

2011 | 2012

# ACADEMIC CATALOG

DAKOTA COUNTY TECHNICAL COLLEGE



**DAKOTA COUNTY**  
TECHNICAL COLLEGE

Real Education. Real Results.



# DAKOTA COUNTY

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## TECHNICAL COLLEGE

[WWW.DCTC.EDU](http://WWW.DCTC.EDU)

Dakota County Technical College, a member of the Minnesota State Colleges and Universities system, is committed to a policy of nondiscrimination in employment and education opportunity. No person shall be discriminated against in the terms and conditions of employment, personnel practices, or access to and participation in, programs, services, and activities with regard to race, sex, color, creed, religion, age, national origin, disability, marital status, status with regard to public assistance, sexual orientation, or membership or activity in a local commission as defined by law.

Harassment of an individual or group on the basis of race, sex, color, creed, religion, age, national origin, disability, marital status, status with regard to public assistance, sexual orientation, or membership or activity in a local commission has no place in a learning or work environment and is prohibited. Sexual violence has no place in a learning or work environment. Further, Dakota County Technical College shall work to eliminate violence in all its forms. Physical contact by designated college staff members may be appropriate if necessary to avoid physical harm to persons or property.

This document is available in alternative formats to individuals with disabilities by calling 877-937-3282 or TTY: 651-423-8621.

This publication is not an offer to contract or a contract. DCTC reserves the right to change information without notice when circumstances warrant such action.

## CONNECT WITH US



**Online:** [dctc.edu](http://dctc.edu)



**Facebook:** [facebook.com/dakotatech](https://facebook.com/dakotatech)



**Twitter:** [twitter.com/dctc](https://twitter.com/dctc)



**E-mail:** [admissions@dctc.edu](mailto:admissions@dctc.edu)



**Visit:** Tuesday Campus Visits  
Every Tuesday, 12:45 - 2:30 p.m.



**Contact:** 1300 145th Street E.  
Rosemount, MN 55068  
651-423-8000

### ADMISSIONS

651-423-8000 | [admissions@dctc.edu](mailto:admissions@dctc.edu)

### REGISTRATION

651-423-8038 | [registration@dctc.edu](mailto:registration@dctc.edu)

### TUITION

651-423-8045 | [tuition@dctc.edu](mailto:tuition@dctc.edu)

### FINANCIAL AID / SCHOLARSHIPS

651-423-8299 | [finaid@dctc.edu](mailto:finaid@dctc.edu)

## VISIT US

### MAP LEGEND



**Dakota County Technical College**  
1300 145th Street East (County Road 42)  
Rosemount, MN 55068  
651-423-8301



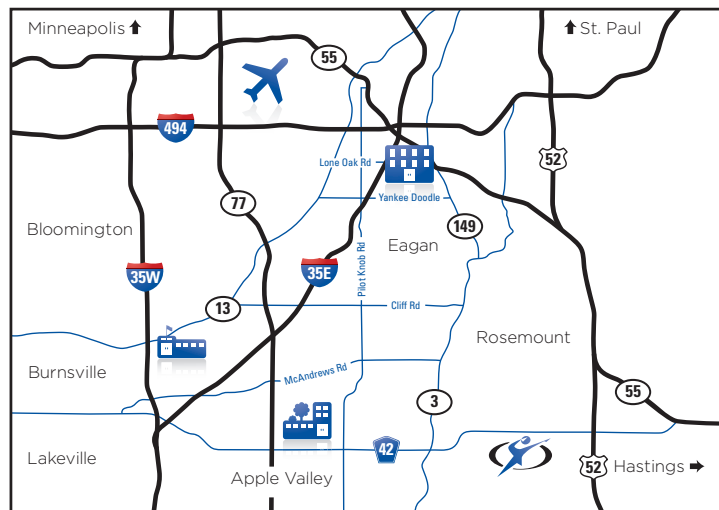
**Partners in Higher Education**  
14200 Cedar Avenue  
Apple Valley, MN 55124  
651-423-8600



