Automatic Transmission/Transaxle Mechanical systems that are performed by students working in groups.

ASEP2561 Allison Automatic Diagnostics 1.5
This course covers the operation and diagnosis of the Allison LCT1000 transmission used in General Motor's light trucks. Proper usage of special tools and service procedures will be covered.Prerequisites: None.

ASEP2566 Electrical/Electronics, Terminals and Connectors 1
This course includes practice exercises related to diagnosis and repair of electrical circuits and wiring. Digital multimeter usage is the main focus along with information pertaining to new GM terminals and connectors. Prerequisites: None.

ASEP2570 Waterleak and Windnoise Management 1
Waterleak and Windnoise Management

ASEP2575 Moveable Roof Systems 1.5
This course begins with pre-planned Workstations related to the location, diagnosis and repair of moveable roof systems that are performed by students working in groups.

ASEP2580 Body Electrical Accessory Systems 1
The Body Electrical Accessory Systems course allows the service technician to demonstrate their ability to diagnose different accessory systems used in GM vehicles. This course is intended for experienced service technicians with competent electrical skills. It focuses on design, operation, and servicing for the Power Liftgate and Latch, Keyless Access (PEPS), Theft Deterrent, Power Tilt/Telescope Steering Column, Electronic Park Brake, and Movable Pedals systems. Upon completion of this course, technicians will be able to perform diagnostics and repair procedures on body electrical accessory systems.

ASEP2582 Strategies for Efficient Diagnosis 1
This course presents a General Motors diagnostic strategy for proper, efficient diagnosis of vehicle concerns including an in-depth review of Strategy Based Diagnosis and "Diagnostic System Check-Vehicle". It also includes exercises covering current vehicle issues and new diagnostic tools. It is designed to assist technicians in developing a consistent diagnostic approach to vehicle concerns while incorporating many existing resources which may not always be factored into a repair. While the primary goal is to provide the technician with the resources to Fit it Right the First Time, special attention will be focused on known vehicle concerns that are resulting in high warranty waste.

ASEP2583 eAssist System Diagnosis and Service 1
This course covers eAssist systems diagnosis and service. It includes a review of the eAssist system features, components, and operation as well as high voltage safety procedures. The course provides students with hands-on workstations to perform the high voltage disable procedure, diagnose faults in the eAssist systems, and perform the service procedures for repairing faults.

ASEP2584 Duramax Operation, Service and Diagnosis 1.5
This course consists of workstations covering the diagnosis of the Duramax fuel system, fuel quality, advanced after-treatment system, variable geometry turbocharger, and Diagnostic Trouble Codes. The workstations are designed to provide practical situations that the technicians may see in the field.

ASEP2585 GM Safety Systems 1.5
This course provides technicians with hands-on opportunities to practice and enhance skills associated with diagnosing and servicing the supplemental inflatable restraint system, rear vision camera, park assist system, lane departure warning system, side object detection system, and brake override system.

ASEP2586 GM Safety Systems (1) 1
This course provides technicians with hands-on opportunities to practice and enhance skills associated with diagnosing and servicing the supplemental inflatable restrain system, r ear vision camera, park assist system, lane departure warning system, side object detection system and brake override system.

ASEP2587 GM Safety Systems (2) 2
This course provides technicians with hands-on opportunities to practice and enhance skills associated with diagnosing and servicing the supplemental inflatable restraint system, rear vision camera, park assist system, lane departure warning system, side object detection system, and brake override system.

ASEP2588 Engine Performance 2
This course provides hands-on opportunities to practice and enhance skills associated with diagnosing and servicing systems related to engine performance including, air, fuel, ignition, emission and electronic control systems.

ASEP2589 Electric Vehicle Systems Diagnosis and Service 2
This course covers electric vehicle high voltage systems and battery diagnosis and service. It includes a review of safety procedures and operation of high voltage systems and components. The course provides the participants with hands-on workstations to diagnose faults in electric vehicles and service procedures for repairing the faults.

ASEP2590 Electric Vehicle Transmission: Diagnosis and Service 2
This course begins with a PowerPoint presentation to review the components of the 4ET50 transmission. The presentation also includes safety precautions to follow while working on a high voltage system. The students will work in groups on workstations related to the diagnosis and repair of the 4ET50 transmission.

ASEP2591 FWD/RWD Operation, Diagnosis and Service 2
This course begins with practice exercises related to the diagnosis and repair of GM FWD/RWD systems that are performed by students working in groups.

ASEP2592 Truck AWD/4WD Operation, Diagnosis, and Service 1
This course begins with an instructor presentation regarding 4WD/AWD vehicles, and continues with the explanation of the steps to service two different transfer cases and a front drive axle assembly. The course ends with practice exercises related to the diagnosis and repair of 4WD/AWD trucks, performed by students working in groups.

ASEP2593 Ecotech Generation 2 Overhaul 1
This course provides information about the Ecotech engines, including general specifications, features and processes of assembly, cleaning and inspection, and disassembly.

ASEP2594 Data Communication Systems Diagnostics 1
This course provides an introduction to data communication systems diagnostics and describes key components and tools required for an accurate diagnosis. The main focus of this course will be on diagnosing customer concerns regarding the data communication systems. Participants will diagnose High Speed and Low Speed GM Local Area Networks (GMLANs), the Media Oriented Systems Transport (MOST) system, and the Local Interconnect Networks (LIN), as well as Infotainment networks.

ASEP2595 Infotainment Operation and Diagnosis 1
This course explores current infotainment hardware, communication, features, and functions. Topics include components, peripheral interfaces, and the role of software in infotainment systems, as well as software versions, programming, and applications. Participants will be able to distinguish the differences in various radio features and their functions. The course also covers pairing of peripheral functions with radios, and participants will join a vehicle/peripheral pairing exercise. After discussing possible customer concerns that are not caused by component or wiring issues, participants will learn about related tools and resources and then participate in infotainment system diagnostic exercises.

ASEP2980 Special Topics: GM Training Center
Special Topics: GM Training Center

ASEP3001 Electrical/Electronic Assessment Certification 3
This course covers all aspects of electrical/electronic systems service, diagnosis and repair procedures on GM vehicles. The course represents a culmination of skill and education the technician has gained over many years and numerous GM training courses.
Prerequisites: ASE #A6 certification, GM courses; 18043.01W, 18043.02W, 18043.03W, 16048.15W, 10040.00W, 16041.01W, 18044.16W, 18044.16W, 1804416D1, & D2, 18044.16H, 22048.22W, 22048.22H, 19047.06W, 19047.03W1 & W2, 19047.03H, 19040.10D1 & D2.

ASEP3002 HVAC Assessment Certification 3
This course covers all aspects of HVAC system service, diagnosis and repair procedures on GM vehicles. This course represents a culmination of skills and education the technician has gained over many years and numerous GM training courses.
Prerequisites: ASE #A6 certification, GM courses; 18043.01W, 18043.02W, 18043.03W, 16048.15W, 10040.00W, 11044.00W, 11044.00D1, 11044.00D2, 11045.10W, 11045.10H.

ASEP3003 GM Powertrain Performance Certification Assessment 3
This course covers testing, diagnosis and repair of GM Fuel Injection Ignition and Computer Systems. This assessment represents a body of work by the technician spanning many years.

ASEP3004 Diesel Engine Performance Certification Assessment 3
This course covers diesel engine performance testing and procedures. This assessment represents a body of work by the technician spanning many years. Technicians are required to complete fifty hours of training before they are allowed to take this assessment. Prerequisites: Completion of GM STC courses, Web based training and Interactive Distance Learning.

ASEP3005 Engine Repair Certification Assessment 3
This course covers engine mechanical diagnosis and measurement procedures performed in GM Dealerships. Proper use of special tools and procedures will be required. This course represents a culmination of skill and education the technician has gained over many years and numerous GM training courses. Prerequisites: None.

ASEP3006 Brakes Certification Assessment 3
This course covers base and ABS brake system service as it is performed in GM dealerships. Proper use of special tools and procedures will be required. This course represents a culmination of skill and education the technician has gained over many years and numerous GM training courses.

ASEP3007 Automatic Transmission Certification Assessment 3
This course covers automatic transmission diagnosis, evaluation and repair procedures performed in GM dealerships. Proper use of special tools and

procedures will be required. This course represents a culmination of skill and education the technician has gained over many years and numerous GM training courses.

ASEP3008 Manual Drivetrain and Axle Certification Assessment 3
This course covers manual drivetrain and rear axle diagnosis, evaluation, and repair procedures performed at GM dealerships. Proper use of special tools and procedures will be required. This course represents a culmination of skill and education the technician has gained over many years and numerous GM training courses
Prerequisites:
None.

ASEP3009 Steering and Suspension Certification Assessment 3
This course covers steering and suspension diagnosis, evaluation and repair procedures performed in GM dealerships. Proper use of special tools and procedures will be required. This course represents a culmination of skill and education the technician has gained over many years and numerous GM training courses.
Prerequisites:
None.

AUTOMOTIVE

AUTM1003 Automotive Fundamentals 2
This course covers automotive industry fundamental knowledge and operations as well as basic automotive electrical theories, diagnosis, and repair procedures using various types of tools and test equipment and reference materials available in Alldata, Mitchell and your textbook.

AUTM1013 Automotive Starting and Charging Systems 3
This course covers automotive batteries, starting and charging system theories, diagnosis and repair procedures using various types of tools and test equipment and reference materials available in Alldata, Mitchell and student textbook. Prerequisites: AUTM1003

AUTM1023 Automotive Suspension Systems 3
This course teaches suspension systems using leaf springs, coil springs, McPherson struts, and torsion bars. Steering systems using manual and power rack and pinion, recirculating ball steering gears. Alignment angles and their relationship to vehicle handling. Prerequisites: AUTM 1003 and 1013

AUTM1033 Automotive Brake Systems 3
This course includes basic principles of brakes, hydraulic system basics, disc and drum brakes, parking brakes, anti-lock brakes and power assist units. Emphasis will be placed on operation, diagnosis and repair of various types of braking systems. Prerequisites: AUTM 1003 and 1013

AUTM1043 Vehicle Maintenance 4
In this course you will learn to inspect, and provide basic service and repairs on both manual and automatic transmissions & transaxles differential, transfer cases, drive axles and wheel bearings. Pre-requisites: AUTM 1003, 1013, 1023, 1033 (with a C or better).

AUTM1053 Maintenance & Light Repair Engine Repair 4
In this course you will learn basic heating and air conditioning system terminology, service and repair. Engine lubrication and resealing engine gaskets.

AUTM1063 Maintenance & Light Repair Engine Performance 4
In this course you will learn to inspect and diagnose basic engine condition retrieve, retrieve and analyze engine codes, perform basic fuel and exhaust system service and repair.

AUTM1073 Maintenance & Light Repair Advanced Lab 5
This course covers the operation and servicing techniques required to repair exhaust and engine concerns encountered on modern automobiles. Live work will be stressed in this course. Prerequisite: Successful completion of AUTM2045 Engine performance and repair, AUTM2015 Drivetrain Repair, and AUTM2035 Heating and A/C systems, with a minimum overall score of 70%.

AUTM2117 Automotive Electronics 1 3
This course covers automotive electrical and electronic fundamentals. Operation, diagnosis, and repair of automotive lighting, horn, relay, and windshield wiper circuits are studied using various types of tools and test equipment. Reference materials available through Alldata, Mitchell, Identifix, AC Delco, Subaru of America and the student textbook will be utilized. Prerequisites: AUTM 1003, 1013

AUTM2127 Automotive Electronics 2 3
This course covers automotive electronics and computer fundamentals. Operation, diagnosis, and repair of automotive accessory and Supplemental Restraint systems are studied using various types of tools and test equipment. Reference materials available through Alldata, Mitchell, Identifix, AC Delco, Subaru of America and the student textbook will be utilized. Prerequisites: AUTM 1003, 1013, 2117.

AUTM2137 Automotive HVAC Systems 3
This course covers the principles of air conditioning and types, diagnosis, testing, and repair of air conditioning systems. The course includes practical work on air conditioning systems such as evacuating, replacement of components, charging, recycling, and performance testing. Reference materials available through Alldata, Mitchell, Identifix, AC Delco, Subaru of America and the student textbook will be utilized. Prerequisites: AUTM 1003, 1013, 2117, 2127

AUTM2147 Advanced Automotive Electronics 5
This course covers advanced automotive electrical, electronic, and HVAC system diagnostic and repair procedures using various types of tools and test equipment and reference materials available in Alldata, Mitchell and student textbook. Prerequisite: Successful completion of AUTM1003 Automotive Fundamentals, AUTM1013 Automotive Engine Electrical Systems, AUTM2117 Automotive Electrical Systems, AUTM 2127 Automotive Electronic Systems, and AUTM2137 Heating, Ventilation, and Air Conditioning with a minimum overall score of 70% OR concurrent enrollment in course 2960 Skill Development with instructor approval.

AUTM2218 Automotive Engine Fundamentals 3
This course includes general engine diagnosis, cylinder head diagnosis and repair, valve train diagnosis and repair, engine block diagnosis and repair. The class stresses how engines work and how to repair them. Prerequisites: AUTM 1003, 1013.

AUTM2228 Automotive Transmission Fundamentals 3
This course includes basic theory of torque converters, planetary gears, clutches, bands, and hydraulics. The class stresses how automatic transmissions and transaxles work and how to repair them. Prerequisites: AUTM 1003 and 1013

AUTM2238 Automotive Driveline Fundamentals 3
This course will cover the operation and proper repair procedures of current differentials, manual transmissions, transaxles, and transfer cases used on late model vehicles. It also covers the operation and proper repair procedures for locking hubs in four-wheel drive vehicles. Prerequisites: AUTM 1003 and 1013

AUTM2248 Advanced Powertrain 5
This course includes: advanced automatic transmission and engine diagnostic procedures. Advanced repair of automatic transmissions and engines. Prerequisites: Successful completion of Autm 1003, 1043, 2218, 2228, and 2238 with a minimum overall score of 70% OR concurrent enrollment in course 2960 Skill Development with instructor approval.

AUTM2314 Engine Performance 1 3
This course covers the operation and servicing techniques required to diagnose and repair automotive fuel system related concerns encountered on modern automobiles
Prerequisites: AUTM 1003 and 1013

AUTM2324 Engine Performance 2 3
This course covers the operation and servicing techniques required to diagnose and repair automotive computer system related concerns encountered on modern automobiles
Pre-requisites: AUTM 1003, 1013, and 2314

AUTM2334 Engine Performance 3 3
This course covers the operation and servicing techniques required to diagnose and repair ignition system related concerns encountered on modern automobiles. Prerequisites: 1003,1013,2314, and 2324

AUTM2344 Advanced Engine Performance 5
This course will focus on emission control systems and hybrid vehicle operation, diagnosis, and repair. Live work will be at the core of this course and will reinforce understandings obtained in prior courses. Prerequisite: Successful completion of AUTM1003, AUTM 1013, AUTM2314, AUTM2324, and AUTM2334 with a minimum overall score of 70% OR concurrent enrollment in course 2960 Skill Development with instructor approval.

AUTM2960 Skill Development: Auto Mechanics
Skill Development: Auto Mechanics

AUTM2970 Automotive Internship
Automotive Internship

AUTM2980 Special Topics
Special topics coursed are designed by faculty to address some unique and specifically identified needs of a group of students to fulfill their program requirements. Such courses are usually delivered as a one-time offering and do not become part of the program. Special topic courses can have a varied credit value and differing prerequisites. Prerequisites: Instructor approval.

AUDIO VISUAL

AVIT1100 Audio Visual Industry Essentials 4
This course provides an introduction to the Audio Visual industry including the sales, design and installation functions. It also includes the science and technology for basic audio, visual, and audiovisual systems integration. Prerequisites: None.

AVIT1130 Audio Visual System Construction and Installation I 4
This course provides an introduction project scope analysis, site evaluation and recommendations as well as the basics of audio video equipment and technology installation. This course will include cable termination, rack building, cable handling and equipment mounting. Prerequisites: AVIT1100, AVIT1110, and AVIT1120.

BIOLOGY

BIOL1110 Environmental Science 3
This course emphasizes the fundamental concepts of ecology as it pertains to the impact of humans on their environment. It addresses the demands placed on the biosphere by the exploitation of natural resources and energy, the creation of pollution and the disposal of waste. This course is interdisciplinary, combining concepts from the natural and physical sciences (e.g. biology, chemistry, geology, physics) with the social sciences (e.g. economics, politics, ethics, history) to present an understanding of how wise stewardship of earth's resources can result in the long-term sustainability of our shared environment. Meets MnTC Goal 3 and MnTC Goal 10

BIOL1200 Biology and Society 3
This interdisciplinary course explores the interaction between complex human perspectives and the technical and scientific aspects of biology. Issues with a biological basis such as human health, environmental safety, biodiversity, agriculture, and natural resources naturally lead to applied ethical, social, political, and economic questions. Students will explore the technical aspects of timely biological issues, breakthroughs, and technological applications in the context of their societal implications. Meets MnTC Goal 10

BIOL1250 Biology of Women and Men 4
Students will focus on concepts related to women's and men's health. Topics covered will include anatomy and physiology of human reproductive systems, ethical issues in women's and men's health, formulating critical thinking skills in the face of new medical findings presented to society and biological concepts of common medical issues faced by women/men. Specific topics may include, menopause, prostate health, hair loss, mental health, pregnancy and current media issues in the face of health care, to name a few. Lab like experiences will be included in the teaching of these topics through simulations, case-studies and more. Meets MnTC Goal 2, 3, 9,

BIOL1310 Introduction to Anatomy and Physiology 4
This lecture and laboratory-based course is designed for introductory study of human organ systems (integumentary, skeletal, muscular, nervous, endocrine, cardiovascular, respiratory, digestive, and urogenital) by structure and function. Cellular function, human reproduction, development, and heredity are other topics integrated into the biology of the human body. Carefully check your program requirements for acceptability of this course. It does not replace the two course sequence of anatomy and physiology required for many advanced health programs. Meets MnTC Goal 3

BIOL1400 Ecology Field Studies 4
An inquiry-based course that covers the fundamental principles of ecology, conservation, and sustainability. Students will have the opportunity to learn through laboratory, field work, and lecture activities. Topics include biodiversity, a survey of biomes, populations, interrelationships in biological communities, ecological succession, energy flow, nutrient cycling, physiological ecology, and human impacts on ecosystems. Meets MnTC Goal 3

BIOL1500 General Biology 4
This course surveys the basic principles of biology. Content topics include fundamental concepts of cellular structure and metabolism, inheritance, biodiversity, ecology, and evolution. The lab component includes application of concepts with an emphasis on observation, the scientific method, and analysis. This course provides a foundation for students pursuing health-related careers as well as those in non-science majors. Meets MnTC Goal 3

BIOL2000 Anatomy & Physiology I 4
This course is the first semester of a two-semester lab-science course intended for students pursuing careers in fitness and allied health fields. Human anatomy and physiology are studied using a body systems approach, with emphasis on the interrelationships between form and function at the gross and microscopic levels of organization. Homeostasis is an integrating theme throughout this course. Content topics include basic anatomical and directional terminology, fundamental concepts and principles of cell physiology, histology, and the integumentary, skeletal, muscular, and nervous systems. Dissection of individual organs and whole organisms may be included. Meets MnTC Goal 3
Prerequisite: BIOL 1500 with a grade of C or better

BIOL2010 Anatomy & Physiology II 4
This course is the second semester of a two-semester lab-science course intended for students pursuing careers in fitness and allied health fields. Human anatomy and physiology are studied using a body systems approach, with emphasis on the interrelationships between form and function at the gross and microscopic levels of organization. Homeostasis is an integrating theme throughout this course. Content topics include immunity, metabolism, fluid balance, development, and the cardiovascular, hematopoietic, respiratory, lymphatic, digestive, urinary, and reproductive systems. Dissection of individual organs and whole organisms may be included. Meets MnTC Goal 3
Prerequisite: BIOL 2000 with a grade of C or better

BIOL2020 Microbiology 4
An introduction to Microbiology with a focus on microbe classification and biology, disease transmission, and pathogenesis, the immune response, and isolation and identification laboratory practices. Emphasis will be on microorganisms that cause local and systemic disease in humans with consideration of treatment options as well as infection control and prevention strategies. This course is intended for nursing students and other students pursuing careers in allied health fields. Meets MnTC Goal 3
Prerequisite BIOL1500 with a grade of C or better

BIOL2990 Independent Study Biology 4
Independent Study Biology

BIOMEDICAL EQUIPMENT TECHNOLOGY

BMET1000 Electronic Concepts
An introduction to electronics using a hands-on approach to gain familiarity with basic circuit parameters and component functions. Each skill will be presented through a theoretical presentation reinforced by a hands-on lab project. Prerequisite: INTS1002

BMET1111 Medical Device Technology 3
This course provides students with an industry overview/perspective of the biomedical technology field. In this course students will learn the relationships between equipment and patient care and the various sensors and transducers used by medical equipment. Typical electronic circuitry used in medical equipment will be covered. Prerequisites: None.

BMET1112 DC Electricity 3
This course is designed to investigate the direct current and voltage behavior of series and parallel circuits, using Ohm's and Watt's laws. Natural and direct current electromagnetism will also be presented. Students will perform lab projects on all subject matter by use of an interactive lab network computer. Prerequisites: None.

BMET1114 Wireless Communication 1
This class will study the use of wireless networks in hospitals. The technology involved in wireless medical telemetry. The designated frequencies within the radio spectrum and the potential for radio frequency interference. Also discussed will be the wireless environment, wireless LANs, cell phones, wireless planning and antenna systems plus the role the Federal Communication Commission has in managing the radio frequency spectrum. This class is intended to be an introductory level class.

BMET1116 Solid State Electronics 5
This course will introduce students to a wide range of active solid state devices such as transistors, unijunction transistors, and silicon-controlled rectifiers. It also teaches how these devices are used in practical circuits such as amplifiers, speed controls, switching circuits, and timing circuits. The student will compute component and circuit parameters. These will then be compared with measured data. Circuits will be designed and evaluated by breadboarding and/or computer simulation software. Prerequisites: None.

BMET1122 Administrative Functions 4
This course introduces students to the basic operation of hospitals; the requirements of regulatory agencies; biomedical departmental policies and procedures and the managing of information, work orders and vendors.

BMET1123 AC Electricity 3
This course introduces the principles of alternating current. Circuits will consist of resistive, capacitive, and inductive devices. Ohm's and Watt's laws, along with Norton's and Thevenin's theorems will be used to simplify complex combinations of RCL circuits. Test equipment introduced includes the VOM (volt-ohm-meter), DMM (digital-multimeter), signal generator, and oscilloscope. The course concludes with resonating circuits. Prerequisites: BMET1112 or equivalent.

BMET1140 Solid State Electronics 4
This course will introduce students to a wide range of active solid state devices such as transistors, unijunction transistors, and silicon-controlled rectifiers. It also teaches how these devices are used in practical circuits such as amplifiers, speed controls, switching circuits, and timing circuits. The student will computer component and circuit parameters. These will then be compared with measured data. Circuits will be designed and evaluated by breadboarding and/or computer simulation software.

BMET1220 Medical Device Technology 4
This course provides students with an industry overview/perspective of the biomedical technology field. In this course students will learn the relationships between equipment and patient care and the various sensors and transducers used by medical equipment. Typical electronic circuitry used in medical equipment will be covered.

BMET1231 Biomedical Instrumentation II 4
This course provides a foundation in the theory and operation of medical test equipment. The student will use various types of test equipment to test and measure the performance of diagnostic, monitoring and surgical equipment. Each class will have a lecture component on a specific type of instrumentation following the syllabus. Prerequisites: BMET1220.

BMET1530 Digital and Micro Processor 3
This course covers the basic and advanced digital logic used in integrated circuits and their application. Logic diagrams and analysis will be covered. Microprocessor control and feedback systems using sensor feedback will be studied. Training will be accomplished using the LabVolt system and handouts selected by the Instructor.
Prerequisites: BMET1112, BMET1123, BMET116 or equivalent.

BMET2110 Professional Skills 2
This course will consist of class lecture, practical exercises and reflective compositions, the student will focus on the professional skills necessary to thrive in the Healthcare Technology Management field.

BMET2210 Biomedical Instrumentation I 4
This course studies the various technologies used in the medical care field. Areas of study will cover the use of various test equipment, performing preventive maintenance and the use of testing equipment for maintaining proper operation. Students will also learn to read schematics and following instructions in service manuals for performing test and maintenance. Each class will have a lecture component on a specific type of instrumentation following the syllabus.

BMET2940 BMET Field Experience 1
In this course students work in a clinical site within the Biomedical Engineering Department. They are expected to observe and apply all of the BMET skills learned thus far - the same skill that would be expected of an employee.

BMET2960 BMET Skill Development 1
Skill Development

BMET2970 Biomedical Equipment Technology Internship
In this course students work full shifts in a clinical site within the Biomedical Engineering Department. They are expected to observe and apply all of the BMET skills learned thus far - the same skill that would be expected of an employee. Prerequisites: BMET1110, BMET1210, BMET1220.

BMET2980 BMET Special Topics
BMET Special Topics

BMET2990 Biomedical Equipment Technology - Independent Study 3
Biomedical Equipment Technology - Independent Study

BREWING & BEER STEWARD TECHNOLOGY

BREW1000 Introduction to Brewing and Beer Steward 2
This course will focus on the history of beer and brewing, the main processing steps involved in beer brewing, identification and characteristics of a variety of beer styles and flavors, beer serving and freshness, main ingredients used in brewing beer, and societal impact and legal regulation of beer and brewing.

BREW1100 Science of Brewing and Fermentation 4
Students will learn the biological, chemical, and physical science related to brewing and the fermentation process.

BREW1200 Raw Materials and Brewing Process 4
In this course students will learn about the characteristics and variables related to the main ingredients used in the beer brewing process - water, barley/malt, hops, adjuncts, yeast, and other ingredients. The students will also learn more in-depth about the brewing process including equipment and procedures involved in wort production, fermentation, clarification, and filtration.

BREW1300 Beer Production and Quality Control 4
Students will gain more in-depth knowledge and hands-on experience of the brewing and beer production process. The course will cover process, procedures, and best practices for each step in the brewing process.

BREW1400 Packaging and Process Technology 3
In this course students will develop a basic knowledge of bottling, canning, and kegging beer emphasizing best practices for stability and shelf life. Students will also learn about draught systems, packaging containers, and materials used in the brewing industry and quality control tests and measurements used on finished beer. This course will also include operation, safety and maintenance of brewing equipment and technology including hydraulic pumps, filtration systems, and heating and refrigeration technology.

BREW2970 Internship 4
Brewing and Beer Steward Internship

BUSINESS MANAGEMENT

BUSN1000 Foundations of Management 3
This course will provide you with background and theories of supervision and management, and the key skills required to be successful supervisor, manager and entrepreneur. Learn to effectively manage in an ever increasingly diverse workforce. Ease the transition to supervisor or bring yourself up-to-date with todays supervisory/management practices. Study the role and responsibilities of supervisors including planning, organizing, staffing, directing, and controlling. Develop new skills in communication, correcting or rewarding performance, and overall management of resources.

BUSN1010 Leadership 3
Learn concepts to become an effective leader in today's global business environment. Determine your leadership style and the implications of that style on work group performance. Incorporate ethics, cooperate mission, vision and culture into a powerful leadership strategy. Enhance your ability to motivate and
positively influence others in an increasingly diverse workforce. Model leadership behaviors and inspire,
challenge, enable and encourage those around you toward a common purpose.

BUSN1020 Management Effectiveness 3
Learn practical tools to manage time and stress. Develop habits to increase personal productivity and create an individual time management plan. Set priorities, delegate and reduce time wasters and stressors. Explore strategies
to improve time utilization in workgroups.

BUSN1030 Financial Management 2
This course provides the non-financial manager/supervisor an understanding of business accounting terms, annual reports, basic accounting cycles, budgeting, cost control, income statements, cash flow analysis and other financial statements. Develop and apply skills in basic accounting principles and concepts to make sound business financial decisions. You will be introduced to financial business plans.

BUSN1040 Organizational Behavior 3
We will review, discuss and analyze some of the things that make an organization of any size and purpose tick. We will examine the ways that systems and values help to make up an organizations
culture. We will discuss the ways individuals work inside an organization and ways they influence those around them. And we will consider in detail what this all means in the context of todays call for constant
change. The focus of this course will be on application. We will work to understand theories as they can be practiced. We will work with models and tools that have practical application in our many endeavors. Ultimately, success will be judged on each participants ability to make a difference outside the classroom.

BUSN1100 Human Resources Management 3
This course focuses on providing supervisors and managers an overview of the principles and practices of Human Resources Management functions in todays organizations of any size. Emphasis areas include Recruitment and Selection, Orientation, Compensation and Benefits, and Managing Employee Relations.

BUSN1110 Business Law and Ethics 3
Examine workplace issues impacting supervisory responsibilities and explore the influence of ethics on individuals and organizations. You will be introduced to the American legal system. Understand civil, criminal, TORT, contract, employment and labor laws and other factors that affect business operations.

BUSN1120 Managing Performance 3
Manage employee performance by establishing performance expectations, identifying and providing needed training and support, monitoring performance, and providing formal and informal feedback. Practice conducting employee performance evaluations. Learn methods to take corrective action. Identify sources of inadequate performance, skills and knowledge, processes and systems, motivation and personal issues-and determine appropriate resolution to each. Coach and mentor good performers to higher levels.

BUSN1130 Risk Management 2
This course is designed to give the supervisor or manager an overview of how to provide a safe and healthy work environment. Supervisors/ managers will be able to develop, based on knowledge gained in this course, a safety plan, conduct a job safety analysis, new employee orientation, job safety training, perform workplace inspections and conduct effective accident investigations.

BUSN1140 Training and Developing Employees 3
Consider employee training and development needs from orientation through progressive job training to enhance organizational effectiveness. Assess learning styles of trainees, and learn effective training techniques to reach a wide range of learners. Design and deliver a work-related training session. Understand the risks and rewards of the training process. Create a positive physical, social and emotional environment that arouses learning abilities while reducing learning barriers.

BUSN1200 Quality Management 3
Learn how to integrate TQM into planning and project management, strategic management, process improvement and how to modify an organizations behavior. Assess supervisor's roles and responsibilities related to quality including identifying and meeting customer needs, applying problem solving tools and techniques for improving systems and processes and making quality decisions. Develop a quality training plan for work group members and enhancing work group commitment to continuous quality improvement.

BUSN1210 Project Management 3
Understand the project management process and learn to utilize the appropriate tools to initiate, plan, execute, control and close projects. Learn to apply knowledge, skills, tools and techniques to project activities to meet project requirements. Understand how organizational planning impacts the projects by means of project prioritization based on risk, funding, and the organizations strategic plan.

BUSN1220 Effective Business Communication 3
Learn and practice skills to communicate your message directly and effectively to generate the desired results, whether in a meeting, presentation or written media. Integrate multi-media to support your ideas. Assess your audience prior to communicating to maximize effectiveness. Facilitate group participation including handling disruptive behavior. Learn to apply skills in any situation to achieve win-win negotiations.

BUSN1240 Creativity and Problem Solving 2
Develop the skills and knowledge to cultivate productive work teams. Learn to defuse resistance to change and foster support and involvement in developing a shared vision. Another important focus is to master conflict resolution and negotiation strategies essential for supervisors and others in leadership positions in fostering self managed work teams.

BUSN1260 Managing Customer Service 1
Identify how supervisors can plan for and support excellent customer service through developing a service strategy. Examine the impact of employee training and decision making authority on customer service. Analyze models of service for internal and external customers. Learn tools and techniques for gathering feedback and handling complaints. Consider the relationship between customer service and quality.

BUSN1300 Multicultural Mentorship I 2
This course explains what multicultural mentoring is and how it can be used as an effective tool to develop individuals, foster teamwork, multicultural understanding and organizational effectiveness and productivity. This course places the student in the role of mentee and mentor. As a mentee, the student will learn how to develop and acquire new skills and abilities through a multicultural mentorship partnership. A mentor/mentee agreement will develop a path to growth opportunities. This course is a Prerequisite for BUSN1310 Multicultural Mentorship II.

BUSN1310 Multicultural Mentorship II 1
This course builds on what multicultural mentoring is and how it can be used as an effective tool to develop individuals, foster teamwork, multicultural understanding and organizational effectiveness and productivity. This course places the student in the role of mentee and mentor. As a mentor, you will utilize skills learned to help their mentee succeed. A mentor/mentee agreement will develop a path to growth opportunities.

BUSN1320 Managing Diversity 3
Identify what it takes to become a diversity leader in your organization and community. Learn the complexities of managing in today's diverse workforce. Explore the evolution of diversity from the past, present and future perspectives. Assess personal, group and organizational viewpoints toward diversity and diversity initiatives. Examine the legal aspects related to discrimination, affirmative action, and bias and stereotyping in human resource activities. Implore effective communication methods to build relationships and understanding. Utilize the differences, similarities and tensions of individuals and groups into a collaborative and competitive advantage for your organization. Eliminate barriers affecting equal access and professional growth and mobility.

BUSN1330 Leading a Multicultural Workforce 3
Learn how to adapt global and multicultural contexts into traditional leadership theories. Develop assimilation strategies that do not lose the many advantages that diversity offers. Examine the leadership challenges regarding ethics, social responsibility, accountability and training in a multicultural environment. Choose appropriate leadership styles to build teamwork and collaboration. Raise the awareness of the workforce at all levels to leverage the value of diversity.

BUSN1340 International Business 3
Understand the growing influence of globalization on all areas of business. Assess the global business environment which includes trade, outsourcing, off shoring, legal, technological, political and social and ethical perspectives. Learn the affects of cultural contexts in negotiation and management. Explore strategies for international and global business.

BUSN1350 Multicultural Conflict Resolution 2
This course focuses on building multicultural conflict resolution skills needed to improve the workplace relationships by understanding the concept of cultural clashes, practicing conflict management prevention, mastering negotiatingskills across cultures, building multicultural communication skills, developing mediation techniques, understanding the conflict management continuum resolving multicultural conflict, and comprehending the Alternative Dispute Resolution progression.

BUSN1510 Fundamentals of Business 3
Gain an understanding of management concepts, principles, and applications for effective operations of industrial distribution firms. Topics covered are concepts of rationale of discounting, financial systems, inventory management, purchasing, vendor evaluations, profitability analysis, warehouse management and future trends.

BUSN2010 Graduation Project
Complete an improvement project applying the knowledge and skills you have learned in the Supervisory Management program. Advisor

approval is required for the project and credits. Credits are variable (1-6 credits) based on the scope of the project. Up to five technical electives required in the program may be applied to the Graduation Project.

BUSN2970 Internship
Internship

CHEMISTRY

CHEM1500 Introduction to Chemistry 4
This course is a broad introduction to chemistry - its principles and applications. It is intended for the non-science major. Topics include the scientific method, atomic structure, periodic table, general properties of matter, the development of the model of the atom, basics of chemical bonding, chemical equations and their uses, acids and bases, and oxidation reduction. Meets MnTC Goal 3
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CIVIL ENGINEERING TECHNOLOGY

CIVL1131 Beginning Survey 5
Introduces the three basic surveying tools - the tape, level and transit/ theodolite - along with proper field procedures for basic surveying which include taking field notes, taping and EDM, leveling, bearings and azimuths, topography, and mapping. Prerequisites: None.

CIVL1151 Basic CAD 5
This is the first course in Computer Aided Design (CAD) lab work for Civil Engineering Technology Students using AutoCAD software. It will present the fundamentals of AutoCAD including but not limited to command structure, setting units and limits, drafting primitives, layering, use of editing tools, grid, snap, and axis commands. The assignments require extensive use of the Civil Engineering Technology CAD lab. Prerequisites: None.

CIVL1222 Civil Drafting 4
An introduction to large scale mapping as used in highway and site design. Laboratory exercises include preparation of site plans, boundary surveys, and road plans. Laboratory exercises make extensive use of Autodesk Civil 3D. Prerequisites: CIVL 1121

CIVL1231 Intermediate Surveying and GPS 5
This course covers the basics of horizontal and vertical curve geometry as used in highway design before undertaking the study of more advanced surveying topics including: use of mass diagrams to track earthwork on highways, control surveying mathematics, universal coordinate systems, and boundary location. Laboratory exercises will vary between CAD drawings and outdoor exercises.

CIVL1241 Construction Staking 2
A course on fundamental construction layout principles required for typical construction projects. Topics include: basic control networks, coordinate systems and coordinate geometry, alignment and grade for structures, roadway, and utilities, data collector use, and RTK GPS data acquisition, positioning, and mapping.

CIVL1251 Soil Mechanics/Materials Testing 3
Determination of soil composition and structure is the first phase of project delivery for every type of civil engineering related activity. This course covers the classification of soils through: soil exploration, basic geology, hydraulics of groundwater, weight-volume relationships, sampling procedures, stresses, strains, bearing capacity, settlement and expansion, compaction, stabilization, and an introduction to foundations and retaining walls. Soil mechanics are determined by both field and laboratory test methods. In this course, you will gain hands on experience by applying the methods that are commonly performed to determine soil mechanics. This course also familiarizes students with lab and testing procedures for testing construction materials. Topics include sieve analysis, relative density, compaction tests, Atterberg limits, and soil classification, concrete strength testing, and bituminous sampling. Prerequisites: NONE

CIVL1255 Hydrology and GIS 3
Geographic Information Systems (GIS) is information in context. The ability to tie information to a spatial location is basis of GIS. GIS allows us to view, understand, question, interpret, and visualize data in many ways the reveal relationships, pattern, and trends in the form of maps, reports, and charts. In this class the student will learn how to use GIS and apply it to civil engineering and other related practices. Completing civil engineering projects involves skills in health, marketing, environmental studies, geography, natural resource management and many other disciplines. These skills will be developed by using GIS to perform analysis of spatial and tabular data in the field of civil engineering. This course is also an introduction to storm water management as it relates to the design of storm water conveyance systems, and ponds using various engineering tools. Prerequisites: CIVL 1122

CIVL2120 Construction Inspection 3
Develop an understanding of the various roles that the construction inspector plays, and methods used by the construction inspector to document and enforce compliance with the specifications of a construction contact.

CIVL2131 Land Survey 2
An advanced course on fundamental land survey principles required for typical boundary establishment. Topics include: Legal Description reading/writing, adverse possession, Junior/Senior rights, Riparian rights, Land Survey case law, and covers MN Rules on Land Surveys. Prerequisites: CIVL1231, CIVL2141

CIVL2152 Eco-Sensitive Design 2
This course is an introduction to the design of sites, and buildings with methods, materials, and philosophies that produce sustainability and protect the world's ecosystems. Prerequisites: CIVL 1221

CIVL2155 Eco-Sensitive Design 1
This course is an introduction to the design of sites, and buildings with methods, materials, and philosophies that produce sustainability and protect the world's ecosystems. Prerequisites: CIVL 1221

CIVL2162 Project Management 2
This course introduces the student to a key element of the Civil Engineering task: Project Management. The student will learn the elements of managing a construction project and work out project schedules by hand and with PM software programs. Prerequisites: None.

CIVL2211 Project Design 3
This course is a comprehensive introduction to the estimating practices used in the construction industry. Prerequisites: CIVL 2150

CIVL2221 Properties of Construction Materials 2
This course is an introduction to the Properties of Construction Materials normally used in Civil Engineering applications. Prerequisites: 1251

CIVL2241 Estimating 2
This course is a comprehensive introduction to the estimating practices used in the construction industry. Prerequisites: CIVL 2120

CIVL2970 Internship 3
This course is required for graduation and consists of a minimum of 96 hours of experience in the Civil Engineering Technology industry as an intern. Intern tasks can vary: surveying, construction inspection, CAD work, and office work of a Civil Engineering Technician. Prerequisites: First year CET classes.

CIVL2980 Special Topics
Special Topics

DENTAL ASSISTANT

DENT1100 Dental Science 4
This course provides an overview of basic normal body structure and function including an understanding of the common disease process. Special attention will be given to a comprehensive overview of the oral anatomical structures, functions, and development of the oral cavity, as well as the identification of structures of the head and neck and their functions. Prerequisites: Admission to Dental Assisting Program

DENT1110 Pre-Clinical Dental Assisting 3
This course will introduce the student to the health and safety considerations for basic infection control and dental emergencies. Topics will include occupational exposure risks, personal protection, exposure control, hazard communication standards, and medical waste disposal, as defined by government guidelines and regulations including OSHA standards. Special attention will be given on how to reduce the risk of transmission of disease commonly found in the dental office between dental assistants and patients, including various sterilization and disinfection techniques. This course will also discuss the prevention and treatment of medical emergencies commonly found in the dental office. The student will have a basic understanding of the classification, administration, use, and effects of drugs commonly used in a dental office. Prerequisites: Admission to Dental Assisting Program

DENT1120 Dental Health 2
This course is designed to provide the student with the knowledge necessary to instruct a patient in proper oral hygiene and explain the benefits of fluoride. It also will provide the students with basic nutritional concepts and their practical applications. Prerequisites: Admission to Dental Assisting Program

DENT1135 Chairside Assisting I 4
This course introduces the student to the fundamentals of working in a dental office setting as a chairside assistant. It introduces concepts of dental charting, techniques of basic equipment, supplies, four-handed dentistry, oral evacuation and instrument identification and their proper use. This course also provides an introduction to the psychology of patient management skills necessary for effective interaction with patients.

DENT1145 Dental Materials 4
This course provides the student with the knowledge and practical application of dental materials commonly found in the dental office. Emphasis will be on chemical and physical properties, uses, types and applications. Students will be able to identify uses for specific dental products and be aware of specific care and storage properties of various materials.

DENT1250 Radiology 5
This course requires instructor approval if not taken in the semester sequence. This course assists the student with an understanding of how radiation is produced, principles of protection for the patient and the operator, and techniques for processing radiographs as well as identifying processing errors. This course covers the techniques used in exposing intraoral radiographs as well as technical errors and corrections. Students will learn to mount and evaluate films for their diagnostic value. The student will be exposed to the extraoral accessory films utilized in the dental office and the procedural techniques for exposing them. Prerequisites: Admission to Dental Assisting Program or instructor permission

DENT1260 Expanded Functions 5
This course prepares the assistant to perform all functions legally performed by a registered dental assistant (RDA) according to the Minnesota Dental Practice Act. This course covers the following expanded functions: alginate impressions for opposing models and study casts with bite registration, mechanical polishing of the clinical crowns, application of topical fluoride, rubber dam applications and removal, application of topical medications, orthodontic skills of preselecting orthodontic bands, removing and replacing ligature ties, and placement and removal of elastic separators. Also included are suture removal, placement and removal of periodontal dressings, adaptation of temporary crowns, cement removal, pit and fissure sealants, enamel etching, removal of bonding material, and nitrous oxide monitoring. Prerequisites: Admission to Dental Assisting Program or instructor approval

DENT1275 Chairside Assisting II 4
This course furthers knowledge of chairside assisting duties by presenting tray set-ups and the restorative process to help further the development of basic skills of four handed dentistry. This course also introduces basic concepts of the different specialties in dentistry, including orthodontics, oral surgery, endodontics, pediatrics, prosthodontics, and oral pathology. The student will be taught to identify the instruments, materials, and procedures needed to gain skills in assisting the dentist with each specialty.

DENT1280 Dental Practice Management 2
This course is an overview of duties performed by a dental assistant with emphasis on patient registration, medical history forms, telephone skills, appointments, recordkeeping, and correspondence. It also will provide the student with knowledge of professional ethics and dental laws with emphasis on the Minnesota Dental Practice Act. Students will write the Minnesota Dental Jurisprudence Exam. Prerequisites: Admission to Dental Assisting Program or instructor permission

DENT2970 EXTERNSHIP: Dental Assistant 7
This course provides the student with actual experience assisting in an off-campus clinical setting in private dental offices, group practices, or specialty dental offices. Prerequisites: Prior completion of all Dental Assisting courses or instructor approval

ECONOMICS

ECON1100 Microeconomics 3
This course is an introduction to: price mechanisms, supply and demand, resource allocation, analysis of market structures, distribution of income, and business decisions with regard to cost analysis. Meets MnTC Goal 5 Meets MnTC Goal 5

ECON1200 Principles of Macroeconomics 3
This course analyzes the interactions between all segments of the economic system. The course will focus on savings and investment, aggregate supply and aggregate demand, the monetary system, unemployment and inflation, and fiscal policy. Additional topics may include the balance of payments and currency exchange rates determination. Meets MnTC Goal 5 Meets MnTC Goal 5

EARLY CHILDHOOD AND YOUTH DEVELOPMENT

ECYD1100 Introduction to Early Childhood Careers 3
This course provides an overview of the early childhood field, including theories, philosophies, missions, and regulations. It examines the roles and responsibilities of professionals in a variety of career settings, including child life.

ECYD1205 CDA Professional Resources 1
This introductory course defines the processes and procedures used in obtaining the National Child Development Associate (CDA) credential.

Students will develop the Professional Resource File required by the Council for Professional Recognition.
Note: This course requires a clear Minnesota Criminal Background Study.

ECYD1206 Parent and Professional Relations 2
This course explores a variety of topics regarding duties, regulations, issues and skills necessary to becoming an early childhood professional and in establishing a positive relationship with parents and coworkers.
Note: This course requires a clear Minnesota Criminal Background Study.

ECYD1210 Child Growth and Development 3
This course examines the major developmental milestones for children, both typical and atypical, from conception through adolescence in the areas of physical, psychosocial, and cognitive development. Also emphasizes interactions between maturational processes and environmental factors. While studying developmental theory and investigative research methods, students will observe children and analyze characteristic of development at various stages.
Note: This course requires a clear Minnesota Criminal Background Study.

ECYD1220 Health, Safety, and Nutrition 3
An introduction to the regulations, standards, policies, and procedures, prevention techniques, and early childhood curriculum related to health, safety, and nutrition. The key components that ensure physical health, mental health, and safety for both children and staff will be identified, as well as the importance of collaboration with families and health professionals. A focus will be on integrating the concepts into everyday planning and program development.
Note: This course requires a clear Minnesota Criminal Background Study.

ECYD1230 Guiding Children's Behaviors 3
This course examines positive strategies to guide children's behavior in the early childhood setting. It also examines ways to establish supportive relationships with children and guide them in order to enhance learning.
Note: This course requires a clear Minnesota Criminal Background Study.

ECYD1240 Learning Environment and Curriculum 3
Presents an overview of knowledge and skills related to providing appropriate curriculum and environments for young children. Examines the role of the teacher in providing learning experiences to meet each child's needs, capabilities, and interests, and ways to implement the principles of developmentally appropriate practices. Will provide an overview of content areas including (but not limited to): Language and literacy, social and emotional learning, sensory learning, art and creativity, math and science.
Note: This course requires a clear Minnesota Criminal Background Study.

ECYD1310 Infant and Toddler Caregiving 2
This course examines developmental theory and caregiving skills unique to infants and toddlers. Also included are strategies that support diversity and anti-bias perspectives, environment and research-based curriculum models that are developmentally appropriate for infants and toddlers.
Note: This course requires a clear Minnesota Criminal Background Study.

ECYD1325 Observation and Assessment 3
This course focuses on the appropriate use of assessment and observation strategies to document development, growth, play and learning to join with families and professionals in promoting children's success. Recording strategies, rating systems, multiple assessment tools and portfolios are explored. There will be a focus on increasing objectivity in observing and interpreting children's behavior, observing developmental characteristics and increasing the awareness of normal patterns of behavior. Prerequisite: ECYD 1210 or Instructor Permission
Note: This course requires a clear Minnesota Criminal Background Study.

ECYD1340 Curriculum Planning 3
Provides an advanced level of curriculum planning. Emphasis is on organizing, implementing, and evaluating developmentally appropriate curricula. Prerequisite: ECYD1240
Note: This course requires a clear Minnesota Criminal Background Study.

ECYD1410 Infant and Toddler Field Experience 1
This course provides students with the opportunity to apply knowledge and skills in both infant and toddler settings. Students will implement a variety of learning experiences and interactions that are developmentally and culturally sensitive to infants and toddlers. Prerequisites: ECYD 1210 or ECYD 1310 and instructor permission.
Note: This course requires a clear Minnesota Criminal Background Study.

ECYD1510 Practicum I 3
In this course students will demonstrate early childhood teaching competencies under guided supervision to make connections between theory and practice and developing professional behaviors. Students apply comprehensive understanding of children and families; developmentally appropriate, child-centered, play-orientated approaches to teaching and learning and knowledge of curriculum content areas. They design, implement and evaluate experiences that promote positive development and learning for all young children. PREREQUISITES: ECYD1100, ECYD1210, ECYD1220, ECYD1230, and ECYD1240
Note: This course requires a clear Minnesota Criminal Background Study.

ECYD2320 Children with Differing Abilities 3
Examines the child with differing abilities in an early childhood setting. Students will integrate strategies that support diversity and anti-bias perspectives, provide inclusive programs for young children, apply legal and ethical requirements including, but not limited to ADA and IDEA, differentiate between typical and exceptional development, analyze the differing abilities of children with physical, cognitive, health/medical, communication, and/or behavioral/emotional disorders, work collaboratively with community and professional resources, utilize an individual education plan, adapt curriculum to meet the needs of children with developmental differences, cultivate partnerships with families who have children with developmental differences.
Note: This course requires a clear Minnesota Criminal Background Study.

ECYD2510 Practicum II 3
The course provides an opportunity to apply knowledge and skill in an early childhood setting. Students implement a variety of learning experiences that are developmentally appropriate for and culturally sensitive to a specific age and group of children. PREREQUISITES: ECYD1510, ECYD1325, ECYD1340, and ECYD2320. ECYD2600 must also be taken prior to or concurrently with 2510.

Note: This course requires a clear Minnesota Criminal Background Study.

ECYD2560 Language and Literacy Development 3
The course provides an overview of language learning experiences in early childhood settings and a detailed study of language, literature and literacy experiences. Students will integrate knowledge of children's language and literacy development, learning environments and teaching strategies to select, plan and present and evaluate literature experiences to children of different abilities and diverse backgrounds.
Note: This course requires a clear Minnesota Criminal Background Study.

ECYD2570 Working with Diverse Families and Children 3
Examines how to work with many types of families. Investigates the importance of the family/school partnership, study methods of effectively communicating with families, and identify community organizations and networks that support families. Various classroom strategies will be explored emphasizing culturally and linguistically appropriate anti-bias approaches supporting all children in becoming competent members of a diverse society.
Note: This course requires a clear Minnesota Criminal Background Study.

ECYD2580 Creative Development Experiences 3
This course provides an overview of creative/aesthetic learning experiences in either home-or center-based settings. Students integrate knowledge of child development, learning environments and teaching methods to promote children's artistic, musical, movement and dramatic abilities.
Note: This course requires a clear Minnesota Criminal Background Study.

ECYD2600 Organizational Leadership and Management 3
In this course the students will discuss the personal and professional reasons for becoming a teacher, ways to advocate in this profession and will develop a plan for continuous education and professional development. Students will be able to improve their skills in working with other by learning strategies for team building, coping with stress, and problem-solving. Students will also study professional ethics and procedures for evaluating self and staff. Opportunities for professional membership and conferences will also be provided. Prerequisites: Diploma Courses
Note: This course requires a clear Minnesota Criminal Background Study.

ECYD2713 Culture, Family and Providers 1
This module will examine ways to be culturally sensitive and build partnerships with parents. Students will integrate knowledge of culturally sensitive/responsive caregiving techniques and curriculum approaches in order to enhance the learning environment of infants and toddlers from diverse backgrounds.

ECYD2715 Sign Language in Early Childhood 1
This course is designed to equip students with the tools they need to introduce signing in childcare environments with preverbal children. Students will examine research, review benefits of signing with hearing infants, practice modeling signs, identify strategies for parental involvement with sign, and discover how to create learning opportunities in daily activities.

ECYD2900 Introduction to the Child Life Profession: History and Practice 3
This course offers a basic knowledge of the child life profession. Elements covered include history and current scope of practice, impact of illness and stress, coping theory and strategies, and patient and family-centered care. Students will also examine the modalities of play and the role of preparation in healthcare settings. *This course is taught by a Certified Child Life Specialist
Prerequisite: ECYD1210 and instructor permission.
Note: This course requires a clear Minnesota Criminal Background Study.

ECYD2950 Field Experience 3
Field Experience Prerequisites: Instructor permission is required for this course.
Note: This course requires a clear Minnesota Criminal Background Study.

EKG

EKGT2000 EKG Telemetry Technician 6
This comprehensive 6 credit course will prepare students to be an EKG Technician and take the Certified EKG Technician (CET) exam. An EKG Technician attaches electrodes to the patient's body which then send a signal to a machine displaying the activity in a recognized pattern. The technician will recognize abnormalities in EKG tracings and report them to a physician or other authorized healthcare providers for interpretation. Students will study: cardiac anatomy and physiology, EKG equipment (attaching to patients, proper safety and operation, recognize artifacts and resolve problems), how to recognize tracings that deviate from normal and prioritize reporting of such deviations, heart rhythms and waveforms, obtain basic vitals, HIPAA compliance, use of Holter monitors, introduction to stress tests and 12-lead EKGs, and more.

ELECTRICAL CONSTRUCTION & MAINTENANCE TECHNOLOGY

ELEC1110 D.C. Electricity Theory and Lab 3
This course covers investigation of direct current and its behavior in series, parallel, and series/parallel circuits; measuring devices and components; and electromagnetism. Prerequisites: None.

ELEC1120 A.C. Electricity Theory and Lab 3
This course covers investigation of alternating current and its behavior in resistive and reactive series, parallel, and series/parallel circuits; use of test instrumentation; electromagnetic induction; and resonation. Prerequisites: None.

ELEC1130 National Electrical Code I 3
This course covers the requirements of the National Electrical Code.

ELEC1137 Construction Site Safety 1
Safety in the workplace is everyone's responsibility. This course covers basic employee safety training for hazards commonly encountered on a construction site or an industrial workplace. Employees can greatly reduce the chance of injury to themselves or co-workers by carefully following the safety rules and safe work practices.

ELEC1139 Electrical Construction Fundamentals 2
Construction is the systematic process of putting something together. Constructing electrical systems requires a variety of mechanical skills including, but not limited to, measuring, cutting, drilling, bending, fabricating, mounting, fastening, supporting, and terminating. These basic mechanical skills become the foundation for technical and specialized skills. As such, construction requires the efficient and safe use of numerous hand and power tools, as well as the techniques to use trade-specific tools.
In addition, electrical work is a licensed and regulated occupation. It is important that students are made aware of the laws and rules governing licensing and registration so as not to find themselves facing the consequences of working unlawfully.

ELEC1140 Blueprint Reading for Technicians 3
This course investigates blueprint reading for electricians. This course consist of basic sketching and drawing techniques, applications of plans, scales and scaling applications, symbology, and print reading. Prerequisites: None.

ELEC1210 Analog and Digital Electronics Theory 2
This course covers the theory of semiconductors, power supplies, amplifiers, digital circuits, microprocessor applications, sensors, and signal coupling materials/devices. Prerequisites: ELEC1110, ELEC1120, MATS1205.

ELEC1220 Analog and Digital Electronics Lab 4
This course covers connecting, testing, and analyzing semiconductors, power supplies, amplifiers, digital circuits, microprocessor applications, sensors, and signal coupling materials/devices. Prerequisites: None.

ELEC1230 Construction Skills and Introduction to Wiring Theory 3
This course covers material and design of residential wiring, wiring methods, selection of proper fastening devices, sizing of wire and boxes, branch circuit requirements, and use of blueprints. Prerequisites: ELEC1110, ELEC1120, MATS1205.

ELEC1240 Construction Skills and Introduction to Wiring Lab 6
This course covers lab experiences in material and design of residential wiring, wiring methods, selection of proper fastening devices, sizing of wire and boxes, branch circuit requirements, and use of blueprints. Prerequisites: ELEC1110, ELEC1120, ELEC1130.

ELEC2110 Electrical Apparatus Theory 3
This course covers the principles of direct current motors, single- and three-phase motors and transformers, and proper use of meters and test equipment. Prerequisites: None.

ELEC2110 Electrical Apparatus Theory 3
This course will consist of technical instruction and assessment of knowledge related to the installation and operation of electrical apparatus. Students will receive instruction on basic and complex control circuits, single-phase and three-phase motors and transformers, across-the-line motor controllers, reduced voltage starters, variable frequency drives, and power distribution and transfer apparatus. In addition, students will study the National Electrical Code requirements governing the installation of electrical equipment and apparatus. The majority of the technical information will be used to support a parallel lab course.

ELEC2120 Electrical Appartus Lab 6
This course covers analysis and troubleshooting of direct current motors, single-and three-phase motors, transformers, and proper use of meters and test equipment. Prerequisites: None.

ELEC2120 Electrical Appartus Lab 6
This course will consist of clearly directed lab exercises with the expectation of exact results, performance evaluations and related assignments. Students will have an opportunity to connect, troubleshoot, and operate both basic and complex control circuits, connect and operate single-phase and three-phase motors, across-the-line motor controllers, reduced-voltage starters, and variable frequency drives. In addition, students will connect and operate single-phase and three-phase transformers, autotransformers, and other electrical equipment and apparatus. The supporting technical information will be provided through a parallel theory course.

ELEC2131 Programmable Logic Controllers Theory 2
This course covers theory of logic applications; connecting, programming, and operating programmable logic controllers; and AC and DC electronic drives. Prerequisites: ELEC1110, ELEC1120, ELEC1211, ELEC1221.

ELEC2131 Programmable Logic Controllers Theory 2
Course work includes the technical information supporting a parallel lab course. Students will learn Allen-Bradley RSLogix 500 and RSLogix 5000 programming software to write, edit, download, and operate control programs for Allen-Bradley MicroLogix 1100, SLC-500, and CompactLogix PLC hardware. Students will learn Allen-Bradley Panelbulder32 programming software to create applications for the Panelview 300 and 600 operator interface terminals. In addition, will students study basic instrumentation and networking strategies associated with automation technologies.

ELEC2141 Programmable Logic Controllers Lab 4
This course covers analysis and troubleshooting of logic applications; connecting, programming and operating programmable logic controllers; AC and DC electronic drives; and motor controls. Prerequisites: ELEC1110, ELEC1120, ELEC1211, ELEC1221

ELEC2141 Programmable Logic Controllers Lab 4
This course work will consist of clearly directed lab exercises with the expectation of exact results, performance evaluations and related assignments. Students will use Allen-Bradley RSLinx, RSLogix 500 and RSLogix 5000 programming software to write, edit, download, and operate control programs for Allen-Bradley MicroLogix 1000, MicroLogix 1100, SLC-500, and CompactLogix PLC hardware. Students will use Allen-Bradley Panelbulder32 programming software to create applications for the Panelview 300 and 600 operator interface terminals. In addition, students will study basic instrumentation and networking strategies associated with automation technologies. The supporting technical information will be provided through a parallel theory course.

ELEC2210 National Electric Code II 3
This course covers continued requirements of the National Electrical Code. Prerequisites: ELEC1130.

ELEC2220 Electrical/Electronic Controls and Systems Theory 2
This course covers analysis and troubleshooting of logic controllers, AC and DC electronic drives, energy management systems, heating and cooling systems, fire alarm and security systems, and integrated voice/video/data and infrared systems. Prerequisites: ELEC2130, ELEC2140.

ELEC2230 Electrical/Electronics Controls and Systems Lab 4
This course covers analysis and troubleshooting of programmable logic controllers, AC and DC electronic drives, energy management systems, heating and cooling systems, fire alarm and security systems, and integrated voice/video/data and infrared systems. Prerequisites: ELEC2130, ELEC2140.

ELEC2241 Industrial and Maintenance Wiring Theory and Lab 3
This course covers the use of materials and design of industrial wiring, industrial tools and equipment, service equipment, and maintenance technology. Prerequisites: ELEC1230 and ELEC1240.

ELEC2251 Commercial Wiring Theory and Lab 3
This course covers the use of materials and design of commercial wiring, commercial tools and equipment, service equipment, and maintenance technology. Prerequisites: ELEC1230 and ELEC1240.

ELEC2260 Heating, Ventilation, and Air Conditioning Wiring Theory and Lab 3
This course covers the use of materials and design of materials and equipment for heating, ventilating, and air conditioning residential, commercial and industrial buildings. Prerequisite: ELEC1230 and ELEC1240.

ELEC2960 Skill Development
Further skills for Electrical Construction Maintenance Technology.

ELEC2970 Electrical Construction Internship
In this course students will work full shifts in manufacturing environment at Andersen Corporation Bayport plant. Work assignments will be either the door plant, double hung plant, or window plant as required to maintain manufacturing flow through. 1-6 variable credits.
Prerequisites: AC Fundamentals, DC Fundamentals, Motion Control Basics and PLC Control courses.