**IT Training Center**  
3140 Neil Armstrong Boulevard  
Eagan, MN 55121  
651-406-4754



**Diamondhead Education Center**  
200 West Burnsville Parkway #100  
Burnsville, MN 55337







## **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.

## **Vision**

Dakota County Technical College will be recognized as a leader in providing quality technical and general education needed for employment in an ever-changing work environment

## **Philosophy**

Dakota County Technical College is a public two-year institution of higher education dedicated to the philosophy that there is dignity in all work and value in individual growth and learning. It is the philosophy of the college that all of its students should have access to quality education that prepares them for rewarding careers. The college values its role in contributing to economic development by providing a knowledgeable and skilled workforce. The college views itself as a full partner in the higher education community and recognizes its contribution to lifelong learning.



# General Information

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## 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](http://dctc.edu).

## Accreditation & Approvals

DCTC is fully accredited by the Higher Learning Commission of the North Central Association of Colleges and Schools. For more information, please visit [dctc.edu/go/hlc](http://dctc.edu/go/hlc).

DCTC also holds occupationally specific accreditation in a number of its programs.

- The Practical Nursing major is approved by the Minnesota Board of Nursing.
- The Landscape Horticulture major is nationally accredited by the Associated Landscape Contractors of America (ALCA) and the Professional Landcare Network (PLANET).
- The Dental Assistant major is accredited by the Commission on Dental Accreditation of the American Dental Association.
- The Medical Assistant major is accredited by the Council of Accreditation and Unit Recognition (CAUR) of the American Association of Medical Assistants' Endowment.
- The Medical Coding Program is approved by the Council on American Health Information Management Association (AHIMA).
- The Automotive Technician program, Auto Body Collision Technology program, and Automotive Service Educational Program are accredited by the National Automotive Technicians Educator Foundation, Inc. (NATEF).

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 are entitled to participate in federal financial assistance programs.

## ADMISSIONS

651-423-8000 | [ADMISSIONS@DCTC.EDU](mailto: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 12:45-2:30 p.m., no reservation required). At the visit, students are given the opportunity to gather information on the college, the admissions requirements, and tour 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 Student Services, or online at [dctc.edu/go/onlineapp](http://dctc.edu/go/onlineapp)

#### 2. Pay a \$20 non-refundable application fee

Online payment is accepted with a credit card at [dctc.edu/go/admissions](http://dctc.edu/go/admissions)

#### 3. Complete the ACCUPLACER Placement Test

For a testing schedule, call 651-423-8000 or visit [dctc.edu/go/accuplacer](http://dctc.edu/go/accuplacer)

#### 4. Complete an immunization form

Available at DCTC or online at [dctc.edu/go/admissions](http://dctc.edu/go/admissions)

#### 5. Submit transcripts

If you have graduated from high school within the last five years, you must submit high school transcripts. 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-MnSCU college transcripts must be sent directly from the previous college in a sealed envelope.

In addition, applicants to specific programs must meet published, program-specific admissions requirements.

### 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.

For an unofficial review of general education courses, please contact Colleen Moser at 651-423-8277 or [colleen.moser@dctc.edu](mailto: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.

### 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.

### 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. International application form with \$20 application fee
2. TOEFL exam with a minimum score of 61 on the internet-based exam
3. Copy of passport or visa
4. Official high school and/or college transcripts (translated in English)
5. Affidavit of financial support
6. Immunization record

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

June 1 for Fall Semester

November 1 for Spring Semester

### Post-Secondary Enrollment Option (PSEO)

#### Eligibility and Admission

High school students eligible for Post-Secondary Enrollment Option must be in the upper third of their junior class or the upper half of their senior class. PSEO applicants from alternative learning centers and/or home schools must achieve qualifying scores on the ACCUPLACER Test (Reading Comprehension, 78 or higher; Sentence Skills, 86 or higher; Arithmetic, 56 or higher). If a PSEO applicant does not meet the class rank requirements, they must achieve qualifying scores on the ACCUPLACER Test and have at least a 2.0 G.P.A. and meet with an admissions counselor. The PSEO Admissions Committee will review scores and high school transcript for a final decision.

DCTC PSEO applications for PSEO students are available at DCTC or online at [dctc.edu/go/pseo](http://dctc.edu/go/pseo). PSEO applicants must also submit a PSEO Program Notice of Student Registration form signed by their high school counselor.

#### PSEO Student Admission Deadline

June 1 for Fall Semester

December 1 for Spring Semester

To discuss PSEO options at DCTC, call Karianne Loula at 651-423-8298 or LeeAnn Xiong at 651-423-8221 or e-mail [admissions@dctc.edu](mailto:admissions@dctc.edu).

#### ACCUPLACER Placement Test

The ACCUPLACER is an assessment of reading comprehension, sentence skills and mathematics skills. Students entering some programs will also need an elementary algebra assessment. The results provide advisors with information needed for course placement.

Testing is available on a walk-in basis Monday-Friday. Call 651-423-8000 or visit [dctc.edu/go/accuplacer](http://dctc.edu/go/accuplacer) for the testing schedule. Students who have completed an associate's degree, bachelor's degree or graduate degree may be exempt from the test, but need to complete an exemption form and provide official transcripts before an exemption decision is made.

#### Selection of Major

It is recommended that students declare a major upon enrollment at the college. Majors may be changed, depending upon factors such as student interest and success. Before completing an application to attend DCTC, new students may meet with an advisor to determine their major.

**Undeclared Major**

Students not pursuing a degree, diploma, or certificate do not need to complete the admissions process if they do not intend to:

1. Receive veterans' benefits
2. Transfer credits toward a degree, diploma, or certificate
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 the Student Services Office.

**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. At least 20 semester credits shall be 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 occupation or technical credits.

**Associate in Science Degrees:** are awarded for successful completion of a program of 60 semester credits. At least 20 semester credits shall be delivered by DCTC. An A.S. degree is designed to transfer to a related baccalaureate major. An A.S. program includes a minimum of 30 percent 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.

**REGISTRATION**

651-423-8038 | [REGISTRATION@DCTC.EDU](mailto:REGISTRATION@DCTC.EDU)

**Full-Time and/or Degree Seeking Students**

After new students are admitted to the college, they will be invited to attend a New Student Advising/Registration session. During the session students will be given necessary information to ensure a successful college registration experience. Following the presentation, students will meet with an advisor to select courses for the term and they will register online with the guidance of the registration staff.

Students must make payment arrangements with the Tuition Office or pay their tuition online at [dctc.edu/go/paytuition](http://dctc.edu/go/paytuition). Those interested in setting up a payment plan should contact the Tuition Office by e-mail [tuition@dctc.edu](mailto:tuition@dctc.edu) or call 651-423-8248.

**Part-Time or Non-Degree Seeking Students**

Students wanting to attend on a part-time basis and/or are not pursuing a degree may register as an undeclared student. On-line, mailed or faxed registration requests will be accepted with payment during the open registration period published in the course schedule. Requests received prior to this date will be held and processed in the order in which they were received after open registration begins. Requests received without payment may be returned unprocessed. Visit [dctc.edu/go/part-time](http://dctc.edu/go/part-time) for additional details.

**Change of Registration (Drop, Add, Withdrawal)**

Students 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.

**Transfer from DCTC**

DCTC has transfer agreements with several colleges and universities. For more information on transferring your degree from DCTC, visit [dctc.edu/go/transferout](http://dctc.edu/go/transferout).



## TUITION & FEES

651-423-8045 | 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. Final payment of all tuition and fees is required each semester to confirm registration for courses. Tuition and fees for the 2010-2011 school year were \$176.62 per credit (**NOTE: some courses and programs have higher tuition rates**).