ELEC2980 Electrical Construction Special Topics
Electrical Construction Special Topics

ELECTRICAL LINE WORKER

ELLW0098 Introduction to Climbing 1
This course covers the introduction to the equipment used for climbing. The use of this equipment will be applied to the act of learning to climb safely and correctly.

ELLW1110 Distribution I 4
This course covers the task of learning to climb safely along with the use of digger/derrick units. It includes an introduction of the materials and their applications, along with an introduction to the application of rigging to the industry. The safety aspect of the industry is stressed in these applications. Prerequisites: ELLW1098

ELLW1120 Utility Equipment and Tools 2
This course offers an introduction to the tools used in the line industry.

Personal tools, climbing tools, and the introduction to the safe operation of carrier-mounted devices are included. The digger/derrick and the personnel-carrying aerial devices will be covered. Prerequisites: ELLW0098.

ELLW1130 Basic Electricity 2
This course covers the introduction to electrical circuits and magnetic circuits, both AC and DC. The student will use mathematics to calculate voltage, resistance, and current in each type of circuit. This course is an introduction to the use of formulas needed to do the calculations that the lineworker may encounter in this field. The introduction to the magnetic circuits will be the basis for transformer application. The safety aspects of calculating voltages and currents will be used to identify the exposure in such applications that could be a safety hazard. Prerequisites: None

ELLW1140 Distribution IIA 4
This course covers the construction aspects in the building of single-phase lines and the use of plan profiles, specification drawings, material lists, and their application to the field. It includes the equipment that will be used for this construction. Hot line work with sticks will also be introduced at this time. The hanging of guys, the stringing of conductors, anchor installations, industry framing practices, and safety in all line building, equipment operations, and material handling will be observed and practiced. Prerequisites: ELLW1110, ELLW1120, and concurrent enrollment in ELLW1141

ELLW1141 Distribution IIB 4
This course covers more of the material that is in ELLW1140 Distribution IIA. Prerequisites: ELLW1110, ELLW1120, and concurrent enrollment in ELLW1140

ELLW1145 Rope and Rigging 2
Students will learn and practice knot tying and splicing. Also included are the study of rope characteristics, different uses of rope, and basic rigging techniques.

ELLW1150 Construction Planning and Practices 2
This course covers the use of different drawings, maps, and construction materials used in the line worker's field. This includes the list of materials and specifications. Use of the transit will be introduced and applied to the lab field where lines will be staked for future building as a project. Placement of anchors and the installation of line equipment will also be used in the advanced part of the class. Prerequisites: ELLW1110

ELLW1155 Equipment Operations 2
A mix of classroom training and outdoor lab work studying and applying the safe and efficient operation of digger derricks, skid steer loaders, backhoes and trenchers.

ELLW1160 Transformers I 4
This course covers the theory and applications of transformer principles of magnetic and electrical circuits for primary and secondary connections. Understanding of polarities is examined and applied. Use of the different types and possibilities of connections will also be covered, with the needed information for choosing the loading, transformer types and sizes, and the fusing of the same. Prerequisites: ELLW1130 and concurrent enrollment in ELLW1161

ELLW1162 Transformers II 4
This course covers the actual mounting and connecting of the transformers to the primary and secondary systems, including the use and installation of over-current and over-voltage protection. The use of closed and open banks will be applied, as well as the paralleling of same. Safety of both the primary and secondary applications will be covered and used in all applications. Prerequisites: Concurrent enrollment in ELLW1160

ELLW1165 Pole Top and Bucket Rescue 2
Students will learn the most up-to-date techniques and operations of rescue equipment in the electrical line worker industry. These skills will help prepare for the possibility of line worker injury on the pole or in aerial equipment. Along with this training, the student will obtain First Aid, CPR and AED certification.

ELLW1170 Line Construction and Maintenance A 4
This course covers the conversion of single-phase to multi-phase applications. The use of three-phase hot stick line applications will be applied to the changing of poles, deadends, crossarms, and running angles. The maintenance of three-phase systems will be applied. The use of insulated fiberglass boards and ladders, nylon hot line hoists, and block and tackle will be applied. Safety applications will be emphasized at all times throughout this course. Prerequisites: Concurrent enrollment in ELLW1172

ELLW1172 Line Construction and Maintenance B 4
This course covers the continuation of line construction and maintenance. The application of ties, standard and preformed with sticks and live line applications, is covered. The use of protective coverup materials for lineman and support structures is covered. The transferring and handling of energized conductors using temporary supports, etc. are also covered. Prerequisites: Concurrent enrollment in ELLW1170

ELLW1175 System Protection 2
Students will be given a general overview on the basic fundamentals of equipment used in Transmission and Distribution system protection. The objective of this course will be to help the student understand how protection systems function, and how they protect the general public and utility employees, reduce damage to electrical equipment, and reduce duration and number of sustained outages.

ELLW1180 Underground Cable and Fault Locating 2
This course covers the practices and techniques used in cable and fault locating. The student will understand and demonstrate all safety practices in the application and operation involved with the equipment used in this course. Prerequisites: None

ELLW1185 Electrical Industry Search Skills 1
This course covers a comprehensive view of the aspects incurred in job search activity. It will cover locating job openings, hidden markets, assessing employment strengths, writing resumes, writing cover letters, completing applications, preparing for interview questions, and using the computer highway for job searching. Prerequisites: None

ELLW2980 Special Topics (ELLW)
Special Topics (ELLW)

ELLW2981 Special Topics: Electrical Lineworker
Special Topics: Electrical Lineworker

ENGLISH - GEN ED

ENGL0110 College Reading Boost 1
The course is designed to develop the effective reading and clear thinking skills that are required to be successful in college today.

ENGL0120 Fundamentals of College Writing 3
This course focuses on the writing skills needed to produce paragraphs and short essays. During the semester, students 1) demonstrate conventional sentence structure, punctuation, and spelling, as well as vocabulary and usage; 2) communicate clear ideas in developed paragraphs with main points and logically sequenced sentences; 3) follow a process for academic writing; 4) analyze ideas.
This composition course emphasizes basic grammar, mechanics, and

usage in the development and enhanced use of English sentences and paragraphs in short writing assignments. Students will practice writing as a process and thinking critically about language, especially sentences, in context. Special emphasis will be placed on recognizing and eliminating common sentence errors.

ENGL0130 English Essentials 3
This is a basic writing course that introduces students to the primary principles of college composition and professional writing skills. The courses primary skill areas include organizational development, refined grammar and punctuation execution, proper paragraph development, short essay construction, proofreading skills, audience recognition, and rules for formatting.

ENGL0140 Developing College Writing Skills 4
This is a basic writing course that introduces students to the primary principles of college composition and professional writing skills. The courses primary skill areas include organizational development, refined grammar and punctuation execution, proper paragraph development, short essay construction, proofreading skills, audience recognition, and rules for formatting.

ENGL0150 English Writing Essentials 3
This is a basic writing course that introduces students to the primary principles of college composition and professional writing skills. The courses primary skill areas include organizational development, refined grammar and punctuation execution, proper paragraph development, short essay construction, proofreading skills, audience recognition, and rules for formatting.

ENGL0990 Independent Reading
Independent Reading.

ENGL1125 Business Writing 3
This course focuses on effective, persuasive communication within and between business organizations, from the perspective of employees and of mangers. Students learn to critically analyze communication strategies, organizational culture and common business texts, such as memos, reports and case studies; they learn to select quality data from primary and secondary sources; and they write and edit letters, memos, reports and studies in situations that simulate the complexities of small companies and global corporations.
Students will also gain experience making an oral presentation with accompanying presentation and software slides, work as part of a collaborative team, and recognize the ethical implications of business communication.

This course is not a substitute for ENGL1150 Composition I. Meets MnTC Goal 1

ENGL1150 Composition I 3
This course emphasizes the process of writing expository and persuasive essays using effective writing skills and a variety of research techniques. Also included in the course content are critical reading and logical reasoning. Meets MnTC Goal 1 - PREREQUISITES: Student must score an 86 or above on the Accuplacer Sentence Skills assessment OR complete developmental courses through English Essentials AND score a 78 or higher on the Accuplacer Reading Comprehension Assessment OR complete College Reading I or II. Meets MnTC Goal 1

ENGL1200 Technical Writing 3
This course is designed to enhance students' abilities to write technical documents. The content covered will include proposals, research reports, technical manuals, feasibility studies, and process reports. Pre-requisites: Students must score 70 or above on the Accuplacer Reading assessment to register for this course.
Co-requisite: If students score between 51 and 69, they can register for this course, but must concurrently take ENGL 0110 College Reading Boost. Meets MnTC Goal 1

ENGL1300 Introduction to Creative Writing 3
This course introduces students to the fundamentals of creative writing. The elements of fiction, poetry, nonfiction, and screenwriting are covered. Emphasis will be placed on both the writing process and the end product. Meets MnTC Goal 6

ENGL1355 Critical Reading and Writing 3
How can writing present complex arguments - and require critical thinking skills to develop answers? Is there more than just what is on the surface? How can a student intelligently challenge what is written in a text or even what is offered on the Internet? Students read, compose, analyze, and engage in interesting and rigorous discussions of selected plays and texts. Concepts of audience, purpose, and context are studied and evaluated. Students will learn how to discuss critically, synthesize key components, and provide analysis orally and in writing. This course is not an alternative to Composition 1101. Meets MnTC Goal 1 Meets MnTC Goal 2

ENGL1400 American Short Story 3
This course emphasizes the review and analysis of examples of the short story format. These stories will be by various American writers from the period 1789 to the present. Also included in the course content are critical reading and logical reasoning. Meets MnTC Goal 6

ENGL1570 The Literature of Nature
This course focuses on the understanding and analysis of humanity's relationship to its environment, as revealed through particular genres, such as the short story, essay, diary, and poetry. Students will review the major texts in the literature of nature and look at the ethical and philosophical relationship between humans and nature over the centuries, focusing primarily on North America. Meets MnTC Goal 6 and Goal 9

ENGL1625 Film Studies 4
This course emphasizes the review and analysis of films. This will include how movies reflect and shape the hopes, dreams, and aspirations of the society that produces them. These films will be from various genres and span the entire time frame that movies have been a popular phenomenon. Also included in this course is logical reasoning as well as the investigation of certain aspects of film that set it apart from other literary forms such as technical advances, special effects, camera angles, costuming, cinematography, and lighting. Meets MnTC Goal 6 Meets MnTC Goal 5

ENGL1630 Genre Film 1
This course emphasizes the review and analysis of focused genres of films. This will include how a genre reflects the society that produces them and how each genre transcends the limits of its formula. Also included in this course is logical reasoning. Meets MnTC Goal 6

ENGL1650 Greek Mythology 4
This course emphasizes the review and analysis of various Greek myths. This will include how these myths have reflected and shaped art and history. Also included in the course are critical reading and logical reasoning. Meets MnTC Goal 6

ENGL1675 Children's Literature 3
Students will study and evaluate literature (picture books, fables, fairy tales, fantasy fiction, realistic fiction, historical fiction, and more) written for children from first years to preteen years. Topics covered in this course include (but are not limited to) how to study, analyze, and discuss literature; how to engage children in reading and to encourage thoughtful and creative responses to literature; how to evaluate the literary and educational merits of a text; how to introduce children to a variety of cultural and historical perspectives through literature; how to promote the overall joy of reading; and personal reflections on various modern-day concerns with literature. Meets MnTC Goal 2, 6

ENGL2000 Composition II 3
This course will offer challenging insights into the act of writing. Students will continue to strengthen their writing skills while engaging in analysis of literary texts and secondary sources. In writing critical essays based on that analysis, students will apply rhetorical strategies related to purpose, audience, genre and context. Pre-requisite: ENGL 1150 Composition I Meets MnTC Goal 1

ENGL2990 English Independent Study
English Independent Study

BUSINESS ENTREPRENEUR

ENTR1170 Introduction to Small Business 2
Students taking this course will learn what it takes to own, operate, and grow a small business successfully. The student will learn the personal traits and characteristics necessary to succeed in the fast-paced small business environment. This course will also examine the various ways small business can start. Some of these ways include starting a business from scratch, buying an existing business, or buying a franchise. Various case studies will be examined as to why some businesses fail, while other succeed. In addition, the student will identify their individual strengths and weaknesses and will learn which of these areas help or hinder the success of small business ownership. Although there is no way to 100% "failure-proof" a business, the student will learn the three main secrets to launching a small business successfully.

ENTR1180 Legal Issues for Small Business 3
This course covers all aspects of Business Law for the entrepreneur/ small business owner operator. Every business owner needs to understand the legal aspects of his or her business so as to protect not only the business, but the personal assets of the business owner as well. Topics covered in this class include types of business entities and which entity is the best for his or her business, writing contracts, dealing with employees, protecting your business with legal agreements, intellectual property including patents, trademarks, copyrights, business ethics, and creating a code of ethics for your company. In addition, the student will examine the very serious business issues of sexual harassment, workplace violence, discrimination, and be able to create small business polices for each of these areas.

ENTR1490 Marketing for Small Business 3
Students will be given a complete overview of all aspects of marketing used to grow a small business. Specific topics include research, determining a target market, selecting the right marketing tactics for a specific target customer, and creating the best marketing messages for results oriented marketing. The student will be exposed to over 30 marketing tactics and will learn how to use these tactics to grow their own small business. In this class both traditional marketing tactics and web marketing tactics will be discussed so that the student will have a complete understanding of marketing for his or her small business in today's world.

ENTR1760 Selling & Negotiating for Small Business Owners 3
Your success as a business owner is directly related to your ability to sell yourself, your company, and your products or services. This course is ideal for the new business owner especially if they have never sold before. The entire sales process is clearly defined and broken down into seven steps that lead the student through all aspects of sales. Each student learns how to sell his or her own product or service and is given ample opportunity to practice selling his or her own products and services in a safe setting. In addition to learning how to sell, the student will also learn how to negotiate and will be able to practice negotiating skills in a safe environment. The student will learn the importance of a ?win/win? negotiation and learn the consequences when one party wins and the other party loses. The student will be part of a negotiation team and the team will be part of a negotiation role play.

ENTR1860 Business Plan Development 3
This course will give the student all the necessary tools to create a business plan that gets results. The student will, during the course of the semester, create his or her own business plan, which is the main objective of the course. The business plan process will be broken down into five areas: vision, customer's product/service, numbers, and team. Numerous business plans will be examined and good points and bad points will be examined in each. Students will also be given the opportunity to present their plans to the group in a safe setting and have them critiqued for clarity and effectiveness.

ENTR1920 Capitalizing and Financial Management for Small Business 2
This course will provide the student with the basics of raising money for his or her business, along with gaining a basic understanding of the financial management aspects of any small business. The student will be exposed to the various methods of raising both start-up capital and capital for continuing operations. The methods for raising money presented in the class include bank loans, SBA loans, other debt instruments, venture capital, equity financing, and Federal Grant opportunities. The student will also learn the basic, common-sense aspects of money management including understanding cash flow, basic spreadsheets, and monthly/ quarterly and annual financial requirements for tax purposes.

ENTR2980 Business Entrepreneur Special Topics
Business Entrepreneur Special Topics

ENERGY TECHNICAL SPECIALIST

ETSA1300 Introduction to Traditional and Renewable Energy 3
This course is designed to introduce students to various forms of energy stemming from both renewable and non-renewable sources. Students will study many sources of energy including solar thermal power, solar photovoltaic, bio energy, hydroelectricity, tidal power, wind energy, wave energy, geothermal energy, and fossil fuels. The economics, potential, and environmental impact will be covered for each topic.

ETSA1507 Digital Electronics 3
This is a first course in Digital Electronics. The primary goals of this course are to help individuals acquire a fundamental knowledge of digital electronics. Boolean algebra, digital devices, analog to digital conversion and digital to analog conversion, and how to apply their knowledge and skills through problem solving, simulation and practical projects.

ETSA1511 Fundamentals of AC/DC Electricity I 3
This is a foundational course in direct current 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.

ETSA1512 Fundamentals of AC/DC Electricity II 3
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.

ETSA1515 Intro to Industrial Safety and Health 2
This course is designed to align with the Manufacturing Skill Standards Council's (MSSC) assessment and certification system for Safety. The course curriculum is based upon federally-endorsed national standards for production workers. This course will introduce OSHA standards relating to personal protective equipment, HAZMAT, tool safety, confined spaces and others.

ETSA1523 Print Reading 3
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 concept, and machine layout tools to transfer measurements from drawing to stock. Understand piping and instrumentation diagrams (P&ID).

ETSA1531 Process Controls/Instrumentation I 3
This course covers the fundamental principles of process measurement and control equipment and systems. Students will acquire the knowledge required to read and interpret piping and instrument diagrams, understand the terminology and language of control systems, and control strategies. Students will be introduced to a variety of instruments commonly used in industry for measurement and control.

ETSA1541 Mechanical Fundamentals 3
This course teaches students the basic knowledge and skills required to install, and maintain pumps, compressors, hoists, rigging and power transmission systems.

ETSA1552 Basic Metal Joining and Fabrication 2
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.

ETSA2512 Hydraulics 3
This course is an introductory course in hydraulics. This course is designed 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.

ETSA2513 Pneumatics 3
This course is an introductory course in pneumatics. This course is designed for students who have no previous experience working with pneumatic systems. The primary goals of this course are to help individuals acquire the knowledge and skills required to install, troubleshoot and maintain pneumatic systems.

ETSA2516 Mechanical Systems II 4
This course teaches students a higher level of knowledge and skills required to install and maintain pumps, compressors, hoists, rigging and power transmission systems.

ETSA2543 Programmable Logic Controls (PLC) Fundamentals 3
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.

ETSA2546 Po3werplant Technology 4
This course teaches basic powerplant technology, powerplant engineering, and energy conversion offered in departments of mechanical engineering and nuclear engineering. Its main focus is on fossil and nuclear power plants.

ETSA2547 Mechanical Fundamentals for Process Control 3
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.

ETSA2960 Skill Building
Skill Building

EXERCISE AND SPORT SCIENCE

EXER1000 Introduction to Human Performance Studies 3
Introduction and orientation to the fields of and related to physical education, sports management and exercise science. Includes an overview of aims, objectives, values, issues, qualifications and opportunities in related professions as well as a brief historical perspective of sport as an industry. Prerequisites: None.

EXER1015 Personal Health and Wellness 3
A comprehensive course that focuses on disease prevention, physical activity, nutrition, and general health facts. The course is designed to help each student take responsibility for their overall health and learn practical ways of achieving a safe and healthy lifestyle. Course topics include self-assessment, wellness improvement plan, personal program design, exercise research investigation, and exercise critical thinking issues. Prerequisites: None.

EXER1020 Strength Training 2
This course is an introductory course to strength or resistance training. Students will perform more than four different workouts during the course of the semester designed for various levels of resistance training expertise. Topics covered during lecture include: skeletal and muscular anatomy and physiology, program design, lifting safety, weight room etiquette, and strength plateaus.

EXER1025 Physical Conditioning 2
This course is designed to teach students the numerous methods involved in the training of individuals and athletes in order to develop conditioning to achieve a desired effect. The course will focus on training students to become proficient in the use of plyometric exercise as well as spring mechanics, speed development, flexibility training, aerobic maintenance, and agility work. Specificity toward skills to be developed will be emphasized.

EXER1045 Organization and Management of Sports 3
Designed to introduce students to the functions of management and practical use of management skills as they relate to sporting activities and events. Includes basic study of organization, budget, legal aspects and leadership.

EXER1050 Nutrition for Health and Human Performance 3
This course will provide the student with introductory nutritional information for health, fitness and sports performance. Course content includes: classification and function of nutrients, body composition and weight management, dietary supplements and ergogenic aids, energy and metabolism, and eating disorders.

EXER1065 Psychology of Sport and Performance 3
This course examines thoughts, emotions, and feelings associated with performing one's best in sport and other areas. Topics covered include:

realizing potential; performance goals; motivation; mental readiness; distraction control; group dynamics; injuries and rehabilitation; depression, eating disorders and substance abuse; and age and gender issues.

EXER2020 Personal Training and Exercise Leadership I 2
An introductory course to the business of personal training. This course will focus on the fundamental concepts in personal training for healthy, general populations. Topics include: program design, nutrition, health and fitness assessments, and legal and ethical issues.

EXER2035 Health and Lifestyle Coach 3
This course is designed to provide theoretical knowledge and practical skills in preparation for a national certification exam in health coaching. Topics include effective coach-to-client communication techniques; behavioral, nutritional, and physiological sciences (particularly as they relate to the obese client); screening and assessment; guidelines for designing and implementing safe, effective, and purposeful exercise programs; and the legal, professional, and roles of the health coach.

EXER2060 Personal Training and Exercise Leadership II 2
A lecture/laboratory covering an overview of various training methods and facilities used in one-on-one training, group training, and sports team training. Topics include client motivation, Lifestyle modification coaching, program periodization, plyometrics, rehabilitation concerns, and exercise facility design.

EXER2090 Exercise for Special Populations 2
Learn about the theory and practice of functional exercise training for various populations. Learn program design techniques for healthy, diseased, and disabled populations. Students will get practical hands-on activities including stability and medicine balls, balance training, and free weights. Topics include: client recommendations and rehabilitation concerns.

EXER2115 Applied Exercise Physiology 3
This course will present an overview of the most important concepts for coaches, fitness instructors, or practitioners in a health-science field. It is not the intent to study each topic in depth. This course will feature laboratory activities, demonstrations, and hands-on learning experience, and from these activities, conclusions will be discussed regarding concepts.

EXER2125 Applied Biomechanics and Movement Anatomy 3
An in-depth course covering the study of biomechanics and the anatomical foundations of human movement. Topics include: muscle contraction, muscle origins and insertions, muscular and skeletal actions, articulations, and human movement fundamentals. Prerequisites: BIOL2000.

EXER2225 Theory of Coaching 2
This course includes skill analysis, motivation techniques, teaching progression, responsibilities, qualities, coaching philosophies, coaching skills, practice management, psychology of coaching, game management, coaching methods, statistics and team organization of various sports. The course also includes exposure to some of the great coaches, past and present.

EXER2235 Introduction to Athletic Training 3
This course is designed to provide the entry-level exercise science practitioner with an overview of the knowledge's, competencies, and skills of athletic training. Prerequisites: None.

EXER2250 Group Fitness Instruction 2
An introductory course to the fundamental elements of group fitness instruction. Areas of focus include: music selection, choreography, cuing, leadership skills, and motivational techniques. A variety of instruction formats will be taught including: step, cardio, kickboxing, aqua, and specialty classes. Strongly recommended for those pursuing careers in Corporate Wellness.

EXER2260 Recruiting and Retaining Clients 1
This course will provide an introduction to the business side of personal training. Students will learn sales and marketing techniques to use to recruit clients and customer service skills to retain their clients. This course will provide future trainers with the knowledge and skills to maximize their client base and to be effective in meeting the individualized needs of their clients.

EXER2275 Sport Marketing 3
This course is designed to give students an understanding of marketing theories and practices relative to the sports industry. Specific topics include: public relations, promotions, special events, fundraising, licensing and merchandising, market research, pricing, sales, sponsorship and consumer behavior as it applies to the marketing sport or marketing products through sport.

EXER2280 Health and Aging 3
The purpose of this course is to introduce students to the complex physiological and psychological processes associated with aging. Students will learn about specific health problems associated with an older population and ways to prevent some of the nonessential age-related declines in function.

EXER2285 Sport Facilities Management 3
All sporting events take place in some type of facility. This course examines the principles and skills needed to manage such sports facilities and the events within them servicing schools, colleges, municipalities, private and public athletic clubs, fitness centers and professional sport organizations. This course provides students with information, skills and techniques that will be needed in the planning, development and management of existing sports facilities as well as facility development and maintenance to meet the objectives, goals, and mission of the facility.

EXER2290 Legal Aspects of Sport 3
The purpose of this course is to provide students with an adequate background to ensure their comfort when dealing with legal issues surrounding sport. Students will learn of the inherent risk associated with sport management and administration. They will be provided with a history of legal arguments, defenses, and judgments in the sport arena.

EXER2295 Social and Ethical Aspects of Sport 3
This course examines how sport is affected by society, and how society is affected by sport; ethical and moral issues in sport for athletes, coaches, administrators, staff personnel and media; and legal considerations in roles related to sport.

EXER2970 INTERNSHIP: Exercise and Sport Science
INTERNSHIP: Exercise and Sport Science

EXER2975 PRACTICUM - Exercise and Sport Science
PRACTICUM - Exercise and Sport Science

EXER2980 SPECIAL TOPICS: Exercise and Sport Science
SPECIAL TOPICS: Exercise and Sport Science

EXER2981 Spec Top: Exercise and Sport Science (INACTIVATE? Current course: EXER2980)
Spec Top: Exercise and Sport Science

GRAPHIC DESIGN

GRDT1001 Technical Foundations 2
This is an introductory course that prepares all students for entry into the graphic design or web and multimedia design fields. General overviews will be given of the visual arts, photography, and graphic design fields. Students will learn basic computer operations, how to use the local campus network for servers and printers, ad an introduction to the online classroom resources. Additionally, students will learn to prepare, mount, display, and present design work.

GRDT1006 Color Theory and Applications 2
This course covers the historical background of color. Artist colors are explored using terminology in conjunction with painting mixing to reflect the terminology. Creative color assignments are given to enhance knowledge and skill. Commercial reproduction of color will be addressed with the translation of artist colors to print colors. Color interpretations and trends are also discussed. Digital color, corrections on digital files and how color works on the computer monitor and web will be covered as well as printing from digital files. Color management of files will also be included.

GRDT1010 Adobe Photoshop I 3
This is an introduction to the basic tools used for image manipulation in Adobe Photoshop. Image modification and compositing, use of the scanner, and mastery of Photoshop tools are stressed. Image adjustment, enhancement and layer masks are also included.

GRDT1016 Typography and Layout I 3
This course covers the basics of typography and development of page layout in graphic design processes. It provides an overview of the graphic design profession and a historical framework for modem typography and layout practices. Typography classification and identification are covered. Design elements and principles are used as a foundation of any design work. Both screen and print formats are explored. Students work with type and visuals to create layouts and solve design assignments.

GRDT1030 Graphic Design Fundamentals 3
In this course, the principles and elements of design will be studied and applied to various design projects. Methods of solving creative problems will be explored and developing creativity and overcoming creative blocks will be emphasized. Those methods will include the application of the creative process and metaphorical thinking. Additional emphasis is placed on evaluating solutions and effective presentation of those solutions. Professionalism and professional attitude will be practiced.

GRDT1053 Design Drawing 3
This is a beginning drawing course geared toward developing or improving good drawing habits. Linear perspective is emphasized. Drawing freehand is practiced for sketchbook and various classroom exercises. Drawing in perspective will also be emphasized, including one, two and three point perspective. The course will explore composition, drawing and rendering techniques. A key emphasis for this course is to instill more confidence in visual expression, through learned techniques and to become a better visual communicator.

GRDT1096 Illustration Fundamentals 2
This course covers the basic concepts in the illustration sector of visual communication. The history and genres of illustration as well as illustration styles and mediums are examined. Projects are assigned to develop illustration skills and uses of various media. Using professional business practices are part of the focus. Visual concept development and communication through illustration are explored through research and application. Prerequisites: GRDT1030 and GRDT1053

GRDT1410 Adobe Illustrator I 3
This course is a comprehensive look into the drawing tools of Adobe Illustrator, a computer illustration application. Students will develop skills using the basic drawing tools. Use of the transformation tools, templates, layers, spot and process color, and file output will be emphasized.

GRDT1423 Print Processes and Production 3
This graphic design course is designed to give the student a hands-on overview of various printing processes. Theory, terminology, paper use and production, as well as press and bindery processes will be emphasized. Students will make paper, print on paper and virtually use a press simulator. Students will work with vinyl and learn more about this growing field.

GRDT1430 Adobe InDesign I 3
Placed on software operation. Use of text and graphics into single and multi-page documents will be incorporated into projects.

GRDT2016 Typography and Layout II 3
This course covers advanced typography and page layout skills. Students develop greater understanding of type as a key element of design. The course concentrates on designing with type, understanding the relationship between type families and type styles, selecting type for emotional impact, and using color and texture in type. Additional topics include font and image copyright requirements, and use of type and images for web and motion graphics. Students work toward creating effective marketing and advertising pieces through the practical application of typography and composition. The use of visual concepts is explored. Development and completion of a variety of assignments place emphasis on methods using page layout software.
Prerequisites: GRDT1016

GRDT2400 Adobe Photoshop II 3
This course builds on the tools and techniques learned in Adobe Photoshop I. The student will use and become more proficient with all the tools, especially the adjustment layers, layer styles and layer masks. The actions panel will be used to facilitate work with many photographs. Students will composite photos using various techniques. Prerequisites: GRDT1010

GRDT2415 Adobe InDesign II 3
Students will design and produce advanced page layouts using Adobe In Design to further develop skills combining type and images together. Emphasis will be placed on advanced publishing techniques to create complex quality projects for print, interactive publishing and portfolio presentation.

GRDT2420 Adobe Illustrator II 3
This is a project driven course. Specific Adobe illustrator skill areas covered are blending tools, gradient mesh, graphs and charts, use of path options and brushes. Students will design symbols, ads, packages and campaigns, using these skills. They will create a variety of portfolio quality drawings that reflect their ability to design and use the Illustrator software. Prerequisites: GRDT1410

GRDT2721 Graphic Design Career and Portfolio 3
This capstone experience concentrates on preparing students to enter the graphic design job market. Coursework includes career research and development of a professional portfolio, web representation, cover letter, resume and self-promotional materials. Students conduct informational interviews and develop networking skills. These skills will enable the students to better market, manage and promote themselves for positions in-house for a company or starting their own freelance business. Students will use skills learned in software and design coursework to refine or create new projects to include in a portfolio. Students should expect a substantial level of out-of-class time preparation. Prerequisites: Must be taken in final semester with the majority of degree coursework complete.