### Senior Citizens

Minnesota residents 66 or older may register for credit courses on a space-available basis within one week before courses begin. Tuition is \$20 per credit. Tuition is waived if you choose to audit the course. The following fees are applicable to all senior citizens: technology, MSCSA, health, parking, and non-refundable application fee.

## 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, ownership of property or a business, and a number of other criteria are taken into consideration. Strict congressionally-mandated formulas are used to determine need to ensure fair and equal treatment of everyone applying for financial aid.

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.ed.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 [dctc.edu/go/financialaid](http://dctc.edu/go/financialaid).

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 DCTC loan counseling session before applying for a student loan. This can be done on the Web by using the loan links at [dctc.edu/future-students/pay-for-college/loans.cfm](http://dctc.edu/future-students/pay-for-college/loans.cfm). Additionally, students must complete an 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 in the Office of Scholarships and Financial Aid.

**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 Student 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](mailto: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.

## COLLEGE SERVICES

DCTC is committed to providing its students with the opportunity to develop technical skills that lead to good careers. 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.

### Bookstore

651-423-8486 | [BOOKSTORE@DCTC.EDU](mailto:BOOKSTORE@DCTC.EDU)

Students may purchase books and supplies in the DCTC Bookstore and online. Visit the bookstore web site at [dctcbookstore.com](http://dctcbookstore.com) for store hours.

### 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.

### Career Services

651-423-8450

Career Services at DCTC helps students and alumni develop, evaluate and implement their career plans. For more information, visit [dctc.edu/go/careerservices](http://dctc.edu/go/careerservices) or stop by Room 2-202.

### Counseling

651-423-8217

Due to difficult life circumstances and/or academic challenges, college students may need assistance in developing coping strategies. The college counselor is professionally trained to help students deal with a variety of educational, adjustment and mental health issues. For more information, visit [dctc.edu/go/counseling](http://dctc.edu/go/counseling) or contact Jennifer Robinson-West at 651-423-8217 or in Room 2-141.

### Disability Services

651-423-8469

Dakota County Technical College is committed to providing an accessible education to students with disabilities. Enrolled students may be eligible for services if they have a documented disability that significantly limits one or more

major life activities, e.g., learning, walking and/or reading. To discuss or arrange accommodations, call Anne Swanberg at 651-423-8469 or stop by Room 2-141.

### 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 is located in Room 2-205. Please report any medical concerns to Health Services.

### Housing

651-423-8000

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/go/housing](http://dctc.edu/go/housing).

### Computer Lab (Instructional Technology Center)

651-423-8657

The Instructional Technology Center (ITC) is a computer lab available to students for general computer use. The ITC is located in Room 2-101. For more information, visit [dctc.edu/go/itc](http://dctc.edu/go/itc).

### Library

651-423-8345

DCTC's library offers students a wide variety of informational resources. The library is located on the west side of DCTC's campus, on the first floor. For more information, visit [dctclibrary.dctc.edu](http://dctclibrary.dctc.edu).

### Learning Center

651-423-8420

The Learning Center provides tutoring and other learning support services to help students achieve success in their technical and occupational training program. For more information, visit [dctc.edu/go/learningcenter](http://dctc.edu/go/learningcenter) or stop by Room 2-141.

### TRiO/Student Support Services

651-423-8420

DCTC has a federally-funded TRiO educational opportunity outreach program to serve and assist low-income, first-generation college students, and students with disabilities to progress through the academic pipeline to postbaccalaureate programs. For more information, visit [dctc.edu/go/trio](http://dctc.edu/go/trio) or stop by Room 2-141.

## STUDENT LIFE

651-423-8330 | [STUDENTLIFE@DCTC.EDU](mailto: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

651-423-8249 | [ALUMNI@DCTC.EDU](mailto: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. The mission of the Alumni Association is to reunite former students with the college and their programs, to provide life-long learning opportunities and services to the community. To be a part of the association, visit [dctc/go/alumni](http://dctc/go/alumni).

### Student Senate

651-423-8330 | [STUSENATE@DCTC.EDU](mailto:STUSENATE@DCTC.EDU)

Student Senate is the voice of the student body. The Senate strives to represent student opinion to the college faculty, staff, and administration as well as the college community and the state legislature. Student Senate deals with all aspects of college life, including: academics, student life, judicial affairs, health and human services, and civic engagement. For more information or to join the Senate, visit [dctc.edu/go/senate/index.cfm](http://dctc.edu/go/senate/index.cfm).

### Blue Knights Athletics

651-423-8330 | [ATHLETICS@DCTC.EDU](mailto:ATHLETICS@DCTC.EDU)

DCTC is a member of the National Junior College Athletic Association (NJCAA), the Minnesota College Athletic Conference (MCAC) Division III, and the Iowa Community College Conference (ICCC) Division I. The college has varsity teams in men's soccer, women's soccer, fastpitch softball, baseball, men's basketball and women's volleyball.

### 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:

- Multicultural Student Leadership Association (MSLA)
- Phi Theta Kappa International Honor Society
- SkillsUSA Minnesota
- American Marketing Association (AMA) Club
- Veterans Club
- Automotive Club

- Chess Club
- Coral Reef Ecology Club
- Landscape Horticulture Club
- Business Professionals of America
- Christians on Campus
- Writer's Club
- Gay Straight Alliance
- Meeting Professionals International
- Hospitality Alumni Network
- Design Connexion

For more information or to start your own club, visit [dctc/go/clubs](http://dctc/go/clubs).

### Wellness Center

651-423-8330 | [WELLNESS.CENTER@DCTC.EDU](mailto: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 1-705.

### Veterans Resource Center

651-423-8627 | [VETERANS@DCTC.EDU](mailto:VETERANS@DCTC.EDU)

Within our Student Life Center we have a Veterans Resource Center which is open to military members and their families. The Center has information on educational benefits, and other programs that may be of interest. Stop by or give us a call.

# Business & Information Systems



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## INFORMATION IS EVERYTHING

We are living in the Information Age. Understanding how to make information work is a vital skill at every level of business, from crunching numbers to mastering office technologies to configuring network solutions.

Facing an information overload, society needs trained people to manage, interpret and communicate an ongoing inrush and outflow of data. Business and Information Systems programs give students the tools and know-how to find their favorite lane on the information superhighway.

## TRAITS OF THE TRADE

**Professionals with a gift for mastering information are:**

- Good at analyzing risk
- Skilled in managing resources
- Natural problem solvers
- Critical thinkers
- Organized
- Thoughtful
- Multi-taskers
- Independent
- Detail-oriented
- Computer smart
- Self-motivators

*Unless otherwise specified, salary data is sourced from [iseek.org](http://iseek.org).*



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## DEAN

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“True genius resides in the capacity for evaluation of uncertain,  
hazardous, and conflicting information.”

—Winston Churchill—

## ACCOUNTING

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

### Outcomes

Accountant A.A.S. Degree ..... 72 cr.  
 Accountant Diploma ..... 64 cr.  
 Accounting Clerk Diploma ..... 32 cr.

### Major Description

Accounting students are trained to analyze, interpret and record financial information. Working with word processing, spreadsheet and accounting software, they learn how to prepare financial statements, tax returns and government forms. They also learn federal and state tax and payroll laws.

### Work Environment

Accountants work in typical office settings with a fair number working out of their homes. Some travel during the course of their workdays, visiting branch locations, government offices and client businesses.