GRDT2970 Graphic Design Technology Internship
A Graphic Design Technology Internship is a supervised work experience

to apply classroom and graphics knowledge in a real on-the-job setting. This learning alternative will provide students the opportunity to develop speed and skills and gain knowledge and attitudes in their specialty areas. Specific student outcomes will be prearranged and assessed with the internship provider. A designated faculty member will monitor student progress on a regular basis. Internships can have a varied credit value and need prior approval from the supervising instructor. Prerequisites: Instructor approval

HEAVY EQUIPMENT MAINTENANCE

HCEM1101 General Shop Mechanics - Introduction 2
Students achieve a basic understanding of skills needed in the heavy equipment field. Some areas covered are safety, hand and power tools, hand tool projects, flaring, soldering, gears, chains, bearings, seals, fuels, lubricants, fasteners, fittings, wires and connectors, belts, pulleys, couplings, and precision measuring instruments. Prerequisites: None

HCEM1102 General Shop Mechanics - Introduction 3
Students achieve a basic understanding of skills needed in the heavy equipment field. Some areas covered are safety, hand and power tools, hand tool projects, flaring, soldering, gears, chains, bearings, seals, fuels, lubricants, fasteners, fittings, wires and connectors, belts, pulleys, couplings, and precision measuring instruments. Prerequisites: None

HCEM1110 Welding and Flame Cutting 2
Students study basic arc and gas welding used in the heavy equipment industry. Theory, safety, and practice will be taught. Cutting and heat bending are also included. Prerequisites: HCEM1101 or instructor's approval

HCEM1132 Heavy Duty Electrical 3
This is an introduction to electricity as applied to heavy equipment covering electronic theory and magnetism. Emphasis is on theory, diagnosis and repair of basic starting, charging, and lighting and ignition systems. This course prepares students for Heavy Duty Electronics HCEM1234 through classroom instruction and lab practice. Prerequisites: None.

HCEM1140 Diesel Engine Overhaul I 4
This course teaches engine tear down, failure analysis, cylinder head repair, minor overhaul, and use of proper precision measuring instruments on engines used in the heavy equipment field such as Cat, John Deere, Perkins, Case, Ford, and Cummins. This course also includes basic fundamentals of diesel engine design, including the study of cylinder heads and blocks, lubrication, air intake, exhaust, electrical, cooling, and fuel systems. Precision measuring is included, along with preventive maintenance and minor repair as well as testing on stationary and mobile engines used in the heavy equipment industry. Safety and troubleshooting are stressed. Offered: Fall Prerequisites: HCEM1101

HCEM1150 Applied Failure Analysis 2
The student will study Applied Failure Analysis. The course will include basic metallurgy, principles of fractures and principles of wear. The course will discuss how these factors affect the failure of parts as related to the engines, hydraulics and powertrain components used in the heavy equipment industry. We will do case studies from actual part failures from machines used in the industry. The emphasis of this course is to find the root cause of the failure and prevent the failure from occurring again. This course is required by both the diploma and the A.A.S. student.

HCEM1234 Heavy Duty Electronics 3
This course teaches students heavy equipment electronics, diagnostics and repair. The student will enhance their knowledge of equipment electronics and failure analysis through instruction and hands-on training. Course work will include electrical schematics and symbols, advanced multimeter training, testing, troubleshooting and repair of electronic monitoring systems. Computerized engine components are also covered. Prerequisites: HCEM1132.

HCEM1246 Diesel Engine Overhaul II 3
This course teaches engine tear down, failure analysis, cylinder head repair and major overhaul, and use of proper precision measuring instruments on engines used in the heavy equipment field such as Cat, John Deere, Perkins, Case, Ford, Cummins and Detroit Diesel. This course also includes basic fundamentals of diesel engine design, including the study of cylinder heads and blocks, lubrication, air intake, exhaust, electrical, cooling, and fuel systems. Major tear down and measuring are included along with mastery of preventive maintenance and major repair, tune-up and testing on mobile and stationary diesel engines used in the heavy equipment industry. Safety and troubleshooting are stressed. Prerequisites: HCEM1101 and HCEM1140.

HCEM1250 Brakes 2
Instruction covers hydraulic and pneumatic brake theory and operation, component identification, application, and general repairs on heavy equipment. Safety and troubleshooting are stressed. Prerequisites: HCEM1101 or instructor's approval

HCEM1256 Diesel Engine Tune-up 3
This course includes component identification, testing procedures, problem analysis, valve and injection adjustment, pump replacement, and engine tune-up. Troubleshooting is stressed. Prerequisites: None.

HCEM1262 Preventative Maintenance 2
This course covers proper service intervals, the importance of maintenance records, the knowledge of oil classifications, refill capacities, importance of contamination control and proper oil sampling.

HCEM1270 CAT Basic Training II 2
The student will gain an understanding of the Caterpillar engine and product line with basic fundamentals of the diesel engine.

HCEM1271 CAT Basic Training 2
The student will gain an understanding of the Caterpillar engine and product line with basic fundamentals of the diesel engine.

HCEM2115 Transmissions 4
This is a technical course designed to promote understanding of powershift transmissions used in heavy equipment industry. Theory related to powershift transmissions and torque converters, along with basic fundamental principles of hydraulics, torque multiplication, gear ratios, disassembly, assembly, and adjustment procedures are covered. Prerequisites: HCEM1101 and HCEM1130 or instructor's approval

HCEM2135 Hydraulics I 3
This introduction to basic hydraulics is a prerequisite to related courses. The student will study principles of hydraulics, identification of components, operation, fluids, and preventive maintenance. Students will use test instruments such as high-pressure gauges and flow meters to troubleshoot and diagnose hydraulic pump efficiency and condition of related system components. System components are disassembled and reassembled, with adjustments made to main and circuit reliefs in accordance with manufacturer's specifications. Prerequisites: HCEM1101 and HCEM1130 or instructor's approval

HCEM2145 Hydrostatic Systems 3
Students study basic principles of operations, system components, testing procedures, repair techniques, adjustments, and preventive maintenance procedures. Prerequisites: HCEM1101 and HCEM2135 or instructor's approval

HCEM2177 Machine Electronics I 2
This course will focus on Machine Electronics. The course will start out with a review of Ohms law and series and parallel electric circuits. Sensors used in modern electronic systems will be covered including switches, PWM sensors, Analog sensors, speed sensors, on/off solenoids, PWM solenoids etc. We will cover electrical schematics, how to read them, find part numbers for electrical components and wiring harnesses and locate pin locations. We will cover electrical connectors and how to repair those including Deutsch, Sure Seal and Tyco/Amp connectors. We will discuss electronic system fault codes and how to troubleshoot them. We will discuss why we need to calibrate machines and do a live machine calibration.

HCEM2225 Track Drive Systems 3
This course provides the student with an understanding of track drive component operation and wear. Students study principles of operation, demonstrate safe jacking and blocking procedures, and study track, track frame, sprocket, idler, and roller removal and installation. Wear analysis and preventive maintenance are stressed. Adjustments are made according to manufacturer's specifications. Prerequisites: HCEM1101 and HCEM2115, or instructor's approval

HCEM2238 Hydraulics II 3
This course is designed for students with knowledge of hydraulic flow and pressure. Students learn National Standard Institute symbols used in fluid power diagrams. A technical study provides students with operational knowledge of computer-controlled multiple hydraulic systems. Students troubleshoot and diagnose hydraulic system malfunctions. Prerequisites: HCEM1101, HCEM1130, and HCEM2135, or instructor's approval

HCEM2256 Steering Systems 2
This course provides students with basic understanding of steering systems used on heavy equipment. The course begins with mechanical systems followed by intensive overview of hydraulic-assisted systems used on crawlers, articulated loaders, motor graders, and backhoes. Students study principles of operation, components, repair procedures, and adjustments.

HCEM2260 Machine Electronics II 2
This course is a continuation of Machine Electronics I. The student will do more in depth study of sensors and switches covered in Machine Electronics I. There will also be more troubleshooting of the sensors on actual machines in the lab. The student will be studying more in depth electrical schematics and electrical systems. The student will be using the Cummins Insight computer program to troubleshoot Cummins engines. The student will repair electrical systems on several different brands of equipment.

HCEM2265 Differentials 2
This course provides students with operational knowledge of differentials used in the heavy equipment industry, including standard, limited slip, controlled traction, no spin, and locking. The course covers principles of operation, gear ratios, disassembly, assembly, and adjustment procedures. Prerequisites: HCEM1101 and HCEM2115 or instructor's approval

HCEM2270 CAT Advanced Training III 2
The student will study the operational principals of machine systems such as Air Conditioning, Hydraulics and Powershift Transmissions.

HCEM2271 CAT Advanced Training 2
The student will study the operational principals of machine systems such as Air Conditioning, Hydraulics and Powershift Transmissions.

HCEM2280 Climate Control 2
Students will be taught how to perform routine maintenance and troubleshooting procedures in order to identify and repair or replace faulty components within a climate controlled cab in heavy construction equipment. Air-conditioning theory will be discussed. Prerequisites: HCEM1101, HCEM1130, and HCEM2135.

HCEM2960 HCEM Skill Development
HCEM Skill Development

HCEM2980 HCEM Special Topics
HCEM Special Topics

HEAVY DUTY TRUCK

HDTT1100 Truck Technology Fundamentals 4
This course covers shop procedures and safety in the truck shop such as safety in the use of hand tools, power tools, hoists, jacks, and other equipment used by a heavy duty truck technician. Different types and uses of fasteners, thread repair, and similar procedures will be discussed. Methods of record keeping, repair orders, and the use of repair manuals and related service publications will also be covered. The student will be familiarized with the basic fundamentals of operating heavy trucks. Included will be pre-start and pre-trip inspection procedures, basic operation of the vehicle, and shut-down procedures. Dropping and hooking and basic maneuvering of the trailer will be covered. Prerequisites: None

HDTT1103 Air Brake Systems 6
This course covers the theory of compressed air and its application to the brake system. Air system components will be identified and their functions studied individually and within the entire system. Emphasis will be placed on general repair and trouble-shooting. The course will cover identification of the mechanical components of the foundation brake system and their application, including all wheel/axle components. Theory of operation, removal, repair, and replacement along with diagnostic and testing procedures are covered in this course. Prerequisites: None

HDTT1106 Welding Procedures 2
This course covers basic position welding techniques of the different welding applications used in the heavy truck repair industry. This course will cover applications of oxyacetylene welding, brazing, cutting, heating, arc welding, and wire-feed (MIG). Prerequisites: None

HDTT1109 Fluid Power Systems 2
This course covers the introduction to basic hydraulics and is designed to promote understanding of hydraulic theory and application related to hydraulic systems, tools, and equipment used in heavy duty trucks. The student will study principles of hydraulics, operation, component identification, and preventive maintenance. Also included will be basic information pertaining to heavy truck hydraulic brake components. Prerequisites: None

HDTT1212 Preventive Maintenance 4
This course covers the importance and proper procedures of preventive maintenance and inspection schedules used for various types of heavy trucks and their applications. Students learn to perform inspections according to the standards of the Department of Transportation (D.O.T.) this course also offers the opportunity to participate in taking the test for certified inspector through the state of Minnesota. Prerequisites: None

HDTT1215 Suspensions and Steering Systems 4
This course covers the identification, inspection techniques, repair and adjustment procedures, and alignment checks of the components associated with the variety of frames and suspensions common to heavy trucks. Students will be instructed in identifying the various types of truck steering systems and components. The students learn and practice

inspection disassembly, reassembly, and alignment procedures. Manual and power steering sectors and pumps are included. Prerequisites: None

HDTT1218 Electrical Systems 4
This course covers the basic purpose and function of the various truck electrical systems, components, and instruments. Electrical theory, application, and diagnosis using typical test equipment will also be covered. Prerequisites: None

HDTT1223 Truck A/C 3
The student will gain an understanding of the Caterpillar electrical systems, Caterpillar ET, Caterpillar Fuel systems, Caterpillar Tier 3 engines, and basic hydraulic fundamentals.

HDTT2101 Drive Train I 6
This course covers repairing, rebuilding, and diagnosing problems in transmissions and differentials. Students are taught how to remove, inspect, and replace gears, shafts, bearings, seals, and other components using the proper tools and procedures. Prerequisites: None

HDTT2104 Drive Train II 4
This course covers the theory of operation, repair, removal, inspection, and installation of the clutch and drive shafts. Prerequisites: None

HDTT2107 Diesel Fundamentals 3
This course covers the basic theory, operation, and understanding of the two- and four-stroke cycle diesel engine. The compression ignition engine principles and the engine's components will be covered, along with the disassembly, inspection, evaluation, reassembly, and proper torque techniques which are used on this type of engine. The different engine tools and their proper usage will also be covered. Prerequisites: None

HDTT2110 Diesel Fuel Systems 1
This course will cover the basic operation, theory, and understanding of non-electronic diesel fuel systems. Each of the components, their operation, usage, and internal parts will be covered and then tied together to show the student the complete fuel system. Prerequisites: None

HDTT2213 Diesel Engine Fundamentals 4
This course covers the basic components of the diesel engine as well as their removal, inspection, cleaning, repair, proper measuring, replacement, and/or reuse. Prerequisites: HDTT2107

HDTT2216 Diesel Electronics 3
This course covers the basics of the electronically-controlled engines found in the trucking industry today. The components and their usage, testing, diagnosis, repair, and replacement will be covered. The student will be expected to use a wide variety of diagnostic test equipment. Prerequisites: HDTT1218

HDTT2228 D.O.T. Certification 1
This course covers the proper method of performing the federal and state D.O.T. truck inspection. Use of inspection forms and permit stickers will also be covered. After completion of this course and final exam, the student will be a certified truck inspector and able to perform both federal and Minnesota D.O.T. inspections. Prerequisites: None

HDTT2230 Heavy Duty Truck Industry Training 2
This on-line course covers diesel engine component identification, operation, troubleshooting techniques and procedures, service guidelines, and problem solving procedures used on class 7 and 8 on-highway trucks.

HDTT2960 Heavy Duty Truck Skill Building
Skill Building

HDTT2970 Heavy Duty Truck Internship
This course is an elective for diploma-seeking students and with the instructor's prior approval, can take the place of HDTT2222. However, this course is required for the A.A.S. Degree student as a three-credit internship. This course will allow the students hands-on experience while working at their place of employment. There is a list of required job tasks which the student will perform on the job thus acquiring valuable work experience.
Prerequisites: None

HDTT2980 Heavy Duty Truck: Special Topics
Heavy Duty Truck: Special Topics

HEALTH CAREERS

HEAL1000 First Aid / CPR 1
This course covers the knowledge and skills that are needed for emergency care of the injured or ill until medical care can be obtained. It should also serve to create an active interest in the prevention of accidents and illnesses. This course covers the knowledge for prevention of unnecessary death from heart attack, the signals of a heart attack, and the actions for survival. Basic skills performed in the management of basic life support are in accordance with standards set by the American Red Cross. (Attendance is mandatory in this course. No excuses are accepted. No makeup is scheduled.)

HEAL1005 The Role of the Health Care Technician 2
The Role of the Patient Care Technician course provides students with the knowledge and understanding of the skills and duties required of Patient Care Technicians.
Topics covered in this course includes: function of the Health Care Tech in a number of settings including (hospital, clinic, office, mobile service, long term care) and more. Patient confidentiality and legal aspects of the Health Care Technician along with safety and work ethics are discussed. The course covers basic aseptic technique and infection prevention along with preparation of the patient for examination and treatment.
Information regarding the National Certification Certified Patient Care Technician (CPCT) is further discussed related to the AAS degree.

HEAL1010 CPR For the Professional Rescuer 1
This course covers the knowledge and skills that are needed for emergency care of the injured or ill until medical care can be obtained. It is designed as a review for those who are professional rescuers, e.g., nurses, firefighters, police officers, lifeguards, etc., who need to renew their CPR certification every year. Basic skills performed in the management of basic life support are in accordance with standards set by the American Red Cross. (Attendance is mandatory in this course. No excuses are accepted. No makeup is scheduled.)

HEAL1011 Introduction to Health Care 1
The Introduction to Health Care course provides students with an overview of health care occupations. Topics covered in this course include: jobs available in health care, including education requirements, work environments, and typical positions for health care careers; necessary aptitudes, skills, and ethics of a health care worker; patient confidentiality; professionalism; and interpersonal communications.

HEAL1012 Workplace Training Standard First Aid 1
This course is designed to give individuals the knowledge and skills necessary to recognize and provide basic care for injuries and sudden illness in the workplace until advanced medical personnel arrive and take over. Course includes modules on Ergonomics; Back Injury Prevention; Workplace Violence Awareness; Preventing Disease Transmission; Adult CPR/AED; Slips, Trips and Falls; Stress Management; and Heart of the Matter. THIS COURSE IS THE SAME AS HLTW1012.

HEAL1015 Introduction to Health Care 2
The Introduction to Health Care course provides students with an overview of the health care field and health care occupations. Topics covered in this course include: the fundamentals common to all health care occupations (patient confidentiality, legal and ethical issues, personal and workplace safety, the human body, professionalism, communication, medical terminology), health care today, health care systems, and technology in health care.

HEAL1020 Advanced First Aid 1
This course covers the knowledge and skills necessary to provide emergency care of the injured or ill until advanced medical care arrives. This course provides in-depth knowledge as well as advanced first aid skills. First aid skills are in accordance with the guidelines of the National Safety Council. (Attendance is mandatory in this course. No excuses are accepted. No makeup is scheduled.)

HEAL1030 Emergency Care for Technical Trades 3
This is an industry-related course that covers the knowledge and skills that are needed for emergency care of the injured or ill until medical help may be obtained and creates interest in the prevention of accidents and illness. This course covers the knowledge for prevention of death from heart attack or stroke and the signals and actions for survival. Covered also are the care and prevention of natural element conditions that may become life threatening situations. Basic skills performed in the management of basic life support are in accordance with standards set by the National Safety Council.

HEAL1035 Wilderness First Aid 1
This course covers the knowledge and skills necessary to care for those who are injured or suddenly ill in remote locations. The Wilderness Medical Society defines wilderness as a remote geographical location more than one hour from definitive medical care. The information taught in this course will provide you with the "what to look for" and the "what to do's" necessary to successfully manage injuries and sudden illnesses that occur in delayed help situations. This course targets outdoor enthusiasts (hikers, skiers, hunters, climbers, etc.), individuals who work in remote areas, (farmers, foresters, linesmen, truckers, ranchers), people who live in areas where the EMS system may not be able to respond immediately to an emergency (small communities, ranches, and vacation homes), as well as for those who travel in countries where medical care may be inadequate or difficult to reach.

HEAL1040 Emergency Care on the Job 2
This is an industry related course that covers the knowledge and skills that are needed for emergency care of the injured or ill until medical help may be obtained and also to create interest in the prevention of accidents and illness. This course covers the knowledge for prevention of death from heart attack or stroke and the signals and actions for survival. Covered also are the care and prevention of natural element conditions that may become life threatening situation also. Basic skills performed in the management of basic life support are done according to standards set by the National Safety Council. Prerequisite: None.

HEAL1060 Nursing Assistant 5
This course introduces concepts of basic human needs and the function of the nursing assistant in long term care and or home health care. Basic nursing skills will be demonstrated and practiced in the laboratory setting. Upon successful completion of classroom studies, the student will participate in 24 hours of supervised clinical experience in a long term care setting. This course is a prerequisite for the Practical Nursing Program. It meets the objectives of Federal State Statutory requirements for nursing assistant training. Prerequisites: None. Individuals who provide direct contact services to clients of licensed facilities are required to have complete criminal background studies. Disqualified persons will not be permitted to work in these facilities.

HEAL1075 Trained Medication Aid 3
This program provides an overview of the requirements concerning medications and their administration. Other topics include legal criteria, medical abbreviations, medical math and basic dosage calculations, use of the Physician's Desk Reference (PDR) along with current medication handbooks. A basic overview of body systems and drug classifications are included. Administration of medications via oral, eye, ear, rectal, topical and inhalant routes will also be covered. Attendance of all classes is mandatory; any absence will may result in repeating the course. Students must attain 90% on all examinations to continue in the class.

HEAL1080 Phlebotomy 3
The Phlebotomy course prepares students to collect blood specimens from patients for the purpose of laboratory analysis. Students will be provided with the knowledge and skills necessary for careers in outpatient or inpatient settings. The course consists of medical terminology and anatomy and physiology (as applicable to phlebotomy), safety procedures, customer service skills, laboratory processing, blood collection procedures, and hands-on procedures. Students have the ability to become eligible for the National Health career Association (NHA) phlebotomy certification exam if the NHA requirements are met.

HEAL1101 Anatomy and Physiology 4
This course is an introduction to the structure and function of the human body. Focus will be on the study of each individual organ system and the interaction of each system with the rest of the body.

HEAL1150 Health Career Mathematics 1
This course will assist students in mastering the skills necessary to determine drug dosages. Applicable basic skills will be reviewed, followed by proportions and a study of the metric system and the apothecaries' system. A major portion of the time will be spent solving drug dosage word problems. Prerequisite: Qualifying scores on ACCUPLACER Arithmetic test.

HEAL1400 Nutrition and Diet Therapy 2
This course provides a study of basic nutritional concepts. Diet guidelines and menu planning are emphasized using the Food Guide Pyramid. Therapeutic diets are discussed as related to specific disease conditions. Prerequisites: HEAL1000, HEAL1050, AND OFFC1045.

HEAL1502 Medical Terminology 2
This course is an introduction to building medical terms and learning the meanings. Students will learn combining forms, word roots, prefixes and suffixes, and how these word parts apply to building medical terms. Students will also learn common medical abbreviations and symbols.

HEAL1750 Nutrition and Diet Therapy 3
This course provides a study of basic nutritional concepts. Diet guidelines and menu planning are emphasized using the Dietary Guidelines for Americans and ChooseMyPlate Food Guide. Therapeutic diets are discussed as related to specific disease conditions, with emphasis on management of restricted sodium, modified fat and cholesterol, and diabetic and calorie controlled diets.

HEAL1800 First Aid / CPR for the Allied Health Care Provider 1
This course covers the knowledge and skills that are needed for emergency care of the injured or ill until medical care can be obtained. It should also serve to create an active interest in the prevention of accidents and illnesses. This course is designed for those needing more advanced knowledge and skills than the layperson; medical assistants, personal trainers, lifeguards, police officers, and patient care technicians. Basic skills performed in the management of basic life support are in accordance with standards set by the American Heart Association.

HEAL2010 EKG and Telemetry 6
This comprehensive 6 credit course will prepare students to be an EKG Technician and take the Certified EKG Technician (CET) exam. An EKG Technician attaches electrodes to the patient's body which then send a signal to a machine displaying the activity in a recognized pattern. The technician will recognize abnormalities in EKG tracings and report them

to a physician or other authorized healthcare providers for interpretation. Students will study: cardiac anatomy and physiology, EKG equipment (attaching to patients, proper safety and operation, recognize artifacts and resolve problems), how to recognize tracings that deviate from normal and prioritize reporting of such deviations, heart rhythms and waveforms, obtain basic vitals, HIPAA compliance, use of Holter monitors, introduction to stress tests and 12-lead EKGs, and more.
Prerequisites: HEAL1800

HEAL2011 EKG and Telemetry 3
This course will prepare students to be an EKG Technician and take the National Healthcareer Association (NHA) EKG Technician exam. An EKG Technician attaches electrodes to the patient's body which then send a signal to a machine displaying the activity in a recognized pattern. The technician will recognize abnormalities in EKG tracings and report them to a physician or other authorized healthcare provider for interpretation. Topics covered in this course include: 12- lead EKGs, cardiac anatomy and physiology, EKG equipment, proper placement of electrodes on patients, operation of EKG equipment, patient safety, recognizing artifacts and resolving problems related to EKG equipment, recognizing tracings that deviate from normal and how to prioritize reporting of such deviations, heart rhythms and waveforms, basic patient vital signs, HIPAA compliance, use of Holter monitors, and an introduction to stress tests. Prerequisites: HEAL1800, HEAL 1015, HEAL 1080, HEAL 1060, HEAL 1075, BIOL 1500

HEAL2500 Medical Office Skills for the Health Care Technician 3
This course provides an orientation to the health care delivery system, health records, and basic health information as it applies to the Health Care Technician. A study of the basic concepts of medical record science includes the Medication Record (Pyxis) and basic office technology. The course will provide information and simulation skills in areas such as: the medical record, assembly of records and soft skills including customer service and communication skills needed in the healthcare setting. Basic documentation skills related to medical information and core office personnel skills are introduced as they relate to the healthcare profession.

HEAL2505 Medical Office Skills for the Patient Care Technician 3
The Medical Office Skills Technician course provides the student with the administrative skills necessary for being a Patient Care Technician. The course consists of topics such as electronic health records, documentation, patient records, insurance, and medical coding as they apply to inpatient and outpatient settings.Pre-requisites: HEAL 1015, HEAL 1080, HEAL 1800, HEAL 1060, HEAL 1075, BIOL 1500

HEAL2600 Job Readiness/Certification Exam Preparation 2
The Job Readiness/Certification Exam Preparation course prepares students for their career as a Patient Care Technician and for the certification exam. Students will develop cover letters, resumes, and interview skills. Study skills for the certification exam review will also be covered. The certification exam will be administered in this course as well. This course is for Patient Care Technician students in their last semester of coursework.

HEAL2601 Job Readiness 1
The Job Readiness course prepares students for their career as a Patient Care Technician. Students will develop cover letters, resumes, and interview skills. Emphasis is placed on role transition from student to a Patient Care Technician. This course is for Patient Care Technician students in their last semester of coursework.Pre-requisites: HEAL 1015, HEAL 1080, HEAL 1800, HEAL 1060, HEAL 1075, BIOL 1500

HEAL2602 Certification Exam Preparation 1
The Certification Exam Preparation course prepares students for the National Healthcareer Association (NHA) certification exam. This course will focus on reviewing the Patient Care Technician program content, such as phlebotomy, EKG, patient confidentiality, and patient care. Students will also develop their study skills for the certification exam. This course is optional for Patient Care Technician students in their last semester of coursework.

HEAL2700 Capstone 3
This course provides students with the opportunity to function more independently in the simulation/clinical setting. Emphasis is placed on critical thinking and role transition from student to graduate nurse. Students are assigned to work as members of the health care team in the simulation setting. This course is for Health Care Technician students in their LAST semester of coursework.

HEAL2980 SPECIAL TOPICS: Health Careers
SPECIAL TOPICS: Health Careers

HISTORY

HIST1350 World War II 3
HIST1100 History of the United States to 1877 4
This class is a survey of American history from early Native Americans to Reconstruction. It consists of a combination of primary and secondary sources that focus on the major political and social changes of America to 1877.Meets MnTC Goal 5 Meets MnTC Goal 5,

HIST1200 History of the U.S. from 1877 to the Present 4
This course will survey the major historical events of the United States from 1877 to the present. The text emphasizes political and social developments while the secondary readings provide a closer examination of this period's major themes. Meets MnTC Goal 5

HIST1300 World History 4
Big History is a new approach to World History that widens the scale of study from a few thousand years to the entire past. Rather than studying World History through the lenses of different cultures, nations, and civilizations, Big History starts 13 billion years ago and attempts to place the human species in the context of the universe. This course begins with the scientific account of the universe's beginnings and then describes the formation of the earth including its flora and fauna. The majority of the course concentrates on the major trends and developments of human societies from the Paleolithic, throughout the agararian, and into the modern era. Prerequisites: College reading level recommended.
Meets MnTC Goal 5 and MnTC Goal 8

HIST1350 World War II 3
Historical introduction to World War II including analysis of such topics as the causes of war and peace; strategy, tactics, and technologies in the major theatres; political and military leadership; and war crimes. Prerequisites: None.
Meets MnTC Goal 5

HIST1360 World History to 1500 4
This history course explores world civilizations from prehistoric roots to Sumer, Egypt, Assyria, Israel, China and Southeast Asia, India, Greece, Rome, Africa and Europe to the Renaissance. Topics include political, cultural, religious, economic, intellectual and artistic development across regions and time.
Prerequisites: None.
Meets MnTC Goals 5, 8

HIST1361 World History Since 1500 4
This history course explores world civilizations to the present from the Reformation and Enlightenment in Europe to Modern East Asia; the rise of transatlantic and transpacific societies to industrial revolution; and from the emergence of nationalism and the age of ideologies to the global marketplace. Prerequisites: None.
Meets MnTC Goals 5, 8

HIST1400 American Environmental History 3
This 100% on-line lecture course examines the interaction between humans and the natural world in the United States from the ice age to the present. The course considers such diverse topics as the industrialization and urban growth on the environment, the emergence of ecology and green politics, and creation of the idea of Nature in American culture. Students will be expected to develop a historical understanding of the major themes of American environmental history; relationships between human activity and pollution, emergence of reform movements and environmental regulations, relationships between increasing urban growth and increasing environmental concern, and the rise of environmental politics in both local and national settings. Prerequisites: None.
Meets MnTC Goal 5 and MnTC Goal 10

HIST1450 The History of Minnesota 3
This 3 credit history course explores the history of Minnesota from the ice age and early Native Americans to the events of today. Through a combination of textbooks and internet sites students can gain an appreciation of the contributions made by those who came before us in the state we now call Minnesota. (Field trips may be required.) Prerequisites: None.
Meets MnTC Goal 5

HIST1500 History of Western Civilization 3
This course examines the nature of the Western world and how it has shaped the men and women who are its heirs. Students will understand the role Western civilization has and is playing in the worldwide civilization of the present day. The course focuses on the outstanding institutions, ideas, and creative works that have formed (and expressed) Western civilization, as well as on Western interactions with other civilizations in the past and present. As Shakespeare observed, "What's past is prologue." Prerequisites: None.
Meets MnTC Goal 5

HIST1550 America in the Vietnam Era 3
Historical introduction to the Vietnam War and the dramatic social, economic, cultural and political transformations of the Vietnam era. Includes the French Conquest, rise of nationalism, WWII and Cold War containment, secret CIA operations, civil rights movement, Environmental movement, Black Power, counterculture, political murder, anti-war movement, Watergate, Pentagon/VA transgressions, normalizations. Meets MnTC Goal 7, 9,

HIST1600 America, the Civil War, and the 19th Century 3
This course is designed to introduce students to the varied experiences of Americans, North and South, during the Civil War Era. It explores the causes and outcomes of the Civil War as well as the events of the war itself. This class also examines how gender shaped the war experience and how the war's legacy affected the decades that followed. Topics covered include slavery, the Market Revolution, abolition, succession, Civil War battles, life on the home front, contributions by women and African-Americans, Reconstruction, post-war industrialization, and war commemoration. Using primary and secondary sources, students will explore the war from its roots through its aftermath. Meets MnTC Goal 5.

HUMANITIES

HUMA1100 Introduction to Humanities 4
This course emphasizes eight disciplines as they have grown and influenced each other and the societies that produced them through the ages in western history. These disciplines are: literature, art, architecture, philosophy, music, science, religion, and technology. The course will include analysis of written text, pictures, and ideas. Meets MnTC Goal 6 and 8

HUMA1125 The Humanities in Modern Minnesota 3
This course emphasizes six of the disciplines that make-up the humanities (literature, art, architecture, philosophy, music, science, religion, and technology) and looks at how Minnesotans have been defining and influencing our local and national culture for the past fifty years. The course will include analysis of written texts, art, architecture, music, science, performances, and ideas.Meets MnTC Goal 6 .

HEATING, VENTILATION, AIR CONDITIONING & REFRIGERATION TECHNOLOGY

HVAC1100 Alternative Heating and Cooling Methods 2
This course will provide the student with an understanding of alternative heating and cooling applications and installations. Students will gain a working knowledge of a solar thermal and geothermal heating and cooling system including but not limited to: how the controls work within the system, panel installation, piping and site assessment/survey. Also covered will be gas fireplaces, pellet/corn stoves and wood fired boilers. The course will use lectures, handouts, media presentations and a structured lab to deliver the subject material. Prerequisites: None

HVAC1110 Indoor Air Quality 1
Indoor air quality is an important consideration for the HVAC technician. This course familiarizes the student with accessories utilized in the HVAC field to improve indoor air quality. Topics covered include the different types of air filters, electronic air cleaners, UV air purifiers, air quality sensors, fresh air ventilation, humidifiers/dehumidifiers and heat/energy recovery ventilators.

HVAC1120 Refrigeration Principles and Applications 4
This course covers the theory and the basics of residential and commercial compression refrigeration systems. A refrigeration trainer will be built by each student to supplement the theory delivered in the classroom.

HVAC1130 Tool Usage, Brazing and Soldering Techniques 2
This introductory class introduces students to the tools required for a career in the HVAC field. Proper use of several types of torches, solders and brazing materials are included. Students will acquire the skills necessary to complete clean, leak free joints. Prerequisites: None

HVAC1140 Electric Motors/Controls/Schematics 2
This course covers the operating principles of electric motors and control components used in the HVAC/R field.

HVAC1150 Halide Refrigerants Certification 2
This course provides an understanding of characteristics of common refrigerants used in equipment installed and serviced by HVAC/R technicians. This course also addresses environmental concerns, federal and state regulations (Minnesota and Wisconsin) on refrigerants and procedures, and use of recovery equipment. New refrigerants and methods of leak detection will also be covered. Before completing the course, the student will perform hands on recovery procedure. The course includes approved testing to meet EPA technician certification requirements.

HVAC1160 Employability, Problem Solving and Customer Relations 2
This course covers the study of relationships with co-workers, supervisors, and customers. Also covered are job-seeking and employability skills. Topics include attitudes, behaviors, and techniques for achieving success on the job, human relations, job relocation techniques, informal interviews, job applications, and mathematical problems pertaining to the HVAC/R technician.

HVAC1170 Introduction to Basic Electricity 2
This course covers the fundamental concepts of electricity. Students will utilize Ohm's law, construct basic circuits, and learn the operation of basic test equipment.

HVAC1200 Forced Air Heating Systems 4
The student will identify furnace electrical components and circuits, basic procedures required to service and install standard gas, oil and electric furnaces, belt-drive and direct drive blowers, humidifiers and air filtration techniques.

HVAC1210 Hydronic Heating Systems 2
This course is designed to familiarize the student with boiler safety and operation. Properly operating boiler safety controls, operating controls, proper placement of shut off valves and water level check valves are all very important to boiler operation and customer safety. In addition fluid flow principles, piping design and applications, hot water and steam system operation and maintenance are important aspects for troubleshooting and repair of wet systems. Each is explained in detail with some practical applications during this course. The principles of hydronic heat are studied, starting with an introduction of hydronic heat, heat load calculations, heat sources, fluid flow, pumps and emitters, and controls.

HVAC1230 Ventilating Systems and HVAC Installation 4
Indoor air quality is an important consideration for the HVAC technician. This course familiarizes the student with sheet metal fabrication and layout procedures. Construction blueprint reading and duct sizing is covered. Individualized instruction packets cover electronic air cleaners, air handler service procedures, multizone systems and the basic operation of economizers and make-up air units.

HVAC1240 Air Conditioning and Heat Pump Service 3
Knowledge of the maintenance, servicing and charging of residential and commercial air conditioners and residential heat pumps is covered. The student will replace components, test pressures and temperatures and perform charging and refrigerant recovery procedures. The student also will troubleshoot air conditioners, heat pumps, and rooftop heating-cooling units.

HVAC1250 Commercial Refrigeration 3
The student will learn about various types of commercial refrigeration equipment, the necessary controls and the proper operation. Equipment will include walk in and reach in coolers and freezers as well as ice machines. Also covered will be proper maintenance procedures as well as troubleshooting and schematic diagrams.

HVAC2960 Specialized Lab 1
This lab course provides the student with the opportunity of obtaining a higher level of proficiency in performing the equipment service learned in current or previous HVAC courses. The student may be asked to perform instructor requested shop work. This is an elective course that should be used to provide extra lab time for the student. This credit is not a requirement for graduation.

INTERIOR DESIGN

IDES1010 Introduction to Photoshop / Dual listed with VCOM 1010 2
T This is an introduction of the basic tools used for image manipulation in Adobe Photoshop. Image modification and compositing, use of the scanner, and mastery of Photoshop tools are stressed. Image adjustment and enhancement and layer masks are also taught. Prerequisites: None. DUAL NUMBERED COURSE VCOM1010.

IDES1050 Scale and Perspective Drawing (Dual listed with VCOM 1051) 2
This beginning drawing course covers drawing techniques for drawing linear perspective in a rapid manner. Drawing without tools is emphasized although tool use is explained and demonstrated by the student for both sketchbook drawing and drafting board drawing. One, two and three point drawing is explained as well as drawing style and use of color. DUAL NUMBERED WITH VCOM1051. Prerequisites: None.

IDES1060 Creative Problem Solving (Dual listed with VCOM 1060) 3
In this course various methods of solving creative problems will be explored through design projects. The elements and principles of design will be utilized applying methods of creative problem solving. DUAL NUMBERED WITH VCOM1060. Prerequisites: None.

IDES1101 Design Fundamentals 4
This course covers the elements and principles of design: line, shape and form, space, texture, color and balance, proportion and scale, unity and harmony, and emphasis, in two-dimensional and three-dimensional formats. Color will be a focus, include the study of hue, saturation, and intensity, and how color affects people and interior space.

IDES1111 Drafting I 4
This course covers basic skills for generating and reading manual and computer-aided drawings for design and construction. Students will learn industry graphic standards for 2-dimensional drawings, including line quality and drawing nomenclature. Industry standard formatting for various drawing types and sheet sizes will be addressed.

IDES1112 Introduction to SketchUp Modeling Software (Dual listed w/ ARCT 1300) 3
This course will introduce the motivated student to 3 dimensional modeling software currently being used in professional design offices. Fundamental concepts, commands, and tools of the SketchUp will be taught in an enhanced on-line learning environment. There will be two on site formal lectures introducing basic concepts and ten on-line sessions. Students will submit required projects, questions and comments, to D2L server. Students will complete self-paced tutorials available at the following web address: http://www.sketchup.com. Prerequisites: The student will have a working knowledge of Mac OS and/or Windows XP. It is recommended the student have a background in either drafting, art or computer graphics. DUAL NUMBERED COURSE ARCT1300.

IDES1121 Critical Thinking and Programming 4
This course introduces students to the critical thinking skills used in the design process of interior spaces. Cultural anthropology, anthropometrics, universal design, and ergonomics will be studied. Students will synthesize these factors to generated strategic layouts for interior environments. The initial phases of the design process - programming (gathering project information) and schematic design (develop preliminary concepts) will be explored.

IDES1136 Presentation Techniques I 4
This course covers the process of making visual and verbal presentations. These presentations will be focused on the appropriate industry needs. The visual material will cover sketching and rendering techniques, and the preparation of one-point and two-point perspective drawings. Students will also learn proper techniques and design criteria for board presentation. The verbal component of the class will cover and apply techniques for a successful design presentation.

IDES1137 Presentation Techniques I 3
This course covers the process of making visual and verbal presentations. These presentations will be focused on the appropriate industry needs. The visual material will cover sketching and rendering techniques, and the preparation of one-point and two-point perspective drawings. Students will also learn proper techniques and design criteria for board presentation. The verbal component of the class will cover and apply techniques for a successful design presentation.

IDES1207 Residential Studio I 4
This course covers the basic skills necessary to design both public and private interior spaces in a home. The interior design process will be applied, with an emphasis on the design development phase (refining the design concept and focusing on design details). Sustainable design principles for housing will be introduced, including industry rating systems. Students will investigate furnishings, lighting and finish material sources in progressively complex residential interior design projects. Design fundamentals, critical thinking skills, presentation techniques and verbal presentation skills will be utilized.

IDES1211 Drafting II 4
This course covers intermediate skills for generating and reading computer-aided drawings for design and construction. Students will generate drawings used throughout the design process, including industry graphic standards and formatting. Computer software and hardware appropriate to entry level job positions will be used.

IDES1218 Commercial Studio I 4
This course covers the basic skills necessary to design both public and private interior spaces in a commercial setting. The interior design process will be applied, with an emphasis on the design development phase (refining the design concept and focusing on design details). Sustainable design principles for commercial spaces will be introduced. Students will investigate furnishings, lighting and finish material sources in progressively complex commercial interior design projects. Design fundamentals, critical thinking skills, presentation techniques, and verbal presentation skills will be utilized.

IDES1231 History of Architecture and Interiors 4
This course covers the history of architecture and interiors, from ancient times through the 21st century, with which an interior designer must be familiar for use in industry applications. Particular focus is placed on the history of furniture during these periods.

IDES1232 History of Architecture and Interiors 3
This course covers the history of architecture and interiors, from ancient times through the 21st century, with which an interior designer must be familiar for use in industry applications. Particular focus is placed on the history of furniture during these periods.

IDES1241 Presentation Techniques II 3
This course covers computer based design visualization practices. These practices will be focused on the appropriate industry needs. Students will utilize computer based color application techniques to create rendered presentation drawings. Three-dimensional computer modeling processes and digital image editing will be employed. Strategies for effective visual presentations will be integrated into course work, including electronic presentation layouts. Verbal presentation skills will be utilized.

IDES1250 Sustainable Building Systems and Regulations 4
This course covers basic residential and commercial construction methods and materials, building systems, and sustainable design principles, including floors, walls, and ceilings. Interface of mechanical, plumbing, electrical, telecommunications, and environmental systems in buildings will be addressed. Students will study building codes and regulations for application in interior design studio courses.

IDES1251 Sustainable Building Systems and Regulations 3
This course covers basic residential and commercial construction methods and materials, building systems, and sustainable design principles, including floors, walls, and ceilings. Interface of mechanical, plumbing, electrical, telecommunications, and environmental systems in buildings will be addressed. Students will study building codes and regulations for application in interior design studio courses. Prerequisites: IDES 1211, IDES 1207, IDES 1218

IDES2107 Color and Light 4
This course continues the study of color principles, theory and psychology, and how color affects people and interior space. Light sources, lighting systems, environmental factors and lighting design methods will also be studied. Students will investigate the dynamics of color and light in interior environments while developing knowledge of lighting techniques and their effects.

IDES2108 Color and Light 3
This course continues the study of color principles, theory and psychology, and how color affects people and interior space. Light sources, lighting systems, environmental factors and lighting design methods will also be studied. Students will investigate the dynamics of color and light in interior environments while developing knowledge of lighting techniques and their effects. Prerequisites: NONE

IDES2111 Materials and Estimating 4
This course provides students with information that will allow them to establish a systematic approach to selecting materials for interior environments. Students will also create specifications for interior materials, emphasizing code requirements and testing standards. Environmental issues and concerns in relation to the product materials will be addressed. Textiles and their use in residential and commercial interiors are presented. Students will learn the appropriate estimating techniques to determine accurate material amounts for any given job. The overall appropriateness and manufacturing process combined with the use of materials for walls, floors and ceilings will be emphasized.

IDES2137 Commercial Studio II 4
This course covers the interior design of public spaces. The design process will be applied, with emphasis on the design development phase (refining the design concept and focusing on design details) and the contract documentation phase (construction drawings and specifications). Students will continue to address commercial furnishings, lighting and finish materials. Synthesis of design elements and principles, building systems and regulations, sustainable design principles and product application will be used in progressively complex commercial interior design projects.

IDES2147 Residential Studio II 4
This course covers the basics of residential kitchen and bathroom design. The course uses the guidelines published by the National Kitchen and Bath Association (NKBA) as well as universal design and sustainable design principles. Spatial analysis, material and product selection, construction drawings and product specification are addressed. Students will utilize computer software specific to the residential kitchen and bath industry.

IDES2201 Business Practices 4
This course emphasizes the business practices specific to the interior design industry, including professional ethics, organizational procedures, marketing and sales, and business plan components. The course will also focus on exploring career directions in interior design, including tools and information necessary to obtain an internship position upon the completion of interior design course work.

IDES2202 Business Practices 3
This course emphasizes the business practices specific to the interior design industry, including professional ethics, organizational procedures, marketing and sales, and business plan components. The course will also focus on exploring career directions in interior design, including tools and information necessary to obtain an internship position upon the completion of interior design course work. Prerequisites: IDES 2147 and IDES 2107

IDES2211 Senior Studio 5
This is a Capstone course that serves as a culmination of design skills and knowledge from all interior design courses. Students have the

opportunity to select a residential, kitchen and bath, or commercial studio project. Students' projects will utilize the design process, which includes programming/strategic planning, schematic design, design development and contract documentation. The outcomes must qualify for portfolio inclusion and will be juried by industry professionals.

IDES2300 Principles of Marketing / Dual listed with MKTC 10003
Introduction to marketing terms, concepts, and skills useful in analyzing marketing problems. Covers legal, behavioral, ethical, competitive, economic, technological and international factors affecting product, pricing, promotion, and marketing channel decisions. Identify factors marketing managers take into account when creating a marketing plan, including buying behavior, market segmentation, product life cycle, packaging, branding, pricing, advertising, sales promotion, public relations, personal selling, and product distribution methods. DUAL NUMBERED WITH MKTC1000. Prerequisites: None.

IDES2310 Fundamentals of Sales/ Dual listed with MKTC 1100 3
Introduction of the basic principles and applications of the sales process as they may apply to industrial, wholesale and retail selling situations. This would include prospecting and qualifying, planning and pre-approaching, approaching the customer, the sales presentation/ demonstration, handling objections, closing the sale and post-sale service and follow-up with customer. DUAL NUMBERED WITH MKTC1100. Prerequisites: None.

IDES2320 Professional Sales / Dual listed with MKTC1200 3
Course examines the knowledge and skills required of an effective salesperson. Students will examine methods of identifying prospects, securing appointments, pre-approach planning, gaining attention and interest, understanding prospects' wants and needs, obtaining agreement of concerns and solutions, showcasing product benefits, handling sales resistance, identifying and responding to buying signals, sale-closing techniques, post-call analysis and customer retention techniques. DUAL NUMBERED WITH MKTC1200. Prerequisite: None

IDES2400 Portfolio 2
This is a Capstone course to develop a presentation portfolio utilizing multimedia and printed applications. Students will generate a professional portfolio comprised of project work completed in studio courses within the program. Portfolios will be refined and presented to industry professionals in a Portfolio Review.

IDES2970 INTERNSHIP: Interior Design 4
Upon the satisfactory completion of and/or current enrollment in all IDES coursework, this on-the-job training will provide the interior design student with the opportunity to participate in an internship position within his/her determined area of interiors to strengthen skills in a real design environment. Established design goals from IDES 2100 will be applied in selecting the location and type of design specialty most appropriate to each student. The course is completed after the exterior notebook, hours, and a conference with each student's internship faculty representative is recorded. Each participant is to complete 224 hours of internship work. Prerequisites: Current enrollment in and/or completion of ALL IDES coursework.

IDES2980 SPECIAL TOPICS: Interior Design
SPECIAL TOPICS: Interior Design

IDES2981 Special Topics:
Special Topics

IDES2982 Special Topics:
Special Topics

IDES2990 Independent Study
Independent Study

INDIVIDUAL STUDIES

INDS1000 Individual Studies Career Exploration 1
This course is designed for the planning efforts of students who are enrolled in the Individualized Studies major. This interactive course is for individuals to uncover the career exploration process by understanding how personal characteristics develop interests, values, and abilities as they relate to career choices. This course is required for Individualized Studies students in their first semester and will result in a comprehensive plan for degree completion at the college. Prerequisites: Student must be an Individual Studies major.

INDS1010 Credit for Prior Learning 1
This course will guide students in their first semester through the creation of an individualized degree plan for the Business Management AAS degree program or other participating program at the college. Students will assess their previous education, prior learning from work and life experience and develop a portfolio of prior learning which will be submitted for review. Any credit(s) awarded will be in compliance with the standards, principles, and procedures as published by the Council for Adult and Experiential Learning. Course can be repeated up to six credits. Prerequisites: Program advisor approval.

INTERDISCIPLINARY STUDIES

INTS1010 Job Search Skills 1
This course is designed to introduce students to the fundamentals of planning and organizing job search strategies. Emphasis is placed on identification of individual goals, assessment of talents, exploration of career options, analysis of the job market, effective use of employment search tools (e.g. resume, cover letters, interviewing, networking), and management of career pathways.

INTS1040 Sharing Your Culture 1
This course is intended for international students. It requires them to present information about their native country and culture to various groups. Course topics include research of cultural organizations and resources, organization of practice in presentation delivery, participation in multicultural activities, and performance of community service. This class is reserved for International students accepted into a DCTC program of study, attending full-time under an F1 visa. Prerequisites: None.

INTS1050 TRIO First Year Experience 2
This course is designed to teach students the skills to succeed in college. The topics include time management, note taking, test taking, college resources, motivation, organizational skills, learning styles, memory techniques, and stress reduction. Prerequisites: Students must be in the TRIO program.

INTS1060 TRIO First Year Experience Critical Thinking 1
This course is designed to build on INTS1050 and continue to work with students on the skills to succeed in college. The topics include critical thinking, effective discussions, organization, testing, and learning difficulties. Prerequisites: Students must be in the TRIO Program.

INTS2002 Leadership for Student Diplomats 1
This course is designed to assist students in improving their campus knowledge and gaining leadership skills. This knowledge is important for their personal growth and for carrying out Diplomat responsibilities. This is a 16-hour, one credit repeatable course with P/NC grading. Prerequisites: INTS1001 Student Leadership Academy, preferred

INTS2980 Special Topics:
Special Topics:

INFORMATION SYSTEMS TECHNOLOGY CAREERS

ISTC1000 Introduction to Information Systems Management 3
This course provides an overview of computer hardware, relational databases, local area networks and programming. Information Systems terminology and industry acronyms associated with data, voice and video are also covered. Prerequisites: None

ISTC1010 Microcomputer Maintenance 3
This course is designed for the PC novice to learn how to maintain, upgrade, and repair personal computers. Participants will remove and replace motherboards, and various input/output devices. Hard drives maintenance procedures (formatting) and loading operating systems will be covered. Prerequisites: None.

ISTC1015 Supporting Business Applications 3
This course prepares IT students to support end users on the Microsoft Office Suite. This course covers basic computer concepts on computer hardware and desktop application software. Students will learn the fundamentals of word processing, database, and spreadsheet and presentation applications. Students will also be introduced to use of the Internet, online collaboration tools, and outlook. The capstone of the course will cover a comprehensive integration with Office applications.

ISTC1030 Operating Systems I 3
This course covers operating system administration with the use of command line for microcomputers. Topics include booting and configuring the system, the use of internal commands and external commands, file management, networking, and writing of batch files. Prerequisites: None

ISTC1033 Operating Systems II 3
This course is designed to provide students with the knowledge and skills necessary to install, configure, manage and troubleshoot desktop clients in a network. Lectures, hands-on projects and exercises reinforce skills as they are learned. Specific topic coverage includes: Installing; Using the System Utilities; Managing File Systems and Storage; Users, Groups, Profiles, and Policies; Security and Access Controls; Network Protocols; Printing and Faxing; Performance Tuning; Working with the Registry; Booting Process; Fault Tolerance; Troubleshooting. Prerequisites: Operating Systems I ISTC1030

ISTC1045 Network Systems I: Introduction to Networking 3
This course introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. The principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum. 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. This is the first course preparing the student to take the Cisco Certified Network Associate (CCNA) Routing and Switching examination.

ISTC1050 Database Systems 3
This course focuses on the fundamentals of relational databases; their use, design and implementation. The course will include entity-relationship modeling, logical and physical design and normalization, as well as the definition of tables and indexes. The use of Structured Query Language (SQL) for data manipulation will be emphasized. The course will also cover concepts of client/server, distributed and object-oriented databases, security and data warehousing. Prerequisites: ISTC1015 Supporting Business Applications

ISTC1060 Security I 3
This course is designed to investigate the analysis and implementation of network security policies, procedures and guidelines for establishing, monitoring and controlling methodologies for local and wide area networks. The course covers authentication methods, communication security, infrastructure security, cryptography, operational security and firewalls. Prerequisites: ISTC 1045 Network Systems I

ISTC1100 Business Communication 3
This course focuses on the foundations of business communication in the Information Systems Industry. The topics will include developing your business writing skills, correspondence, written and oral business reports, employment communication, as well as topics on the social and ethical implications of Information Systems. Prerequisites: None

ISTC1230 Systems Analysis and Design 3
This course provides coverage of systems analysis and design theories and techniques. Both the traditional, structured approach and the object-oriented approach to systems development will be explored. Students will learn the theory of analysis, design and implementation following the guidelines of the Systems Development Life Cycle. Students will demonstrate system modeling with UML. Prerequisite: Introduction to Programming ISTC1300 or equivalent programming experience.

ISTC1300 Introduction to Programming 3
This course provides the beginner programmer with a guide to developing programs using structured programming logic. Analysis, design, coding, testing and debugging will be covered. Students will be exposed to various design techniques, such as flowcharts, as prequels to writing code. Programming key points include structured programming, modularized programming, decision-making, looping, arrays, data file utilization, arrays and object-oriented classes. Students will be exposed to procedural and object-oriented programming. Students will be required to generate simple programs for this course. Prerequisites: None.

ISTC1400 Wireless Systems 3
This course provides hands-on experience to wireless networking. The student will explore the latest wireless technologies following networking industry 802.11x standards. This course includes the planning, designing, installing and configuring wireless LANs from the principal Wireless LAN vendors, and explores the interrelationship of their hardware, software and applications. Prerequisites: ISTC1045 Network Systems I

ISTC1510 Web Programming I 3
This course covers skills used to create web applications with a focus on client-side technologies, including such topics as cascading style sheets (CSS), HTML and JavaScript. Students will create numerous web applications using scripting tools/languages. Emphasis will be placed on the design, development, deployment and maintenance of the interactive web sites. Prerequisites: ISTC1300 Introduction to Programming

ISTC2006 Network Systems II: Routing and Switching Essentials 3
This course 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. This is the second course preparing the student to take the Cisco Certified Network Associate (CCNA) Routing and Switching examination. Prerequisite: ISTC1045

ISTC2011 Network Systems III: Scaling Networks 3
This course describes the architecture, components, and operations of routers and switches in a larger and more 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. This is the third course preparing the student to take the Cisco Certified
Network Associate (CCNA) Routing and Switching examination.
Prerequisites: ISTC2006

ISTC2016 Network Systems IV: Connecting Networks 3
This course discusses the WAN technologies and network services required byconverged 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 will also develop the knowledge and skills needed to implement IPSec and virtual private
network (VPN) operations in a complex network. This is the fourth (and final) course preparing the
student to take the Cisco Certified Network Associate (CCNA) Routing and Switching examination.
Prerequisites: ISTC2011

ISTC2035 Operating Systems III 3
In this course the student is expected to learn the procedures underlying server operating systems. The course will cover network design, installing Servers, configuring and optimizing Servers, managing users and groups, disk quotas, basic and dynamic disks, security, and print management. Prerequisites: ISTC1045 Network Systems I (*) and ISTC1033 Operating Systems II

ISTC2040 Database Management 3
This course focuses on working with an enterprise-level database management system as well as basic administrative tasks such as installations. The use of Structured Query Language (SQL) will be emphasized as it relates to data definition and data manipulation. Topics also include triggers and stored procedures. Prerequisites: Database Systems ISTC1050.

ISTC2050 Data Structures 3
This course introduces the student to the theory, design and implementation of common data structures and related algorithms. Topics include linked lists, recursion, stacks, queues, search algorithms, sorting algorithms, graphs and binary trees. Students will write numerous programs to demonstrate comprehension of the course topics. PREREQUISITE: ISTC 1300

ISTC2065 Security II: Firewalls 3
This course is designed for the network administrator who needs to learn the basics of VPN security and network firewalls. Basic installation techniques are covered along with how to make an intelligent choice of firewall technology. Basic firewall troubleshooting is also presented. This course aligns with the Checkpoint CCSA Certification outline. Prerequisites: Security I ISTC1060

ISTC2070 Security III: Forensics 3
This course provides the student with methods for conducting a computer forensics investigation including procedures, tools, ethics, and analysis. This course maps to the objectives of the International Association of Computer Investigative Specialists (IACIS) certification. Prerequisites: Security II ISTC2065

ISTC2100 Project Management 3
This course will provide fundamentals of planning and managing projects for information system (IS) organization. This includes creating a capstone project which will involve schedules, using critical path, assigning resources, and tracking progress. Focus is on topics that are unique to management of projects in an IS department. Prerequisites: ISTC1015 Supporting Business Applications

ISTC2110 Web Programming II 3
This course covers components to create dynamic Web-based applications with a focus on server-side technologies using scripting languages such as PHP, ColdFusion, Python Django and Ruby on Rails. Methods and tools for integrating data will be emphasized including those provided as open source. Prerequisite: ISTC1510 Web Programming I

ISTC2120 Financial Accounting for Information Systems 3
This course focuses on the fundamentals of the accounting system, as well as examines financial reporting from the perspective of decision makers outside the company. The topics will integrate these inside/outside perspectives by studying the accounting activities that take place inside the company and evaluating their impact on users outside the company. Topic coverage is paced appropriately for non-accounting majors. Prerequisites: None

ISTC2130 Android Programming 3
This course covers technologies used to create mobile applications using the Android-based operating environment. Students will learn the concepts required to create the applications using the Android Software Development Kit. Students are expected to have a working knowledge of Java.Prerequisite: ISTC1300 Introduction to Programming or equivalent programming experience.

ISTC2150 Virtualization, Storage, and Cloud Technologies 3
This course covers the fundamentals of virtualization and network storage technologies. Topics covered in this course include Network Attached Storage, Storage Area Networks, Hypervisors, virtual machines, cloud-based technologies, and additional related technologies.Prerequisites: ISTC2035 Operating Systems III

ISTC2315 Java II 3
This course builds on JAVA I to cover some of JAVA's more advanced capacities. Topics covered include the embedding of simple applets in web pages, enterprise wide development of distributed n-tier client/server applications, Remote Method Invocation (RMI), JAVA Database Connectivity (JDBC), server side JAVA programming (Servlets/JSP), collections and data structures. Prerequisites: ISTC1300 Introduction to Programming

ISTC2320 .NET I 3
This course will introduce the student to the .NET application development environment. The student will learn the .NET tools to create applications that correspond to Windows standards. Topics covered include data controls, reports, and multiple-document applications, file processing, elementary database interfacing (ADO.NET), class modules, web applications (ASP.NET) and application installation. The major focus of the course will be on object-oriented topics such as classes, constructors, inheritance and polymorphism used in the context of creating Graphical User Interface (GUI) intense programs. By the end of the course, the student will be able to design and code simple business applications. Prerequisites: Introduction to Programming ISTC1300 or equivalent programming experience.

ISTC2325 .NET II 3
This course will present advanced topics in .NET application development. Coursework will focus on developing programs in the 3-tier client/server environment. Topics covered include database interfacing using ADO.NET, web applications using ASP.NET, web services, collections, enumerations, interfaces, Crystal Reports, and an introduction into mobile device applications. Prerequisites: .NET I ISTC2320 or equivalent .NET programming experience

ISTC2330 Cross-Platform Mobile Application Development 3
This course is designed to introduce students to the concepts of cross-platform application development and to get them started in developing

mobile applications. Participants will build mobile applications while learning what makes mobile applications different from desktop applications. All prerequisites must be met to take this course, or have an instructor approval. Prerequisite: ISTC1510 Web Programming I

ISTC2500 iOS Programming 2
This course introduces students to iOS application development, including topics such as Objective-C, Swift, XCode and modern iOS user interface development. Students will create multiple mobile applications. Prerequisites: ISTC1300 Introduction to Programming or equivalent programming experience.

ISTC2550 Mobile Cloud Integration 2
This course focuses on integrated mobile applications, either Android or iOS-based, with cloud services. Using cloud services in mobile applications will be covered. Developing and deploying applications as cloud services will be explored.
Prerequisites: ISTC2330 Cross-Platform Mobile Application Development

ISTC2610 Web Programming III 3
This course focuses on capstone web project development. Students will be completing a capstone project that highlights an interactive web application, using both client and server side technologies. Advanced web development topics will be addressed that include such areas as version control, Ajax and jQuery.
Prerequisites: ISTC2110 Web Programming II or equivalent programming experience

ISTC2970 Internship 3
This course is designed to provide students the opportunity to work within the Information Technology field. Students are expected to observe and apply all of the technical skills learned thus far in their program. Students are also expected to conduct themselves in a manner that would be expected of a full-time employee of the organization they are working for.

ISTC2980 Information Systems Technology Career: Special Topics
Information Systems Technology Career: Special Topics

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LANDSCAPE HORTICULTURE

LAHT1050 Plant and Soil Ecology 3
This course covers the study of the biology of higher plants, including morphology, physiology, and taxonomy. Emphasis is placed on knowledge relevant to practitioners of the landscape horticulture field.

LAHT1100 Woody Plant Materials I 2
This course covers the identification and use of woody plants, including trees, shrubs, and evergreens, in Minnesota landscapes. Prerequisites: None

LAHT1110 Woody Plant Materials II 2
This course covers the identification and use of woody plants, including trees, shrubs, and evergreens, in Minnesota landscapes. Prerequisites: None

LAHT1210 Integrated Pest Management 3
This course covers the overview of the biology, identification, and control of weeds, insects, infectious, and non-infectious diseases common to the Minnesota landscape and from the integrated pest management perspective.

LAHT1300 Landscape Construction I 3
This course covers the study and practice of the skills necessary to install landscape plantings and materials. Sample subjects include planting, edging, mulching, retaining walls, decks, patios, and fences. This course emphasizes plantings. Building codes and permits are also discussed. Prerequisites: None

LAHT1310 Plant Maintenance 2
This course covers the maintenance of landscape plants other than turf by proper cultural practices, including pruning, fertilizing, damage repair, and support. Prerequisites: None

LAHT1315 Plant and Garden Maintenance 3
This course covers the maintenance of the landscape, including trees, shrubs, annual and perennial beds. Lawn care will not be covered in this class. Proper cultural practices, including plant
replacement, pruning, fertilization, plant support systems, plant protection, and damage repair will
be discussed.

LAHT1325 Sustainable Turf Management 3
This class investigates grass biology, morphology, anatomy, and ecology. Students learn to identify common turf, utility, pasture, and native grasses and how these plants fit into their environment. Students learn to design custom seed mixes for lawns, recreational fields, golf courses, and prairie and pasture applications. Students will grow a variety of grass species in the greenhouse. Students will also gain knowledge and experience in turf, prairie, and pasture maintenance, common diseases associate with grasses, and new low-input management regimes. Emphasis is placed upon moving away from the traditional high-input lawn and towards a more beneficial lawn in terms of nutrient regulation, biodiversity and being pollinator friendly.

LAHT1420 Protected Horticulture 3
This course presents basic concepts of growing plants under protective cover or in containers so as to better control the above and/or below ground environment. This course is applicable to anyone who grows plants in greenhouses, cold frames, interior landscapes, ornamental containers and elsewhere.

LAHT1502 Safety and Equipment 1
This course is an introduction to the safe use and basic maintenance of tools and equipment. Personal safety issues as well as legal issues are discussed. Prerequisites: None

LAHT1610 Sustainable Planting Design 3
This course is an introduction to design theory as applied to the practice of sustainable planting design.Students are introduced to the principles and elements of planting design and the process of creating a
landscape plan. Students will also be taught how to interpret and draw landscape plans using basic
drafting implements. The overriding emphasis in this class will be on the creation of planting
compositions that restore and / or enhance the ecological services associated with a sustainable
approach to planting design.
Prerequisites: None. Concurrent enrollment in LAHT1110 recommended

LAHT1700 Introduction to Sustainable Food Systems 3
This course explores agricultural systems from early history through current practices and beyond with an emphasis on emergent trends in urban agriculture and local food production. Students will gain an historical perspective in the development of agricultural systems, the socioeconomic influences driving our modern day food systems and its impact on human health and the environment. The emphasis of this course will be on the exploration and investigation of current methodologies in urban agriculture through research of case studies allowing students the opportunity to sharpen research skills while focusing on areas of particular interest.

LAHT1710 Sustainable Landscape Horticulture Practices 3
The ability of Earths ecosystems to sustain life as we know it is coming under increasing pressure from the demands of modern society. If future generations are to inherit a healthy planet we will need to rethink the way we live our lives right down to the way we landscape our back yards, school grounds and city parks. This course will introduce students to the broader concepts and definitions of sustainability - meeting the needs of the present without compromising the ability of future generations to meet their own needs - and illustrate how those concepts translate to the site specific scale and influence our approach to the design of our local landscapes.

LAHT1720 Ecological Restoration 3
Introduction to Ecological Restoration. Students will be introduced to the fundamentals of Ecological Restoration including gaining knowledge and experience in knowing the difference between native and non-native vegetation, conducting site assessments, designing site preparation and installation plans, designing custom seed mixes, understanding plant communities, and understanding different applications including prairie, wetland, savanna, lake, and forest restoration.

LAHT1740 Infrastructure for Sustainable Food Systems 2
This course introduces students to the multitude of manmade and natural structures essential to the successful production of food crops including soil building and bed preparation, raised beds, trellising and other means of plant support, water catchment and irrigation systems, structures for season extension and protection from garden predators. Through hands-on exercises and projects, students will learn about the materials, tools and techniques used in their construction and upkeep.

LAHT1830 Principles of Agroecology 3
This course is designed to introduce various topics of Agroecology including traditional and organic farming, plant and animal production, energy, pest management, specialized and controlled environment agriculture and sustainable practices. Prerequisites: None. Recommended: LAHT1000 and LAHT1010

LAHT2005 Herbaceous and Edible Landscape Plants 3
This course covers the identification of herbaceous and edible plants commonly used in Minnesota landscapes, their cultural requirements, and how to place them in a landscape or garden design. Plants studied will include flowering annuals, perennials, ornamental grasses, ferns and bulbs and edibles.

LAHT2010 Indoor Landscaping 3
This course is an overview of the materials and methods of indoor landscaping and indoor plant maintenance. Students will identify foliage plants and their cultural requirement. Practices include lighting, acclimatization, watering, fertilizing, and others. Prerequisites: None

LAHT2020 Permaculture Based Food Systems Design 2
This course explores Permaculture - based design principles and their application to the small-scale homestead or urban farm. Through research and hands-on design studio exercises students will learn how to design small scale food
systems in urban environments that mimic the resiliency and abundance of natural ecosystems. Students will learn
techniques for gathering and organizing critical site information in preparation of the site analysis, program
development and a successful design solution. Information and skills learned in this course will be synthesized in a final
design project for the student's own homestead or urban farm. Prerequisites: None. Suggested: LAHT 1600: Landscape Design I

LAHT2040 Sustainable Food Crop Production 3
This course is designed to introduce students to sustainable practices in food crop production including the identification of both annual and perennial species suitable for growing in the upper mid-west, propagation techniques,
cultural requirements, harvesting and storage techniques and procedures and regulations involved in bringing food
crops to market. Through both lecture and hands-on experiences in the campus greenhouse and farm, students will
plan their own garden layout, create crop production calendars, and propagate the crops they plan to grow on the
campus farm. Students participating in the on-campus internship will also have the opportunity to see their
crop production plans through to harvest and sale.

LAHT2045 Landscape Edibles and Food Crops 3
This course is designed to introduce students to sustainable practices in food crop production including the identification of both annual and perennial species suitable for growing in upper mid-west gardens and landscape plantings, propagation techniques, cultural requirements, harvesting and storage techniques and procedures and regulations involved in bringing food crops to market. Through both lecture and hands-on experiences in the campus greenhouse and farm, students will plan their own garden layout, create crop production calendars, and propagate the crops they plan to grow on the campus farm. Students participating in the on-campus internship will also have the opportunity to see their crop production plans through to harvest and sale.

LAHT2100 Landscape Construction II 3
This course covers the study of design, planning, estimating cost, and construction of such landscape features as decks, retaining walls, patios, and fences. Students will build hardscapes in class. Basic elements of surveying are included. Prerequisites: LAHT1300

LAHT2110 Irrigation and Lighting 2
This course covers the fundamentals of landscape irrigation and lighting, especially for residential sites. Subjects include materials, design, and installation. Prerequisites: None

LAHT2111 Landscape Construction II 3
This course covers the advanced installation process of landscape features including: soil amendments, drainage systems, plants, edging, mulches, as well as hard scape features such as patios, walkways, retaining walls, fencing, etc. Basic land surveying will be included. We will also take field trips to visit work sites and companies in the area. Prerequisites: LAHT 1300

LAHT2115 Irrigation and Water Gardening 3
This course covers the fundamentals of lawn and landscape irrigation, water garden features such as; ponds, streams / waterfalls, pond-less waterfalls, rain gardens, and bogs. Subjects include; materials, design, and principles of installation. Aquatic components such as; pumps, filter systems, lighting, plants, and fish will be covered.

LAHT2120 Landscape Surveying 1
This course deals with the basics of land, topographical and construction surveying as it is used in landscaping. Students use hand and tripod instruments. Required for construction majors; suggested for all students. Prerequisite: None.

LAHT2135 Site Grading and Drainage for Storm water Management 2
This course is a follow-up to LAHT2120 Landscape Surveying and will cover concepts of grading and drainage as utilized by landscape design and construction professionals on a site-specific scale. Students will learn how to read existing landforms and anticipate potential problems related to storm water run-off. Students will learn how to manipulate landforms for functional, aesthetic and storm water management reasons with a priority set on minimizing disruption to existing on and off site features. An understanding of site topography and hydrology coupled with the ability to thoughtfully manipulate landforms will allow designers and contractors to create landscapes that are functional and aesthetically pleasing while avoiding costly mistakes associated with improper site drainage.

LAHT2205 Sustainable Site Design 4
This course is an introduction to process and theory of residential site design with the underlying principles that residential site design should be perceived of as the process of creating a series of outdoor rooms as well as an opportunity to restore and /or enhance the ecological services provided prior to development of the site. Design concepts and principles covered in LAHT 1610 will be further explored and reinforced with added emphasis on sustainable practices in planting and hardscape design. Students will also learn advanced presentation graphic techniques using various drawing media. <Prerequisites: LAHT 1610 or consent of instructor>

LAHT2210 Design Problems 3
This course reinforces design theory concepts through residential, commercial, and public space design problems. Presentation techniques and professional practice are further discussed. Prerequisites: None

LAHT2235 Sketch-Up for Landscape Designers 2
This course is an introduction to the use of computers in the design and drafting processes. Students will be introduced to the fundamentals of Google Sketch-Up version 8 and Sketch-Up Pro. By the end of this class students will have the ability to draft and plot landscape plans using both programs.

LAHT2240 Software for Landscape Professionals 2
This course is an introduction to the use of computers by landscape professionals in the design and drafting processes. In this course, students will be introduced to the fundamentals of Sketch-Up software. Upon completion of this course students will have the ability to draft and plot 2 -dimensional landscape plans, 3 - dimensional perspective drawings as well as dimensioned construction detail drawings using Sketch-Up software.

LAHT2300 Plant Propagation 2
This course is an overview of plant propagation and terminology. Students become familiar with industry techniques including seeding, cuttings, and grafting. This course is required for plant production majors. Prerequisites: None

LAHT2315 Greenhouse Operations I 2
This course continues from LAHT1420. Nursery topics include container production, nursery pests, and inventory. Greenhouse topics include introduction to bedding production and chemistry of growth media.

LAHT2325 Greenhouse Operations II 3
This course is a continuation of LAHT2315 with an emphasis on bedding plant production. Topics include fertilization, pest control, size control, and other cultural practices. Students will grow a bedding plant crop.

LAHT2405 Pesticide Applicator Licensing for Landscape Professionals 2
This course is an overview of pest control and integrated pest management. It reviews proper, safe, and legal application of pesticides, with emphasis on knowledge needed to pass state pesticide applicator's test

LAHT2505 Landscape Business Management 3
This course is the overview of the requirements needed for successful management of a horticulture business. Subject include personnel management, basic concepts of consumerism, pricing, and distribution, sales, and government issues.

LAHT2510 Landscape Estimating 3
This course is an overview of the competitive bidding process including job estimating, proposal writing, and project specifications. It includes practice in completing business records common to the landscape horticulture industry.

LAHT2520 Professional Gardening 2
This course is designed to prepare the student to professionally design, install and maintain gardens, container plantings and seasonal displays in residential, commercial and institutional settings. Some of the skills taught include site preparation, plant selection, pest and weed identification, creating garden maintenance plans, pruning techniques, tool selection and use, and basic business practices.

LAHT2605 Introduction to Sustainable Landscape Practices 2
The ability of Earth's ecosystems to sustain life as we know it is coming under increasing pressure from the demands of our consumer oriented society. If future generations are to inherit a healthy planet then we will need to rethink the way we live our lives right down to the way we landscape our back yards, school grounds and city parks. This course will introduce students to the broader concepts and definitions of sustainability - meeting the needs of the present without compromising the ability of future generations to meet their own needs - and illustrate how those concepts can translate to the site specific scale and influence our approach to the design of our local landscapes. While acknowledging the underlying premise of reduced - reuse - recycle this course will introduce students to topics including landscaping with native plants, water resources management (rain gardens and shoreline plantings) green roofs and concepts of Permaculture that can be applied to future landscape projects. This course will consist of classroom lectures and fieldtrips to natural areas and built projects that demonstrate current examples of sustainable landscape practices. Prerequisites: None.

LAHT2610 Professional Certification 1
Professional Certification is a capstone experience that promotes professionalism and demonstrates understanding of the knowledge of landscape horticulture. Students take the Minnesota Nursery and Landscape Association Certified Professional examination. Prerequisites: Completion of three semesters of LAHT coursework with a GPA of 3.0 or better and completion of two internship courses.

LAHT2620 Water Gardening 1
This course covers all the components of water gardening including: Different types of water gardens, how to design and install a water garden, different types of pumps needed, identification, use, potting and growing of plants, selection and care of fish for a garden, chemicals needed, maintenance, upkeep and over wintering of water gardens. Prerequisites: None.

LAHT2970 Internship 1
Internship

LAHT2980 SPECIAL TOPICS: Landscape and Horticulture
SPECIAL TOPICS: Landscape and Horticulture

LAHT2990 Landscape Independent Study
Landscape Independent Study

MATHEMATICS

MATS0100 Mathematics Skills Lab 3
This course is designed to develop and increase the student's ability in general mathematics topics pertaining to developmental coursework. An independent lab approach will be used and students will work independently using technological resources to learn math concepts in an effort to improve their overall math knowledge and success in developmental math education.

MATS0310 Algebra Skills Lab 4
This course is designed to develop and increase the student's ability in algebra topics pertaining to developmental coursework. An independent lab approach would be used and students would work independently using technological resources to learn algebra concepts in an effort to improve their overall algebra knowledge and success in Intermediate and College Algebra.

MATS0600 Intermediate Algebra 4
Students with a basic algebra background are prepared for college-level mathematics courses such as college algebra, statistics, math for liberal arts, and concepts in math for elementary teachers. After reviewing linear equations and factoring methods, students move on to study rational expressions and equations, radical expressions and equations, rational exponents, quadratic equations and their solution in the complex number system, coordinate geometry including lines and circles, and functions and their graphs.

MATS1000 Math for Welders 3
A course for students enrolling in the Welding program. Topics include operations with whole numbers, fractions, decimals and percents; metric system and unit conversions; perimeter, area and volume of regular and composite shapes; angular measurements; bends, stretchouts, economical layout and takeoffs. Prerequisites: None.
This course DOES NOT meet any requirements of the Transfer Curriculum: it does not meet the general education requirements for A.A.S. degree students and is not a substitute for general electives.

MATS1205 Math for Electricians 3
A course for students enrolling in the Electrical Construction program. After a brief review of fractions, decimals, percents, and proportions, students will apply significant figures and engineering notation in applying Ohm's law, basic formulas of series and parallel circuits, the theorem of superposition, and Norton's and Thevenin's theorems. Students will further solve simultaneous equations and apply Kirchhoff's laws to series, parallel, and complex circuits. Trigonometry, vectors, and AC wave analysis are also introduced. NOTE TO ELECTRICAL CONSTRUCTION STUDENTS: This course does NOT fulfill the union requirement of a year of high school algebra. Students looking to fulfill this requirement should enroll in MATS0305.

MATS1251 Statistics 4
Fundamental principles of inferential statistics are presented in lecture (3 hrs) augmented by computer labs using Excel (2 hrs). Essential topics include sampling methods; descriptive statistics; counting and probability; binary, normal, and other probability distributions; confidence intervals; hypothesis testing; inferences from two samples; correlation and regression. Optional topics include goodness-of-fit and contingency tables; ANOVA; nonparemetrics; and statistical process control. Meets MnTC Goal 4

MATS1300 College Algebra 4
This course develops a student's ability to analyze and work with functions and graphs, as part of the preparation for a rigorous calculus sequence (taking this course together with MATS1320 is equivalent to pre-calculus). Topics include tests for symmetry, finding intercepts and asymptotes, constructing piece wise-defined functions, transformations, polynomial and rational functions, composite and inverse functions, and exponential and logarithmic functions. Techniques for solving linear, quadratic, rational, radical, exponential and logarithmic equations (with applications) are emphasized throughout the course. Systems of linear equations and matrix algebra are introduced, after which sequences and series are also briefly introduced. Meets MnTC Goal 4

MATS1320 College Trigonometry 2
A foundation in trigonometry which, taken with college algebra, prepares students for a rigorous calculus sequence. Topics include right-triangle trigonometry, the laws of sines and cosines, the unit circle, trigonometric graphs with transformations, trigonometric identities, inverse trigonometric functions, trigonometric equations, polar coordinates, complex numbers and vectors. Meets MnTC Goal 4.

MATS1350 Math for Liberal Arts 4
A college level course designed to build a student's appreciation of both the beauty and utility of mathematics as it is used in society. Topics include voting and apportionment, fair division, scheduling and route planning, patterns of growth, and basic probability and statistics concepts including the bell curve. NOTE that this course does not serve as a prerequisite for any other math course. Meets MnTC Goal 4

MATS1480 Technical Calculus 2
This course is designed for students in an engineering technology program, who wish to learn the basic concepts and skills of practical calculus. After a brief review of analytic geometry, students are immediately introduced to differentiation and applications of the derivative (such as related rates and optimization problems), followed by integration and applications of integration (such as work problems, hydrostatics, and center of mass problems). Modeling with differential equations, and their solution by computer, is also explored. Prequisites: Successful completion of MATS1300 College Algebra, or qualifying score on CPT.

MEDICAL ASSISTANT

MDAS1125 Laboratory Skills I 4
This course introduces the student to the clinical lab setting found in a physician's office. It includes safety and emergency practices, professionalism, basic math, weights, measurement, quality control and quality assurance. It also covers skill development in the performance of blood collection methods using proper techniques and standard precaution. The student will be trained to perform evacuated tube, syringe, and butterfly needle venipuncture and dermal puncture. Performance will be on adults only; infant and child methods will be simulated. Emphasis will be placed on infection control, patient identification, proper labeling, and quality assurance. Students will be expected to participate as both a phlebotomist and a patient.
Prerequisites: Acceptance to the Medical Assistant Program, concurrent HEAL 1101

MDAS1131 Clinical Procedures I 3
This course covers Medical Assisting duties that are the fundamentals required for medical asepsis, physical examination, federal regulations, emergencies, patient assessment including vital signs and documentation skills. Professionalism and study of law and ethics are taught at the beginning of the course. Assisting with physical exam, minor surgery procedures and sterile technique are presented at end of course. Prerequisites: A score of 66 or above on the Reading Comprehension portion of the Accuplacer?test. Corequisites: Concurrently with Laboratory Procedures I

MDAS1150 Medical Documentation 2
This course is designed to give Medical Assistant students the skills necessary to document in medical records appropriately. Emphasis will be on grammar, punctuation, sentence structure, capturing patient intake, and an electronic health record program. Other topics included in this course will be confidentiality, general computer skills, medical documents, and paper charts. Prerequisites: Admission to Medical Assisting Program. Co-Requisites: HEAL 1502 Medical Terminology

MDAS1211 Disease/Medical Treatment, Incl. Nutrition 4
This course presents basic information about common disease conditions affecting various body systems. The causes, symptoms, and current diagnostic and treatment procedures will be presented. Basic nutritional concepts and practical applications are also included. Pre-requisite: HEAL 1101

MDAS1223 Laboratory Skills II 4
This course builds on the basic skills learned in Laboratory Skills I and covers the basic laboratory testing done in many clinic labs. The student will participate in waived and moderately complex testing in the areas of chemistry, immunology, microbiology, hematology, coagulation, and urinalysis. The course will also cover electro cardiology as practiced in

the clinic. The end of the course will simulate the operation of a clinic laboratory from specimen collection to result.

MDAS1231 Clinical Procedures II 3
This course covers the expanded practice of Medical Assisting duties that are the fundamentals required for assisting with medical specialty exams and procedures, specimen collection, rehabilitation and therapeutic modalities. Medical specialties include cardiovascular,ENT, eye,gerontology,GI,male reproductive, neurology, ob/gyn,orthopedics,pediatrics,respiratory, and urinary procedures. Students are required to participate in a service learning project.

MDAS1250 Fundamentals of Radiographic Imaging 2
This course is designed to: 1. Prepare students for the MN State Examination for X-ray Operators. 2. Give students an overview of radiology technology and the importance it plays in the medical field. 3. Provide students with the necessary information to understand the following: Medical terminology as related to the specialty of radiology, the design and proper use of x-ray equipment, the principles of radiation safety with protection to both the operator and the patient, the importance of good, safe working habits. 4. Acquaint the students with common radiographic procedures. Prerequisites: None.

MDAS1271 Administrative Procedures 3
This course will introduce the student to the administrative duties performed by a Medical Assistant. Emphasis will be on front office duties such as; telecommunications, appointment scheduling, medical record s,insurance,bookkeeping,written communications,and medical coding. Other topics included in the course will be office and human resource management as they apply to the Medical Assistant. Prerequisite: MDAS 1150 Medical Documentation

MDAS1702 Pharmacology and Math for Medical Assistants 4
The objective of this course is to introduce the study of medications and their uses in the ambulatory care setting. Basic mathematics in relation to calculation of dosages will be taught. Medical Assistant students will learn the techniques needed for administration of medication. Prerequisite: Concurrent with MDAS 1231

MDAS2960 Medical Assisting Skills Refresher
Medical Assisting Skills Refresher

MDAS2970 Practicum 6
This course is designed to provide on-the-job experience for the medical assistant student. The student will be assigned to work in a physician's office/clinic for a total of eight weeks, five days a week, eight hours per day, or the equivalent for a total of 276 hours. The student will work under the supervision of medical office personnel doing tasks pertinent to the student's program. Offered: Spring Semester for January Cohort or Summer Semester for August Cohort
Credits: 6
Prerequisites: all Diploma requirements must be met; student must be recommended by Instructors

MDAS2980 SPECIAL TOPICS: Medical Assistant
SPECIAL TOPICS: Medical Assistant

MDAS2990 Capstone 1
This course is designed for students to reflect on and integrate the medical assisting concepts from the Medical Assistant core courses. This course provides opportunity for assessment of critical thinking skills, communication skills, and teamwork skills helping the student transition from the classroom to the clinic. The course devotes a significant amount of time reviewing all areas of the certification exam reinforcing the knowledge and skills required in preparing for the CMA (AAMA) national certification exam. Prerequisites: Recommendation to Practicum

MARKETING COMMUNICATIONS AND SALES

MKTC1000 Principles of Marketing 3
Introduction to marketing terms, concepts, and skills useful in analyzing marketing problems. Covers legal, behavioral, ethical, competitive, economic, technological and international factors affecting product, pricing, promotion, and marketing channel decisions. Identify factors marketing managers take into account when creating a marketing plan, including buying behavior, market segmentation, product life cycle, packaging, branding, pricing, advertising, sales promotion, public relations, personal selling, and product distribution methods. DUAL NUMBERED WITH IDES2300. Prerequisites: None.

MKTC1100 Fundamentals of Sales 3
Introduction of the basic principles and applications of the sales process as they may apply to industrial, wholesale and retail selling situations. This would include prospecting and qualifying, planning and pre-approaching, approaching the customer, the sales presentation/ demonstration, handling objections, closing the sale and post-sale service and follow-up with customer. DUAL NUMBERED WITH IDES2310.Prerequisistes: None

MKTC1120 Sales Management 3
Students will gain knowledge to create and maintain effective sales teams by identifying sales manager skills and tasks, selecting sales professionals, and identifying relationship-building and trust-building processes. Students will learn to encourage top sales performance by their sales teams through offering appropriate training, setting performance standards, evaluating performance and conducting effective sales meetings. The course will also cover the importance of motivating one's sales team by creating an effective compensation plan, monitoring motivation levels, and improving substandard sales performance.

MKTC1150 Consumer and Professional Buying Behavior 3
Course examines the principles of the behavioral sciences of psychology, sociology and anthropology and how these sciences are used in creating marketing communications plans aimed at consumer or professional buyers. Specific topics include perception processes, lifestyle analysis, personality psychographics, motivation analysis and influence of groups on buying behaviors. Prerequisites: None

MKTC2000 Advertising Practices and Procedures 3
This course studies advertising fundamentals. Students will explore the marketing communications plan, product and service positioning, consumer behavior theories, uses of various media, relationship advertising, and the process of developing creative strategies. Examination of advertising's relationship to other promotional elements of selling, sales promotion and publicity, and the functions and operation of an advertising agency. Prerequisites: None

MKTC2105 Marketing Communications Writing 3
Course examines how to write advertising copy for all areas of marketing communications such as the Internet, public relations, news media, scriptwriting, business writing as well as for print, radio, television and collateral media. Prerequisites: None.

MKTC2310 Public Relations 3
This course explains the nature and uses of public relations as a promotional tool. Training in the writing and preparation of press releases and press kits, publicity campaigns, conduct of press conferences, and other public relations tools. Course also includes current practices and problems in the field of public relations. Emphasizes successful case histories and planning techniques. Prerequisites: None.

MKTC2506 Digital Marketing 3
Digital marketing uses marketing strategies through electronic devices

such as computers, tablets, and other mobile devices to engage with consumers and other business partners. Internet Marketing is a major component of digital marketing. In this course, we will cover the what, why, and how of major current approaches, including online listening and monitoring, search engine optimization, search ads, email marketing, and participating in social media. The course is designed to offer knowledge on digital trends and teach students how to remain current as technology and devices evolve. In addition, students will receive relevant hands-on experience through assignments and exercises.

MKTC2507 Digital Media Tools 3
Explore the world of mobile marketing app, sites, and platforms, along with social media platforms for marketing. Examine the impact of new and emerging technologies available to a marketer. Assess the available new digital media tools to determine which ones make sense for individual businesses. Learn how to implement industry-leader social digital media tools.

MKTC2511 Web Development for Marketers 3
Marketing students will learn the basic tools of web page coding and how to create and implement modern web pages with various popular applications and web development languages. The course offers advanced training on how to code web pages including adjusting the websites for users? mobile devices. Techniques to design sites that load fast, have strong usability, and meet company objectives are taught.

MKTC2515 Digital SEM and Analytics 3
The Digital SEM and Analytics teaches students digital knowledge of advanced search engine marketing and analytics skills. The course examines professional digital marketing execution techniques. The course focuses on the areas of analytics, analysis and reporting, and Search Engine Marketing (SEM). Through content analysis techniques, users learn to increase traffic through digital marketing initiatives such as blogs, paid advertising, and integration with traditional marketing measures. Prerequisites: none

MKTC2520 Video Content for Marketers 2
The Videography for Marketers examines the techniques of leveraging the conversion power of marketing with video. The course analyzes the importance of the creation of shareable creative content that encourages engagement and conversion. Students will learn how to promote marketing storytelling through video and optimize visual content for SEO. Prerequisites: none

MKTC2550 International Marketing 3
This course introduces students to the concepts and disciplines of international marketing. Students develop an understanding of the international environment and its impact on marketing. Topics include social and cultural influences; political, legal and financial considerations; exporting and importing; organizational alternatives; information sources; marketing-entry strategies; pricing and distribution; sales and communications practices; counter trade; and other current international marketing issues.Prerequisites: None.

MKTC2600 Marketing Research 3
This course examines the processes and techniques used in securing, analyzing and creatively using information to identify marketing problems and opportunities. Businesses need current information on which to base their marketing decisions; this course studies research to help business determine marketing strategies and create plans for such objectives as product development, marketing promotional evaluations, operation efficiencies and client satisfaction. Prerequisite: None

MKTC2815 Business Law 3
Examine workplace issues impacting supervisory responsibilities and explore the influence of ethics on individuals and organizations. You will be introduced to the American legal system. Understand civil, contract, employment, and labor laws and how they affect business, such as harassment, discrimination, TORTS, documentation and terminations. Prerequisites: None.

MKTC2900 Portfolio and Interviewing 1
Students will prepare their portfolios for interviewing and showing potential employers. Students will also learn how to set-up interviews, develop interviewing skills and create their resumes and cover letters for job searches. Prerequisites: None.

MKTC2970 Marketing Internship
Marketing Internship

MKTC2980 MKTC SPECIAL TOPICS
MKTC SPECIAL TOPICS

NANOSCIENCE TECHNOLOGY

NANO1001 Nano Technology Concepts 3
This course provides an introduction to the emerging field of nanoscience and will begin with the basics of scale and focus on the micro and nanometer range. Nanotechnology is a result of the capability to observe and manipulate systems at the molecular or atomic scale. This course will discuss the implications of this technology as it applies to the traditional sciences as well as various commercial markets such as materials, electronics and biotechnology. The course will also address the challenges facing businesses who desire to integrate nanotechnology into existing products and for entrepreneurs who desire to benefit from this technology. Societal impacts will be discussed and evaluated. Prerequisites: None Offered: Online.

NANO1100 Fundamentals of Nanotechnology I 3
The course provides an introduction into nanoscience and includes the history of nanotechnology and also an introduction into the tools used to study the world at the nanoscale. This course also covers a sense of scale, exponential notation, surface area to volume ratio, molecular and atomic structure and the various forces that are predominant at various scale levels (macro, micro and nano). Understanding of these concepts is fundamental to learning how nanoscale interactions and phenomena differ from those in our common macroscale world. Societal impacts along with a technology maturity model are also considered as they apply to nanoscience. Finally this first course provides specific study of the application of nanotechnology to biological areas such as the study of proteins, drug interactions, cell operation and ion channels. Sensing systems and newly developed diagnostic tools that are a result of understanding the biological system at the nanoscale are also discussed. Students taking this course should either have successfully completed a college biology course, physics course (first semester) and algebra or be taking these courses concurrently with the 1100 course.

NANO1110 Student Research 3
This course will provide introductory experience with nanoscience equipment, investigative research approaches and critical thinking methodologies. The students will work on industry provided problems and examples, traditional nanoscience experiments and independent work. This class will focus on the investigative process, scientific method and project planning. Students will apply and investigate foundational nanotechnology concepts while learning basic equipment operation, safety techniques and basic lab procedures.

NANO1200 Fundamentals of Nanotechnology II 3
The second semester course focuses on the material science, chemistry and physics aspects of the nanoscale. The course begins with the discussion of elemental material attributes and how environment can impact properties and performance of the starting material. Crystal structure and material properties are then discussed with an emphasis on differences in interactions and measurements at various scale realms. Using the current semiconductor fabrication process as a foundation,

students are introduced to the concepts and limitations of current photolithography and etching processes. New approaches toward electronic circuits are introduced as students gain an understanding of the current process and necessary operation concepts for today's electronic devices. Finally, the concepts of fluid mechanics, optics, photonics and lasers are discussed with an emphasis on new devices and applications based on nanoscale properties. Students taking this course should either have taken chemistry and the second semester of physics or be enrolled in these courses concurrent with the 1200 course.

NANO1210 Computer Simulation 1
This course will cover the application of computer simulation (modeling) to nanoscale systems. In addition, this course provides a visualization of concepts and interactions covered in NANO1100 and NANO1200. The course will cover applied statistics, design of experiments and impact of input parameter variations for biological and mechanical systems. Prerequisites: NANO1100 and concurrent with NANO 1200.

NANO1211 Student Lab Experience & Research 2
This course will provide introductory experience with nanoscience equipment, investigative research approaches and critical thinking methodologies. The students will work on industry provided problems and examples, traditional nanoscience experiments and independent work. This class will focus on the investigative process, scientific method and project planning. Students will apply and investigate foundational nanotechnology concepts while learning basic equipment operation, safety techniques and basic lab procedures. Prerequisite: Nano 1100 concurrent with Nano 1200

NANO2101 Nanoelectronics 3
This course will increase the depth of topics and discussion of those covered in NANO1200. Quantum physics will be reintroduced at a greater depth with coverage of band structure, conduction, diffusion, thin film response and optical properties from a modern physics perspective. Students will study, measure, evaluate and create fabricated structures such as nanowires, cantilevers and nano channels. Application of nanoscale principles will be used to discuss imprint lithography, etching, component block assembly of nanotransistors, quantum computing, magnetic and electron spin memory and holographic memory devices. Prerequisites: A grade of C or better in the following courses; NANO1100, NANO1200, and NANO1210. Concurrent registration in NANO2140, and NANO2970 is optional.

NANO2111 Nanobiotechnology/Agriculture 3
This course will increase the depth of topics and discussion of those covered in NANO1100. Students will investigate the potential of nanoscience in multiple biological applications including nanopore, nanoparticle and nanochannel structures, diagnostics and treatment. Emphasis will be placed on interactions between biological and non-biological systems and understanding biochemistry.

NANO2121 Nanomaterials 3
This course will increase the depth of covered topics and discussion of those covered in NANO1100 and NANO1200 courses. Subjects covered include single walled and multiwalled carbon nanotubes (fabrication, property measurement and compound formulation), creation of nanomaterials, particles and crystals by various processes including colloidal suspensions, deposition, evaporation and plating. Properties (hardness, wear resistance, adhesion, conductivity etc.) and measurement techniques of nanomaterials will be covered. Interactions between organic and inorganic materials such as micro array techniques and bacteria molding will be discussed.

NANO2131 Manufacturing Quality Assurance 2
This course will cover multiple manufacturing methodologies (chemical solutions, electro filament, molding, coating, rolling etc. first in the traditional sense and second as these techniques apply to the nanoscale. Quality Assurance (Six Sigma) practices will be discussed with an emphasis on QA and reliability at the nanoscale. Design of experiments, measurements, approaches, data tracking, process improvement and statistical analysis and reporting will be discussed. Prerequisites: A grade of C or better in the following courses; NANO1100, NANO1200, NANO1211 and NANO1210.

NANO2140 Interdisciplinary Lab 3
This course will cover the experimental aspects of the accompanying third semester nano courses. Four major lab activities are planned for the course. Each lab will be a series of creation, measurement, assessment, improvement and rework. This circular understanding and assessment/improvement cycle will be included in the detail lab descriptions. Prerequisites: A grade of C or better in the following courses; NANO1100, NANO1200 and NANO1210. Concurrent registration in NANO2101, NANO2111, NANO2121, and NANO2970 (optional)

NANO2151 Career Planning and Industry Tours 1
This course will prepare students for the Nanoscience Technician Program fourth semester at the University of Minnesota and also for the job market upon graduation. Class discussion and guest speakers will advise students in selection of a specific career path, creation of a resume and portfolio, preparation and practice in job interviewing and options for continuing education. The industry tours will provide students with a broad experience of potential jobs and activities related to nanoscience in a variety of industrial settings. This internship will support career decisions and provide visual application of the concepts studied. Each student will spend a total of approximately 20 hours in various industrial settings, visiting 4 to 6 companies from various industries to complete the total 20 hours. Prerequisites: A grade of C or better in the following courses; NANO1100, NANO1200, NANO 1211, and NANO1210.

NANO2970 Industry Internship
Students will participate in observational internship at one or more industry locations. This internship will provide a broad base of application knowledge, which will complement and enhance specific course materials. Industry Task Force members have committed to providing internships.

NANO2990 Nanoscience Technology Independent Study
Nanoscience Technology Independent Study

NURSING ASSISTANT/TRAINED MEDICATION AIDE

NATM1500 Nursing Assistant/Trained Medication Aide 8
This This course introduces concepts of basic human needs and the function of the nursing assistant in long term care and or home health care. Basic nursing skills will be demonstrated and practiced in the laboratory setting. Upon successful completion of classroom studies, the student will participate in 24 hours of supervised clinical experience in a long term care setting. This state-approved program provides an overview of the requirements concerning medications and their administration. Other topics include legal criteria, medical abbreviations, measurements, use of the Physician's Desk Reference (PDR), and overview of body systems and drug classifications. Administration of medications via oral, eye, ear, rectal, and topical routes will also be covered.

This course is a prerequisite for the Practical Nursing Program. It meets the objectives of Federal State Statutory requirements for nursing assistant training.
Individuals who provide direct contact services to clients of licensed facilities are required to have complete criminal background studies. Disqualified persons will not be permitted to work in these facilities.

PHYSICAL EDUCATION

S PHED1115 Self-Defense 1
Students will learn the basics of effective personal protection from experts in the field. Emphasis will be placed on awareness of hazardous situations and strategies to avoid them. Another priority will be developing responsible techniques that are simple and practical for almost anyone. This will be an active learning (hands-on) style class so students should wear clean, comfortable workout clothes.

PHED1120 Olympic Weightlifting 2
Requested description 7/19/02

PHED2510 Intercollegiate Wrestling 1
Intercollegiate Wrestling

PHED2520 Intercollegiate Men's Soccer I 1
Soccer is a one-credit Physical Education/General Education elective course at Dakota County Technical College. Students in the course are required to be members of either the Men's or Women's varsity soccer team at the college for the entire season and are required to meet the requirements and achieve a grade. Members must be in good standing in order to receive any credit. The major goal of the course is to develop psychological, physical, technical, athletic skills and abilities required to succeed as a college level athlete in the sport of soccer.

PHED2521 Intercollegiate Women's Soccer I 1
Soccer is a one-credit Physical Education/General Education elective course at Dakota County Technical College. Students in the course are required to be members of either the Men's or Women's varsity soccer team at the college for the entire season and are required to meet the requirements and achieve a grade. Members must be in good standing in order to receive any credit. The major goal of the course is to develop psychological, physical, technical, athletic skills and abilities required to succeed as a college level athlete in the sport of soccer.

PHED2525 Intercollegiate Men's Soccer II 1
Soccer is a one-credit Physical Education/General Education elective course at Dakota County Technical College. Students in the course are required to be members of either the Men's or Women's varsity soccer team for the entire season and are required to meet the requirements and achieve a grade. Members must be in good standing in order to receive any credit. The major goal of the course is to develop psychological, physical, technical, athletic skills and abilities required to succeed as a college level athlete in the sport of soccer.

PHED2526 Intercollegiate Women's Soccer II 1
Soccer is a one-credit Physical Education/General Education elective course at Dakota County Technical College. Students in the course are required to be members of either the Men's or Women's varsity soccer team for the entire season and are required to meet the requirements and achieve a grade. Members must be in good standing in order to receive any credit. The major goal of the course is to develop psychological, physical, technical, athletic skills and abilities required to succeed as a college level athlete in the sport of soccer.

PHED2530 Intercollegiate Baseball I 1
Baseball is a one-credit Physical Education/General Education elective course at Dakota County Technical College. Students in the course are required to be members of the Baseball team at the college for the entire season and are required to meet the requirements and achieve a grade. Members must be in good standing in order to receive any credit. The major goal of the course is to develop psychological, physical, technical, athletic skills and abilities required to succeed as a college level athlete in the sport of baseball.

PHED2535 Intercollegiate Baseball II 1
Baseball is a one-credit Physical Education/General Education elective course at Dakota County Technical College. Students in the course are required to be members of the Baseball team at the college for the entire season and are required to meet the requirements and achieve a grade. Members must be in good standing in order to receive any credit. The major goal of the course is to develop psychological, physical, technical, athletic skills and abilities required to succeed as a college level athlete in the sport of baseball.

PHED2540 Intercollegiate Softball I 1
Softball is a one-credit Physical Education/General Education elective course at Dakota County Technical College. Students in the course are required to be members of the fastpitch softball team at the college for the entire season and are required to meet the requirements and achieve a grade. Members must be in good standing in order to receive any credit. The major goal of the course is to develop psychological, physical, technical, athletic skills and abilities required to succeed as a college level athlete in the sport of softball.

PHED2545 Intercollegiate Softball II 1
Softball is a one-credit Physical Education/General Education elective course at Dakota County Technical College. Students in the course are required to be members of the fastpitch softball team at the college for the entire season and are required to meet the requirements and achieve a grade. Members must be in good standing in order to receive any credit. The major goal of the course is to develop psychological, physical, technical, athletic skills and abilities required to succeed as a college level athlete in the sport of softball.

PHED2560 Intercollegiate Volleyball I 1
Volleyball is a one-credit Physical Education/General Education elective course at Dakota County Technical College. Students in the course are required to be members of the men's varsity volleyball team at the college for the entire season and are required to meet the requirements and achieve a grade. Members must be in good standing in order to receive any credit. The major goal of the course is to develop psychological, physical, technical, athletic skills and abilities required to succeed as a college level athlete in the sport of volleyball.

PHED2565 Intercollegiate Volleyball II 1
Volleyball is a one-credit Physical Education/General Education elective course at Dakota County Technical College. Students in the course are required to be members of the men's varsity volleyball team at the college for the entire season and are required to meet the requirements and achieve a grade. Members must be in good standing in order to receive any credit. The major goal of the course is to develop psychological, physical, technical, athletic skills and abilities required to succeed as a college level athlete in the sport of volleyball.

PHED2570 Intercollegiate Basketball I 1
Basketball is a one-credit Physical Education/General Education elective course at Dakota County Technical College. Students in the course are required to be members of the men's varsity basketball team at the college for the entire season and are required to meet the requirements and achieve a grade. Members must be in good standing in order to receive any credit. The major goal of the course is to develop psychological, physical, technical, athletic skills and abilities required to succeed as a college level athlete in the sport of basketball.

PHED2575 Intercollegiate Basketball II 1
Basketball is a one-credit Physical Education/General Education elective course at Dakota County Technical College. Students in the course are required to be members of the men's varsity basketball team at the college for the entire season and are required to meet the requirements and achieve a grade. Members must be in good standing in order to receive any credit. The major goal of the course is to develop psychological, physical, technical, athletic skills and abilities required to succeed as a college level athlete in the sport of basketball.

PHED2990 Independent Study 3
Independent Study

PHILOSOPHY

PHIL1003 Philosophy of Sex and Love 3
This course is an introduction to philosophical and ethical issues dealing with desire, love, and identity. Students will discuss and criticize texts written by ancient, modern, and contemporary philosophers. Emphasis will be placed on the personal value of the ideas explored. Prerequisites: None. Meets MnTC Goal 6 and Goal 9.

PHIL1100 Ethics 3
This course is an introduction to the study of ethics. Students will read, discuss, and write about texts from Classical and World philosophy. Emphasis will be placed on the process of criticism and the practical value of the ideas explored.
Meets MnTC Goal 6 and 9

PHIL1200 Critical Thinking 3
In this course, students will develop skills in argument evaluation, the use of informal logic, and language analysis as they criticize problems found on the World Wide Web, in the workplace, and in other everyday environments. Students will also have an opportunity to explore topics in media literacy and the philosophy of science. Suggested Accuplacer reading cut score over 78. Meets MnTC Goal 2.

PHIL1250 Introduction to Logic 3
Students will learn to identify, analyze, and evaluate arguments derived from real-world problems using skills in formal logic. Concepts in informal logic will not be covered. Prerequisites: Accuplacer score of 78 or higher in Reading Comprehension OR College Reading I, AND Accuplacer score of 51 or higher in Elementary Algebra OR MATS0305 Introduction to Algebra. Meets MnTC Goal 4.

PHIL1300 Introduction to Philosophy 3
This course is an introduction to the traditional problems of philosophy. Students will discuss and criticize texts written by philosophers from a variety of periods and cultures. Emphasis will be placed on the practical value of the ideas explored. Prerequisites: None. Meets MnTC Goal 6 and Goal 9 Meets

PHIL1350 Medical Ethics 3
This course introduces students to basic issues in medical ethics. Emphasis will be placed on the process of considering ethical theories and laws in the analysis of specific cases from the field. This course will be of special interest to students in programs such as Patient Care Technician, Dental Assistant, and Veterinary Technician though students in any program will find the study of medical ethics worthwhile. Suggested Accuplacer reading cut score over 78 and completion of ENGL 1150: Composition I. Meets MnTC Goals 6 and 9.

PHIL1450 Philosophy of the Arts 2
In course, students will take a philosophical approach to thinking about painting, photography, film, architecture, music, literature, theater arts, and popular art. Using ideas from a variety of time periods, students will analyze artworks of their own choosing. All students will find this course valuable though it will be of special interest to those in following programs: Interior Design, Architectural Technology, Graphic Design Technology, Landscape Horticulture, Multimedia and Web Design, or Photographic Technology. Meets MnTC Goal 2, 6

PHOTOGRAPHY

PHOT1050 Camera Skills 2
This course gives the student an introduction to most of the controls and adjustments available on today's complicated digital SLR cameras. Through hands-on projects we will experiment with both manual and automatic exposure controls with a main emphasis in exposure control, depth-of-field, and motion adjustments. Discussion of camera types, lenses types and uses, and accessories will complement the practice of capturing images that illustrate composition and storytelling. An introduction to management of images and proofing techniques will be included. This course is specially designed for those who plan to make a career out of providing photographic services.

PHOT1100 Introduction to Photography 3
This hands-on introductory course is designed to familiarize students with the industry standard Digital Single Lens Reflex (DSLR) camera. Coursework will cover operation of manually-adjustable DSLR camera functions such as controlling motion, depth of field, ISO, white balance through various indoor, outdoor, and natural lighting conditions. Gaining an understanding of the controls and adjustments will be the key to this course; but students will also be exposed to additional skills such as management and output of images as part of the digital workflow procedures, photographic composition, use of on-camera flash, presentation of finished images, and uses of images in the industry.

PHOT1110 Lighting Basics 2
All photography makes use of some form of lighting and this course will introduce the student to both natural, ambient, and artificial lighting situations. Lighting equipment operation and use light modifiers and meters will be the main emphasis throughout this course. Lighting variables, metering techniques, and light control will be practiced by distinguishing the qualities of light in terms of direction, color, contrast, form, and intensity. This course will give the student an understanding of all types of lighting and practical hands-on experience with meters, lights, and modifiers used both in studios and on location.

PHOT1120 Natural Light Portraits 1
This course covers the use of natural outdoor and window lighting and cameras to produce professional looking portraits. Emphasis will be on the use locations and posing to capture creative images of individuals, couples, small and large groups of people. A critical skill in this area is the ability to use the correct lighting direction, form, intensity, color and contrast to enhance the character and features of the customer. Projects will include typical family, high school senior, on-location, and group portrait techniques.
Prerequisites: PHOT 1050, PHOT 1110

PHOT1200 Photo Lighting 3
The essence of good photography is the ability to apply principals of photography to the understanding of light and lighting conditions. This course teaches students to differentiate and control light by distinguishing qualities of light in terms of direction, color, contrast, and intensity. It builds on this differentiation by teaching ways to modify light, both in the studio and on location. This course covers the use of various types of light meters and light modifiers used in all different lighting conditions from studio, to window light, to indoor flash, and to outdoor light. Consideration is given to the use of traditional lighting methods and the significance of these methods in the commercial photography market.

PHOT1310 Adobe Lightroom 2
Adobe Lightroom helps photographers organize and manipulate their images. It works hand in hand with Adobe Photoshop and Bridge but adds many new options and features. This course will explore the power

and features of Lightroom and how it can import, catalog, save and organize thousands of images and save the photographer a lot of time upfront in the workflow. Then Lightroom's develop and print modules can modify, manipulate and improve digital images in a non-destructive manner. We will wrap up this class with practice outputting images to web, to CD and to labs to create products and images for client viewing. Bring a few hundred images to class for hands-on practice during this class. Prerequisites: NONE

PHOT1320 Photoshop for Photographers 2
Photographers not only need to master their digital camera but also master the software that, manipulates, enhances, modifies, and outputs their images for the clients. Of the two main softwares (Photoshop and Lightroom) used in photography, this course will cover introduce Adobe Photoshop: its tools, editing techniques, non-destructive image enhancement, correction and modification options. Students will practice workflow essentials and image techniques needed by photographers in order to compete successfully in this highly digital field. Skills in the use of the computers operating system and workflow techniques will be covered as well. Prerequisites: PHOT 1310

PHOT1350 Photo Software 3
Photographers not only need to master their digital camera but also master the software that downloads, organizes, manipulates, enhances, stores and outputs their images for the clients. The two main software (but not the only) that this course will introduce is Adobe Photoshop and Adobe Lightroom. Since these two software can be used separately and interchangeably, both are being introduced in this one course. Skilled use of the computers operating system software will be covered and expected as well. Essential for skillful use of these software will be a thorough understanding, identification, and ability to use the 100+ tools that both Lightroom and Photoshop bring to the user. Projects will be designed to exercise as many tools and techniques as possible. Be prepared to bring personal images to class for hands-on practice.

PHOT1360 Photography Workshop
This course allows the student to choose the types of learning experiences they would like to be involved in. Emphasis is placed on the student and the instructor designing a specific educational goal and clearly defining the intended skills and results to be accomplished. This course will meet the highly creative and unique areas of photography or imaging that are not covered by any other course content. Much of the time the student will be expected to work with minimal supervision. Can be taken multiple times. Prerequisites: Approval is based on instructor recommendation and a minimum of previous photographic experience.

PHOT1370 North Shore Photography Workshop 1
This course is a 3-day field trip to the North Shore of Minnesota. Here we explore the tips and techniques of effective nature photography. We spend part of the time in informative lectures and slide shows held on site with the rest of the time spent in the field under the guidance of the instructor. Topics such as advanced composition, creative use of filters, lens and viewing angles, difficult metering situations and effective equipment operation are covered throughout the workshop. Students will come away with a new appreciation and understanding of nature photography as well as some great images of one of Minnesota's most beautiful areas. Prerequisites: PHOT 1100.

PHOT1420 Studio Portraits 2
This course covers the use of studio lighting and cameras to produce professional looking portraits. Emphasis will be on the use of time-proven techniques and equipment to capture creative images of individuals, couples, small and large groups of people. A critical skill in this area is the ability to use the correct lighting and posing to enhance the character and features of the customer. Projects will include typical business, family, high school senior, on-location, and group portrait techniques.
Prerequisites: PHOT 1050, PHOT 1110

PHOT1510 Color Management 2
This course builds on the skills introduced in the prerequisite courses by providing advanced color theory and practical application of digital color management techniques by using various types of calibration equipment. At the heart of this course is a thorough understanding of color theory, color application, color recognition and color adjustments as it relates to the production of high-quality color images. The student will use various monitor calibration and profiling techniques to develop a system of consistent and predictable image quality. An introduction to small and large format printing will enhance the application of these new skills.
Prerequisites: PHOT 1310, PHOT 1320 concurrent

PHOT1550 DSLR Video 2
Course Description: This course is designed to introduce the visual artist/technician to the concepts, uses and operation of digital single lens reflex (DSLR) video cameras. Emphasis will be placed on the use of DSLR camera and video/audio equipment to augment the practice of photography for special events such as weddings, anniversaries, and other events. Camera capture techniques using different compositions, zooms, views and angles will be covered along with basic storyboarding. Basic video editing will cover importing, organizing, clip management, transitions, special effects, and adding audio tracks that can be used to create multimedia presentations. Information on storage and presentation to the client and customer will also be covered.
Prerequisites: PHOT 1050, PHOT 1310,

PHOT1610 Advanced Software 2
This course will bring the student to the advanced level of image processing by building on the tools and skills from PHOT 1310 Lightroom and PHOT 1320 Photoshop for Photographers. This project-based course will simulate many real-life projects and challenges that a photographer will face in this industry. Some of the skills that students will expected to master will be advanced portrait retouching, non-destructive based editing, image enhancement, corrective techniques, creating composites and solving image problems.
Prerequisites: PHOT 1050, PHOT 1310, PHOT 1320

PHOT1650 Design Foundations of Photography 3
In this course the student will learn to apply the traditional principals of design to the process of photography. Students will explore ways that professional photographers apply cultural, historical, and aesthetic principals in order to communicate specific ideas. The course allows students to explore photographic subject matter including people, landscapes, and still life in terms of photography's visual language. Students will discuss and develop their personal style as a photographer, and identify this style within a historical and cultural context. Students will also view the work of contemporary masters, and students will make images and participate in critique sessions to further expand their command of visual aesthetics.

PHOT1651 Product Photography 2
In this course, students will take part in the planning, photography, and post-production of product-type photography projects. Emphasis will be given to studio lighting, and students will apply lighting and aesthetic skills to a variety of assignments including architecture, food, still-life objects, glassware, and people. Students will also replicate industry work as they make images according to client specifications regarding size, cropping, file format output, color, and other layout considerations. The student will review and investigate all the variables, controls, and characteristics related to a professional photo shoot in an effort to create a higher quality digital image and a better understanding of the advancing technology.
Prerequisites: PHOT 1050 Camera Skills, PHOT 1110- Lighting Basics, PHOT 1310, PHOT 1320, PHOT 1420

PHOT1680 Photo Business Preparation 2
Course Description: Successful photographers have a set of skills that include time management, organization, marketing, professional ethics, accounting and general business policies. These are the topics covered in this courses all while building an in-depth business plan customized to your ideas. The purpose is to prepare the individual for all the aspects of the business side of this industry. Whether the photographer or technician works for themselves as an entrepreneur or is employed by a photography company this knowledge will be beneficial to their success. Prerequisites: PHOT 1050, PHOT 1420

PHOT1750 Portrait Photography 4
In this course, students will learn the fundamentals of commercial portraiture. Students will apply knowledge of lighting and exposure, along with understanding of posing and styling, in order to make images for todays discriminating consumer. Assignments will include a variety of genres of portrait photography and pictorial styles. Students will also make images in a variety of lighting conditions including existing environmental portraits, studio lighting, and existing ambient and window light conditions.

PHOT1830 Location Portraits 2
Many professional photographers will go to the client's location of choice to take portraits thus prompting the need for proficient with portable lighting equipment and setups. This course covers the use of the combination of portable lighting equipment and ambient location lighting to produce professional looking portraits. Emphasis will be on the simulation of typical location portraits such as senior portraits, family, children, baby-style portraiture. A critical skill in this area is the ability to control the lighting direction, form, intensity, color and contrast in unusual conditions and unique locations.
Prerequisites: PHOT 1050, PHOT 1110, PHOT 1420

PHOT1850 DSLR Video 3
This course is designed to introduce the visual artist/technician to the concepts, uses and operation of digital single lens reflex (DSLR) video cameras. Emphasis will be placed on the use of DSLR camera and video/audio equipment to augment the practice of photography for special events such as weddings, anniversaries, and other events. Camera capture techniques using different compositions, zooms, views and angles will be covered along with basic story-boarding and time-lining. Basic video editing will cover importing, organizing, clip management, transitions, special effects, and adding audio tracks that can be used to create multimedia presentations. Information on storage and presentation to the client and customer will also be covered. Access to a DSLR video-capable camera and high capacity memory cards is recommended.

PHOT2200 Career Research and Exploration 3
The purpose of this course is to give photography students an opportunity to gain access to and experience to their chosen career path before graduating from the photography program. Student will begin the course by working with the instructor to identify their intended career or continuing education path following completing of the program. The student and instructor will customize a course of study intended to help the student achieve his or her career/continuing education goals upon graduation. Students may choose to participate in Industry Internships, take part in community service learning projects, or conduct industry research in order to gain better insight and access to the students intended career path. Upon completion of the study, students will assess and compare their own industry readiness to the expectations of the marketplace.

PHOT2450 Photographic Production 4
This course will bring the student to the advanced level of image processing by building on the tools and skills from PHOT1350 Photo Software. This project based courses will simulate make real-life projects and challenges that a photographer will face in this industry. Some of the skills that students will expected to master will be advanced portrait retouching, non-destructive based editing, image enhancement, corrective techniques, creating composites and solving image problems. These advanced skills in Adobe Photoshop and Adobe Lightroom will be the primary emphasize in this class as the photographer learns how to solve editing, workflow and technical challenges and create unique products to help them succeed in the competitive workplace.

PHOT2550 Color Printing Systems 4
This course builds on the printing skills introduced in the prerequisite courses by providing advanced color theory and practical application of digital color printing techniques by using various types of printing equipment. At the heart of this course is a thorough understanding of color theory, color application, color recognition and color adjustments and color management as it relates to the production of high-quality color photographs in all facets of the industry. The student will use numerous computer systems and printing devices to produce color photographs ranging from wallets to large enlargements. The ultimate test of skills in this area is for a photographer or photo technician to be able to create and recognize high-quality photographs in order to stay competitive in the industry.

PHOT2560 Digital Printing 2
Using the skills and knowledge from the Color Management course and the skills introduced in the prerequisite courses the student will print large format and high quality images for clients. The student will use numerous computer systems and printing devices to produce color photographs ranging from wallets to large enlargements. Different substrates, surfaces and ink applications will provide the student with a thorough understanding of many of the options that the client may request. The ultimate test of skills in this area is for a photographer or photo technician to be able to create large high-quality photographs in order to stay competitive in the industry. Prerequisites: PHOT 1310, PHOT 1320, PHOT 1510

PHOT2620 Advanced North Shore Photo Workshop
This course is a 3-day field trip to either the north shore or south shore of Lake Superior. Here we explore the tips and techniques of effective and sellable nature images. We spend part of the time in informative lectures and slide shows held on site with the rest of the time spent in the field under the guidance of the instructor. Topics such as advanced composition, creative use of filters, lens and viewing angles, difficult metering situations, night and time lapse photography. This advanced workshop will give students appreciation and understanding of creating marketability of fine art nature photography as well as some great images of a new region of the Upper Midwest. Pre requisites: PHOT 1370 (taken twice) and PHOT 1100

PHOT2650 Business of Photography 3
Successful photographers have a set of skills that include time management, organization, marketing, professional ethics, accounting and general business policies. These are the topics covered in this courses. The purpose is to prepare the individual for all the aspects of the business side of this industry. Whether the photographer or technician works for themselves as an entrepreneur or is employed by a photography company this knowledge will be beneficial to their success.

PHOT2651 Advanced Photo Projects 2
Course Description: This course will give the student a chance to apply the advanced software skills to reality-based photo projects typically required by clients in this industry. This project-based course will practice advance workflow techniques of client interaction, location shooting, image prep and organizing, advanced editing and delivery of products. . Continued practice of advanced, non-destructive based

editing will help student master the techniques needed to survive and flourish in this business. Prerequisites: PHOT 1310, PHOT 1320, PHOT 1610, PHOT 1510

PHOT2710 Portfolio Development 2
Course Description: This hands-on course will guide the student through the creation of a photography-based portfolio and prepare student for entering the workforce upon graduation. Students will begin by assessing their interests, strengths, goals and clarifying the steps needed to enter into the industry. Concepts in assemble techniques, display options and presentation methods will be at the heart of this course. Upon completion the student will have multiple industry-ready photographic portfolios in preparation for career exploration. Emphasis will be given to the idea that portfolio is a process not a project, and therefore requires planning and continuous review and development.
Prerequisites: Should be taken during the last semester prior to graduation so all required photo courses should be completed with exception of PHOT 2650, PHOT 2550 and 2510 with are typically taken concurrently.

PHOT2750 Photography Portfolio 3
In this course, students will make a professional portfolio intended to align with the students career or continuing educational goals upon graduation from DCTC. Students will begin by clarifying and assessing their own post-college goals and then comparing those goals to the expectations of the niche market (s) they intend to pursue. Students will create a print portfolio as well as an electronic presentation of their work. Portfolios will be presented at a juried Senior Portfolio Show attended by all graduating students.

PHOT2970 Internship
Photography Internship

PHOT2985 SPECIAL TOPICS: Photography
Special topics coursed are designed by faculty to address some unique and specifically identified needs of a group of students to fulfill their program requirements. Such courses are usually delivered as a one-time offering and do not become part of the program. Special topic courses can have a varied credit value and differing prerequisites. Prerequisites: Instructor approval.

PHYSICS

PHYS1050 Introduction to Physics 3
This is an introductory course in Physics and its applications. The course is designed for individuals with no previous experience in physics. In this course students will learn basic theory and application of classical physics in everyday life, and how to apply that knowledge through problem solving, simulation, and laboratory experiments. Topics to be covered include: linear and rotational motion, vectors, forces and equilibrium, work and energy, momentum, properties of solids, liquids and gases, heat and thermodynamics, and waves and sound.Meets MnTC Goal 3

PHYS1100 College Physics I 4
This course is the first of two courses that cover non-calculus physics topics. These topics include: mechanics, concepts of energy and momentum, basic laws of motion, structure of matter, gas laws, heat and thermodynamics, waves and sound. Meets MnTC Goal 3.
Prerequisites: None.

PHYS1200 College Physics II 4
This course is the second of two courses that cover non-calculus physics topics. These topics include: fluids, thermal physics, direct and alternating currents, magnetism, light and optics, waves, and topics in modern physics. Meets MnTC goal 3.

PHLEBOTOMY

PLBT2500 Phlebotomy 6
The DCTC Phlebotomy Technician program prepares students to collect blood specimens from patients for the purpose of laboratory analysis. Students will be provided with the knowledge and skills necessary for careers in outpatient or inpatient facilities. The classroom portion will consist of medical terminology, anatomy and physiology (as applicable to phlebotomy), safety procedures, customer service skills, overview of laboratory processing, blood collection procedures, and hands-on procedures. The program also provides a clinical/ simulation experience during the program. After successful completion of both portions of the program, the student will be eligible to take the Phlebotomy certification exam.

PRACTICAL NURSING

PNSG1010 Foundations of Nursing Practice 4
Foundations of Practical Nursing provides an introduction to the theoretical foundation for focused-assessment and nursing skills. The student is given an opportunity to demonstrate these skills in the laboratory setting. An introduction to the nursing process provides the student with a beginning framework for decision making. The key concepts of teamwork and collaboration, safety, quality improvement, professional identity/behavior, patient/relationship centered care, nursing judgement/evidence based practice, managing care of the individual patient, and informatics/technology are introduced. Prerequisites: HEAL1150 Health Career Mathematics

PNSG1025 Core Values and Integrating Concepts in Nursing 1
This course introduces the new practical nursing student to the interactive role of the practical nurse within healthcare. Topics include the core values of nursing practice, i.e. caring, diversity, ethics, excellence, holism, integrity and patient centered care; and the integrating concepts of nursing practice, i.e. context and environment, knowledge and science, professional development, quality and safety, relationship centered care, and teamwork.

PNSG1050 Clinical Refresher I 1
This course prepares the returning student to begin clinical courses in the nursing major. The student will have the opportunity to practice nursing skills, and will be required to demonstrate competence in theory and skills. Prerequisites: PNSG1000

PNSG1250 Nutrition and Diet Therapy 2
This course provides a study of basic nutritional concepts. Diet guidelines and menu planning are emphasized using the Food Guide Pyramid. Therapeutic diets are discussed as related to specific disease conditions.

PNSG1355 Pharmacology 3
This course introduces the study of medications and their uses. Students will learn the techniques needed for administration of medications. Students will master the mathematical skills necessary to accurately calculate drug dosages including the metric and apothecary systems. Prerequisites: HEAL 1150: Health Career Math and PNSG 1000: Foundations of Nursing Practice I

PNSG1400 Adult Health Nursing I 4
This course addresses diseases of the respiratory, cardiovascular, hematologic and lymphatic, immune, musculoskeletal, and endocrine systems as they relate to the adult population. It includes pathology, diagnostics, medical interventions, nursing implications, nutritional

aspects, and pharmacodynamics. The management of perioperative clients, clients with pain, and care of clients with cancer is also discussed. Evidenced-based practice (EBP) and cultural nursing care are threaded throughout the course. Prerequisites: Concurrent enrollment or prior successful completion of PNSG1100 and PNSG1355

PNSG1410 Adult Health Nursing II 4
Adult Health Nursing II focuses on the care of adults with common medical/surgical health problems. Emphasis is placed on physiological disorders that require management in an acute care facility. Application of pathophysiology, nutrition, and pharmacology are applied to co-morbid diseases within each topic area. Prerequisites: PNSG1010 Foundations of Nursing Practice, PNSG1400 Adult Health Nursing I, PNSG1355 Pharmacology, PNSG1600 Clinical I

PNSG1500 Adult Health Nursing II 3
This course follows PNSG 1400 Adult Health Nursing I and addresses different body systems. This course addresses diseases of the gastrointestinal, sensory, neurological, urinary, integumentary, and genitourinary and reproductive disorders as they relate to the adult population. It includes pathology, diagnostics, medical interventions, nursing implications, nutritional aspects, and pharmacodynamics. Nursing care of patients with human immunodeficiency virus (HIV) disease and acquired immunodeficiency syndrome (AIDS) is also discussed. Complementary and alternative modalities (CAM) are also included. Prerequisites: PNSG1100 and PNSG1400. Concurrent enrollment in PNSG1535 and prior successful completion of or concurrent enrollment in PNSG1355.

PNSG1600 Clinical I 4
Clinical I provides the student an opportunity to apply nursing judgement using the nursing process to implement safe, patient/relationship centered care in selected settings. The clinical student demonstrates focused assessments, data collection, implementation of skills learned in the lab setting, documents findings and reinforces teaching plans for individual patients with common problems. The student develops communication and customer service skills working with individual patients and team members. Concurrent enrollment or prior successful completion of HEAL1101 Anatomy and Physiology.

PNSG1620 Clinical II 4
Clinical II provides the student an opportunity to apply nursing judgement using evidence based care, critical thinking and clinical judgement to implement safe, patient/relationship centered care to individual patients across the lifespan (including maternal/child/pediatric). The clinical student reflects on the value of patient centered care, teamwork and collaboration, informatics, quality improvement, safety, managing care of the individual patient, and nursing judgement/evidence based care in his/her career as a LPN. Prerequisites: PNSG1010 Foundations of Nursing Practice, PNSG1400 Adult Health Nursing I, PNSG1355 Pharmacology, PNSG1600 Clinical I

PNSG1650 Clinical Refresher II 1
This course prepares the advanced-standing returning student to continue with clinical courses in the nursing major. Students will have the opportunity to practice nursing skills and will be required to demonstrate competence. Prerequisites: PNSG1100 and PNSG1400.

PNSG1755 Behavioral Health Concepts 2
This course explores mental health and mental illness. Maladaptive disorders, treatment and nursing care are discussed. Transcultural and life span nursing issues of mental health will be addressed.

PNSG1805 Maternal and Child Health 2
This course prepares the student to care for maternity and pediatric patients. The obstetric portion of the course focuses on nursing care during pregnancy, labor/delivery, and postpartum, as well as care of the normal newborn. In the pediatric portion, the effects of illness and hospitalization on children are studied. Prerequisites: HEAL1400, PNSG1100, PSYC200, PSYC1300, and PSYC1400 and concurrent enrollment or prior successful completion of PNSG1560, PNSG1570, and PNSG1580.

PNSG2000 Nursing Capstone 1
This course facilitates the transition of the student to the LPN role and to the workplace. Concepts related to career development options that enhance career mobility are reviewed. Standards of practice and the importance of practicing according to state regulations and statutes for the scope of practice for the LPN are examined. Prerequisites: PNSG1010 Foundations of Nursing Practice, PNSG1400 Adult Health Nursing I, PNSG1355 Pharmacology, PNSG1600 Clinical I

PNSG2020 Nursing Capstone 2
This course provides students with the opportunity to function more independently in the simulation/clinical setting. Emphasis is placed on critical thinking and role transition from student to graduate nurse. Students are assigned to work as members of the health care team in the simulation setting. A Predictor test will be administered to students allowing then to see how they will do on the State NCLEX Practical Nursing Boards. An instructor will be available to provide guidance and support with identification of areas of need in preparation for the NCLEX test. The Capstone will address job search, Nursing opportunities and a review of the testing process for the MN State Board of Nursing.

PNSG2980 SPECIAL TOPICS::Practical Nursing
SPECIAL TOPICS::Practical Nursing

PSYCHOLOGY

PSYC1105 General Psychology 4
This general psychology course is an introduction and overview of the scientific study of behavior and experience. It includes topics like the history of psychology, research methods, perception, learning, human development, intelligence, motivation, social perception and group behavior, and psychological disorders. Meets MnTC Goal 2, 5,

PSYC1200 Abnormal Psychology 3
This psychology course is an introduction and overview of psychopathology. This course discusses diagnosis, treatment and prognosis of patients with mental health disorders and issues impacting mental health professionals. Meets MnTC Goal 5

PSYC1300 Child and Adolescent Psychology 3
This psychology course is an introduction and overview of the scientific study of child development from prenatal through adolescence. It includes topics like perception, learning, intelligence, motivation, developmental disorders, and parenting and peer influence on the developing child. Meets MnTC Goal 5

PSYC1350 Lifespan Development 4
This psychology course is an introduction and overview of the scientific study of development throughout the life span from prenatal through old age, death, dying and bereavement from a developmental perspective. Prerequisites: None.
Meets MnTC Goal 5 and MnTC Goal 7

PSYC1450 Death and Dying 2
This psychology course is an introduction to the concepts and issues surrounding death and dying. It examines these issues from a theoretical perspective with attention to ethical and moral issues from a multicultural perspective and the impact of death, dying and bereavement throughout the lifespan. Meets MnTC Goal 5

READING

READ0110 College Reading Boost 1
The course is designed to develop the effective reading and clear thinking skills that are required to be successful in college today.

READ0140 Developing College Reading Skills 4
This course focuses on reading skills widely recognized as essential for comprehending college-level material. Topics include pre-reading, reading, and post-reading strategies as well as critical thinking to improve comprehensions, increase vocabulary, and develop thoughtful responses to reading with additional emphasis on the close relationship of reading, writing, and thinking. This course is required for students who score 50 or less on the Reading Accuplacer Test. Prerequisites: None

READ0150 English Reading Essentials 3
This course focuses on reading skills widely recognized as essential for comprehending college-level material. Topics include pre-reading, reading, and post-reading strategies as well as critical thinking to improve comprehensions, increase vocabulary, and develop thoughtful responses to reading with additional emphasis on the close relationship for reading, writing, and thinking. This course is required for students who score 51-77 on the Reading Accuplacer Test. Prerequisites: None

SOCIOLOGY

SOCY1010 Marriage and the Family 3
This course embodies a survey of human relationships. This course will examine and explore both the practical side and the sociological side of human relationships. Topics include dealing with love, conflict, sexuality, parenting, relationship violence and gender roles. The focus of the course is to expose students to the cultural diversity of marriage and the family. To give students a fundamental understanding of the sociological perspective on this topic and apply a theoretical/historical perspective. Meets MnTC Goal 5

SOCY1110 Introduction to Sociology 3
This course covers the basic concepts and terminology used in sociological studies. Sociology is broadly defined as the study of human social organization and social behavior including its forms and consequences. It will focus on the characteristics of human group life as they relate to the structure of the social environment and its influence on the individual. This course is designed to introduce students to the theories, concepts and areas of inquiry that typically characterize sociological analyses. Students will have the opportunity to examine the ethical/dimensions and issues facing political, social, and personal life as it relates to the topics in Sociology. Students will explore their own citizenship and find ways to apply their ideas and goals to civic learning and service learning through embracing facets of human society and the human condition. Meets MnTC Goal 5 and MnTC Goal 9

SOCY1150 Race and Gender 2
This course is designed to enable students to obtain a greater understanding of various minority/dominant relations in the United States. Global perspectives will also be addressed. Prerequisites: None. Meets MnTC Goal 5 and Goal 7

SOCY1210 Social Issues Changing World 3
An examination of the many ways in which the United States is interconnected with other societies in a changing world. This changing globalization process and related problems that threaten human well-being are studied from a sociological perspective. Meets MnTC Goal 5 and MnTC Goal 8

SOCY1250 Juvenile Delinquency 2
A sociological examination of juvenile delinquency and society's response to delinquent youth. The juvenile justice system and the rights and responsibilities of children under law. Major topics include the historical foundations of delinquency, emphasis on micro and macro level of struggle in which delinquent behavior takes place, critique of current sociological theories on delinquency, sociological and social psychological causes of delinquency, juvenile justice response to delinquency, and citizen responsibility. Meets MnTC Goal 5 and MnTC Goal 9

SOCY1400 Introduction to Criminal Justice 3
This course will provide an overview of the philosophy of criminal law and deviance, and of the nature and extent of crime in America. The theory, structure, and operation of each of the principle components of the Criminal Justice System (ie. police, courts, and corrections) will be examined in detail. Major topics include the historical foundations of our Criminal Justice System, critique of current sociological theories on crime, analysis of impact of legal and social systems on human behavior, rehabilitation, public safety (including homeland security), and citizen responsibility. We will create a learning environment that takes into account all backgrounds and experiences where we can learn from one another. Meets MnTC Goal 5, 9,

SOCY2980 Sociology Special Topics
Sociology Special Topics

SPANISH

SPAN1100 Beginning Spanish I 4
This course is designed as an introduction to basic Spanish language skills, including listening comprehension, reading, speaking and writing. Students are introduced to cultures of the Spanish speaking countries and develop an understanding and sensitivity to diverse groups. Major grammar focus includes regular and irregular verbs in the present tense, adjective agreement, and discussion of family, school, time, weather, numbers and greetings. Prerequisites: None. (This course is presented for the true beginner, but 1 or 2 years of any H.S. language experience has been helpful.)
Meets MnTC Goal 8 Meets MnTC Goal 8

SPAN1200 Beginning Spanish II 4
This course continues the development of listening, reading, speaking, and writing skills that were introduced in Beginning Spanish 1100. The course continues emphasis on the cultures of Spanish speaking countries. Major grammar focus includes a review of the present tense, reflexive verbs, regular and irregular forms of the preterit and imperfect, and discussion of travel, pastimes, food, shopping, and your daily routine. Prerequisites: SPAN1100 or its equivalent. (Students who were successful with 2 or 3 years of H.S. Spanish could begin with this class. Those with 4 or more years would be beyond the scope of this class.)
Meets MnTC Goal 8 Meets MnTC Goal 8

SPEECH

SPEE1015 Fundamentals of Public Speaking 3
This speech course introduces students to the factors involved in becoming efficient communicators in both individual and group presentations. The course emphasis will be placed on audience analysis, research and organization, speech construction, and delivery techniques. Meets MnTC Goal 1

SPEE1020 Interpersonal Communication 3
This course is intended to increase student's awareness of the processes, models, and theories of interpersonal communication

relative to relationships that impact people's personal and professional lives. Through self-analysis and reflection, case studies, practical application, and critical thinking, students will examine the influence of communicative behaviors on themselves, their personal relationships, groups, and society. Concepts include self-esteem, self-fulfilling prophecies, perception, ethics, emotion, conflict, cultural awareness, language, nonverbal communication, social media, and listening. Meets Goal 7. Meets MNTC Goal 1 fall 2016 and after.

SPEE1030 Intercultural Communications 3
This course studies cultural differences and how they affect communication in our locally, nationally and globally. Topics include definitions of communication; definitions of culture and diversity of cultural patterns; cultural variables influencing communication such as the media, gender, language, nonverbal behavior, perception, values, and beliefs. Basic theories, models and concepts that interface with intercultural communication are explored. An examination of US culture in comparison to other cultures is explored in different contexts. Meets MnTC Goals 7 and 8.

SPEE1042 Small Group Communication 3
This course provides instruction in theory and practice in the application of skills learned in the study of small group communication principles. Students will spend a substantial part of their course time participating in small groups, completing group projects, and analyzing group interaction. Meets MnTC Goal 1.

SPEE1050 Nonverbal Communication 2
Includes facial expressions, tones of voice, gestures, eye contact, spatial arrangements, and patterns of touch, expressive movement, cultural differences, and other "nonverbal" acts. Research suggests that nonverbal communication is more important in understanding human behavior than words alone--the nonverbal "channels" seem to be more powerful that what people say. Meets MnTC Goal 1.

SPEE2980 Special Topics
Special Topics

VETERINARY TECHNOLOGY

VTEC1100 Veterinary Technology Procedures 3
This course is an introductory study of various aspects of the world of veterinary medicine and the role of the veterinary technician within that world. Emphasis is placed on learning the basics of animal identification, husbandry, grooming, animal behavior, and physical examinations. Students learn veterinary office economics and paperwork, medical records management, reminders, financial matters, components to popular veterinary software and the concepts of ethics and professionalism in the work place.

VTEC1110 Veterinary Laboratory Skills I 3
A general introduction to the veterinary clinical sciences, this course acquaints students with laboratory safety, OSHA regulations, medical asepsis, infection control, zoonotic diseases, glassware, specimen collection, laboratory calculations, and microscopy. This course includes hands-on practice of basic laboratory techniques, veterinary parasitology, an introduction to hematology and urinalysis, and basic calculations required in the veterinary medical laboratory.

VTEC1200 Comparative Anatomy and Physiology 1
This course explores the body systems of small animals using the cat cadaver as a model. A systems approach is used to study basic anatomy and physiology of dogs and cats. Comparative reference will be made to a few important differences in anatomical structures of various large animal and exotic pet species.

VTEC1210 Veterinary Pharmacology 3
This course introduces the student to the development and regulation of drugs and vaccines and their use in veterinary medicine. Commonly used drugs are studied using a body systems approach. Calculation of drug dosages is emphasized and techniques for medication administration to canine and feline patients are also covered.Prerequisites: BIOL 1310, HEAL 1502

VTEC1220 Fundamentals of Veterinary Imaging 3
Radiation safety and imaging techniques commonly used in veterinary medicine are covered in this course. Students develop radiographic technique charts and practice radiography using live animals. They also learn about other imaging techniques used in the medical field. Prerequisites: BIOL 1310

VTEC1230 Veterinary Laboratory Skills II 3
As an in-depth study of clinical laboratory procedures, students practice sample collection and handling for hematology, parasitology, blood chemistries, urinalysis, microbiology, cytology and serology. Emphasis is placed on the usefulness of these diagnostic techniques in the context of the animal's overall veterinary care. This course includes discussion of various diseases and disorders evaluated by laboratory testing. Zoonotic disease prevention and biosecurity-safety measures are also covered.Prerequisites: VTEC 1110

VTEC1240 Lab and Exotic Animal 3
This course presents the fields of laboratory animal research and zoological medicine, as well as the care and management of exotic pets. Discussion will include husbandry, animal behavior, nutrition identification, restraint, common clinical conditions, nursing procedures, and preventive health care. Mice, rats, rabbits, and other exotic and laboratory animals are utilized to allow hands-on experience. Prerequisites: VTEC 1110

VTEC1250 Veterinary Nursing Techniques 3
In this course students learn and practice various aspects of small animal husbandry including kennel management and sanitation, reproductive cycles and management, recognition of and response to emergency situations, preventative medicine, and nursing care. Discussion and practice of specialty physical exams will take place. This course will introduce concepts of first aid, care for critically ill patients, emergency nursing, oncology, cardiology, and neurology. There will be opportunities to perform specific nursing skills on small animals. Prerequisites: VTEC 1100

VTEC2100 Animal Diseases and Nutrition 3
This course introduces students to the signs, diagnostic methods, and treatments of diseases in domestic animals. Prevention, zoonosis, and client education regarding common diseases will be covered. Animal nutrition, and the use of therapeutic nutrition and dietary management of disease will also be discussed. Diseases of each body system, as well as systemic and oncology cases will be presented. An understanding of animal behavior will be introduced. Prerequisites: VTEC 1210

VTEC2110 Large Animal 3
This course introduces the livestock and equine industry and the various species of large animal livestock. This includes livestock terminology, breeds, production systems, basic management practices, preventive medicine, lameness examinations and conditions, necropsy procedures and animal products and by-products. Techniques covered will include restraint, behavior, and medical and surgical nursing procedures of large animals and equine. This course includes field trips. Prerequisites: VTEC 1200

VTEC2120 Anesthesia and Pain Management 3
The course will cover basic anesthetic principles and monitoring. The course applies basic utilization of anesthetic agents, the use and operation of allied machines, monitoring and care of the anesthetized animal patient, and the pre-operative considerations and duties for

anesthesia. Other topics include understanding of veterinary dental techniques, emergency procedures, and control of post-surgical pain. Prerequisites: VTEC 1250

VTEC2130 Veterinary Surgical Nursing and Dentistry 5
Students will learn the basics of routine veterinary surgical assisting. This course will cover instrumentation, aseptic technique, proficiency in the proper preparation of the operating room and general nursing care. This course will also cover pre-surgery preparation and post-surgical care of small animals, principles of surgery, aseptic technique, fluid therapy, and surgical assisting through practical experience. Other topics include performance of routine veterinary dental prophylactic techniques, emergency procedures, and control of post-surgical pain. Prerequisites: VTEC 1250

VTEC2960 Special Topics
Special topics coursed are designed by faculty to address some unique and specifically identified needs of a group of students to fulfill their program requirements. Such courses are usually delivered as a one-time offering and do not become part of the program. Special topic courses can have a varied credit value and differing prerequisites. Prerequisites: Instructor approval.

VTEC2970 Veterinary Technology Internship 6
Students participate as Veterinary Technician intern in an off-campus learning experiences in business, industry, and/or the public sector. The student is involved in the day-to-day work of the facility, including restraint and handling of animals, office procedures, clinical laboratory techniques, radiography, pharmacology, and surgical preparation and monitoring. Prerequisites: Completion with a C or better of all previous VTEC coursework and approval of the program director

VTEC2980 Veterinary Technician Capstone 1
This course facilitates the transition of the student to the CVT role and to the workplace. Concepts related to career development options that enhance career mobility are reviewed. Preparation and registration for certification by the American Association of Veterinary State Boards (AAVSB) is covered. Prerequisites: Completion with a C or better of all previous VTEC coursework

WEB AND MULTIMEDIA DESIGN

WEBD1032 Web Fundamentals 2
This course will explore the fundamentals of development and delivery of web sites. Students will be introduced to basic web page coding and image preparation. Special emphasis will be placed on HTML page structure and control of page elements through CSS. Students will be able to create a simple website with HTML and CSS and upload it to a server at the end of the course.

WEBD1650 Web Content I 3
This course addresses the creating, editing. Optimizing and formatting of photo/raster images, vector/drawing images and 3D content at an introductory level for use in web pages and social media. It also address use of raster, vector and web page software for the development of wireframing and screen designs. Software explored includes Adobe Photoshop, Adobe Illustrator and Adobe Dreamweaver.

WEBD1750 Web Content II 3
This course addresses the creating, editing, optimizing and formatting of audio, video, 2D and 3D animated content at an introductory level for use in web pages and social media. Software explored includes Adobe Premiere, Adobe Photoshop and Adobe Animate

WEBD2650 Multimedia Project Management 2
This course is designed to introduce the student to the methods of design and construction of a multimedia production. Students will learn project management, client contact, and presentation techniques. Students will learn to integrate information from a variety of resources into a multimedia production design. This course is delivered online and requires weekly discussion participation.

WEBD2675 Designing for Mobile Applications 2
This course explores the basics of interface and interactive design for common mobile devices and tablets. It focuses on the use of designer friendly software to create and distribute simple mobile apps. Use of the design process and layout principles are stressed. Prerequisites: WEBD1032 Interactive Design Fundamentals, or equivalent HTML and CSS experience

WEBD2681 Multimedia 3
Students will be introduced to Macromedia'a Flash, an object based 2D animation program. Flash is used to create animated segments for use in web pages or multimedia. Basic animation, symbols - unique to Flash, timing, storyboarding, design and software tools will be emphasized. Other Flash tools that are introduced in this course include: masks, motion guides and buttons. ActionScript language code is introduced.

WEBD2685 Web Page Construction I 3
Students will become familiar with the concepts of web page design, construction, and software programs. Emphasis will be on good design process for graphic element creation, logical web page information flow, and site creation. Adobe Dreamweaver, Illustrator, and Photoshop will be used at the primary software tools.

WEBD2690 Web Page Construction II 3
In this class students will become familiar with advanced web page design techniques. The emphasis will be on good design of both graphic elements and logical web page information flow. This advanced course will introduce students to a variety of web page construction software packages and tools. Additionally, issues dealing with file transmission (audio, multimedia interaction) will be discussed.

WEBD2695 UX/UI Design 3
Students will use type and layout skills and interaction design principles to create portfolio quality working interface prototypes for multimedia products. Emphasis will be placed on user interface and experience design, logical information flow, screen design, quality graphic design, and interactivity. This course is project intensive.

WEBD2700 Web Capstone Project 2
This course addresses the creating, editing. Optimizing and formatting of photo/raster images, vector/drawing images and 3D content at an introductory level for use in web pages and social media.

WEBD2705 JavaScript for Designers 2
This course explores the basics of JavaScript code and how to write it. Use of JQuery libraries and Dreamweaver snippets are explored. Students use Dreamweaver to incorporate JavaScript into designed web pages. Previous knowledge of HTML and CSS is required.

WEBD2710 Web Page Construction III 3
Introduces web content management software and use of templates and plugins to create websites. Emphasis is on tools for creating feature rich websites without ground up programming. Other topics include using template web marketing, shopping cart/e-commerce options and HTML 5 and CSS3.

WEBD2722 Web and Multimedia Career and Portfolio 3
This capstone experience concentrates on preparing students to enter the multimedia/web design job market. This includes career research and development of a professional portfolio, cover letter, resumes and self-promotional materials. Students conduct informational interview and develop networking skills. These skills will enable students to better market, manage, and promote themselves for in-house or freelance/ contract positions. Students will use skills learned in software and

design courses to create new or refine existing projects to include in a portfolio. Students should expect a substantial level of out-of-class time preparation.

WELDING TECHNOLOGY

WELD1010 Oxy Fuel and Stick Welding 2
This course covers the introduction to metals, shop safety, along with technique and theory of welding, brazing, cutting and heating. This course is also the basis for all electric welding processes and is strongly recommended before taking any electric welding process. Prerequisites: None.

WELD1012 Mig and Tig Welding 2
This course covers welding techniques on carbon steel, aluminum, and stainless steel. Students will perform welding tasks on carbon steel, stainless steel and aluminum. Prerequisites: None.

WELD1101 Welding Safety and Theory I 3
This course will give the student a basic introduction to welding and cover basic safety for the welding trade. Theory for Shielded Metal, Gas Metal, Flux Cored, and Gas Tungsten Arc Welding Processes. Theory for Oxygen Fuel, Plasma Arc, and Carbon Arc Cutting/Gouging processes. Also covered is visual inspection and quality standards. Prerequisites: None

WELD1111 Shield Metal Arc Welding I 3
This course will develop the skills necessary for the Shielded Metal Arc Welding process using E7018 and E6010 electrodes in the flat and horizontal positions. Students will receive instruction in equipment, technique, and will have opportunity to practice skill development with the Shielded Metal Arc Welding process. The skills necessary for Oxygen Fuel Cutting, manual and mechanized. Prerequisites: Must be taken at the same time as Welding Safety and Theory I

WELD1120 Gas Metal Arc Welding I 2
Students will receive instruction in equipment, technique, and will have opportunity to practice skill development with the Gas Metal Arc Welding Short Circuiting and Spray Arc transfer on mild steel plate and sheet metal. Flat position and horizontal welding will be emphasized. The goal is to be able to perform welds in the flat and horizontal position to an industry acceptable level of quality for entry-level employment. Practice to achieve the required skill level is conducted by supervised instruction. Prerequisites: To be taken at same time as Welding Safety and Theory I

WELD1130 Flux Cored Arc Welding I 2
Students will receive instruction in equipment, technique, and will have opportunity to practice skill development with the Flux Cored Arc Welding on mild steel plate. Use of three types of cored electrodes, gas-shielded, self-shielded, and metal core. The goal is to be able to perform welds in the flat and horizontal position to an industry acceptable level of quality for employment. Practice to achieve the required skill level is conducted by supervised instruction. Prerequisites: Must be taken at same time as Welding Safety and Theory I

WELD1140 Gas Tungsten Arc Welding I 3
This course will develop the skills necessary for the Gas Tungsten Arc Welding process on mild steel sheet and plate in the flat and horizontal positions. The skills necessary for manual Plasma Arc Cutting. Prerequisites: Must be taken at the same time as Welding Safety and Theory I

WELD1150 Print Reading I 3
In this course the student will learn how to interpret drawings related to the manufacture of metal products from simple single part drawings to more complex multipart drawings. Welding symbols, drawing symbols, material specifications, and basic fabrication methods will be studied also. Prerequisites: None

WELD1200 Print Reading II 3
After proper instruction the student will demonstrate use of the American Welding Society Welding Symbol to industry standards. The student will have instruction on proper interpretation of joint design of welding symbols. After proper instruction the student will have working knowledge of prints and drawings. Instruction will be given to the student on proper forming and cutting practices. Classification of base materials and wire will be emphasized. Prerequisites: Print Reading I

WELD1210 Welding Safety and Theory II 3
Upon proper instruction the student will have an understanding of metallurgy as it pertains to base metal and its alloying elements. The student will have an understanding of safety practices associated within the welding industry. Upon proper instruction the student will have knowledge of advanced welding processes and cutting technology. Students will interpret code specifications with testing and inspection gauges. Prerequisites: Welding Safety and Theory I

WELD1230 Shield Metal Arc Welding II 3
Upon proper instruction the student will perform out of position weldments using the two basic code rods of industry, 6010 and 7018. Upon proper instruction the student will perform a certification plate to American Welding Society D1.1structural code. Proper safety and cutting practices will be emphasized. The student will practice control factors until they have mastered essential elements of visual inspection criteria. Prerequisites: Welding Safety and Theory I, Shielded Metal Arc Welding I, and must be taken at the same time as Welding Safety and Theory II

WELD1240 Gas Metal Arc Welding II 2
Students will receive instruction in equipment operation and technique, and will have opportunity to practice skill development with the Gas Metal Arc Welding Short Circuiting, Spray Arc transfer and pulse spray metal transfer on mild steel and aluminum, plate and sheet. Flat, horizontal, and vertical welding position will be emphasized. The goal is to be able to perform welds in the flat, horizontal and vertical position to an industry acceptable level of quality for entry-level employment. Practice to achieve the required skill level is conducted by supervised instruction. Prerequisites: Gas Metal Arc Welding I, Welding Safety and Theory I, and must be taken at same time as Welding Safety and Theory II

WELD1250 Flux Cored Arc Welding II 2
Students will receive instruction in equipment, technique, and will have opportunity to practice skill development with the Flux Cored Arc Welding on mild steel plate. Use of two types of cored electrodes, gas-shielded and self-shielded. The goal is to be able to perform welds in the vertical and overhead positions to an industry acceptable level of quality for employment. Practice to achieve the required skill level is conducted by supervised instruction. Prerequisites: Flux Cored Arc Welding I, Welding Safety Theory I, and must be taken at same time as Welding Safety and Theory II

WELD1260 Gas Tungsten Arc Welding II 3
This course will develop the skills necessary for the Gas Tungsten Arc Welding process on aluminum and stainless steel sheet and plate in the flat, horizontal, and vertical up positions. The skills necessary for advanced safety procedures and in-shop cutting and forming will also be covered. Prerequisites: Gas Tungsten Arc Welding I, Welding Safety and Theory I and must be taken at the same time as Welding Safety and Theory II

WELD2960 Welding Skill Development
This course is designed for skill development. Students will have the opportunity to work with Oxy Fuel and Stick Welding and/or Mig and Tig Welding. Safety will be taught and reinforced as students advance their skills and welding experiences. This course is designed for all skill levels.

WELD2980 Special Topics: Welding
This is a special topics course. Please see instructor for course description.

WELD2981 Special Topics: Welding Technology
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