### Potential Job Titles

- Account Administrator
- Budget Accountant
- Business Analyst
- Financial Advisor
- Payroll Accountant
- Tax Accountant

### Salary Data

- Average Wage: \$30.79
- Top Earners: \$44.08

### ACCOUNTANT - A.A.S. DEGREE

#### First Year - First Semester

ACCT1000	Principles of Accounting I	4
ACCT1100	Business Law and Ethics	3
ACCT1106	Accounting Mathematics	3
OFFC1018	Basic Computer Applications	3
	General Education Electives**	4
<b>Total Credits</b>		<b>17</b>

#### First Year - Second Semester

ACCT1003	Principles of Accounting II	4
ACCT1226	Payroll Accounting	3
ACCT1306	Spreadsheets	3
ACCT1406	Income Tax	4
	Technical Elective*	3
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>20</b>

#### Second Year - First Semester

ACCT2000	Intermediate Accounting I	4
ACCT2100	Cost Accounting I	4
ACCT2200	Accounting Computer Applications I	3
ENGL1150	Composition I	3
	General Education Elective**	3
<b>Total Credits</b>		<b>17</b>

#### Second Year - Second Semester

ACCT2003	Intermediate Accounting II	4
ACCT2103	Cost Accounting II	4
ACCT2203	Accounting Computer Applications II	3
ACCT2306	Auditing	3
	General Education Elective (MnTC Goal 3 or 4)**	4
<b>Total Credits</b>		<b>18</b>

**TOTAL PROGRAM REQUIREMENTS 72**

*This is a sample course sequence resulting in an A.A.S. degree. Please consult your program advisor regarding your academic plans.*

\* Technical electives may be selected from the following subject areas:  
 ACCT, ISTC or OFFC.

\*\* Select General Education electives from MnTC goal area.  
 See pages 116-118 for MnTC goal areas.

**ACCOUNTANT - DIPLOMA****First Year - First Semester**

ACCT1000	Principles of Accounting I	4
ACCT1100	Business Law and Ethics	3
ACCT1106	Accounting Mathematics	3
	Technical Elective*	3
OFFC1018	Basic Computer Applications	3
<b>Total Credits</b>		<b>16</b>

**First Year - Second Semester**

ACCT1003	Principles of Accounting II	4
ACCT1226	Payroll Accounting	3
ACCT1306	Spreadsheets	3
ACCT1406	Income Tax	4
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>17</b>

**Second Year - First Semester**

ACCT2000	Intermediate Accounting I	4
ACCT2100	Cost Accounting I	4
ACCT2200	Accounting Computer Applications I	3
ENGL1150	Composition I (or ENGL1000)	3
<b>Total Credits</b>		<b>14</b>

**Second Year - Second Semester**

ACCT2003	Intermediate Accounting II	4
ACCT2103	Cost Accounting II	4
ACCT2203	Accounting Computer Applications II	3
ACCT2306	Auditing	3
	General Education Elective*	3
<b>Total Credits</b>		<b>17</b>

**TOTAL PROGRAM REQUIREMENTS 64**

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*

*\* Technical electives may be selected from the following subject areas:  
ACCT, ISTC or OFFC.*

**ACCOUNTING CLERK - DIPLOMA****First Year - First Semester**

ACCT1000	Principles of Accounting I	4
ACCT1100	Business Law and Ethics	3
ACCT1106	Accounting Mathematics	3
OFFC1018	Basic Computer Applications	3
	Technical Elective*	2
<b>Total Credits</b>		<b>15</b>

**First Year - Second Semester**

ACCT1003	Principles of Accounting II	4
ACCT1226	Payroll Accounting	3
ACCT1306	Spreadsheets	3
ACCT1406	Income Tax	4
ENGL1150	Composition I (or ENGL1000)	3
<b>Total Credits</b>		<b>17</b>

**TOTAL PROGRAM REQUIREMENTS 32**

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*

*\* Technical electives may be selected from the following subject areas:  
ACCT, ISTC or OFFC.*



## INFORMATION SYSTEMS MANAGEMENT

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

### Outcome

Information Systems Mgmt. A.A.S. Degree . . . . . 71 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

Equipped with well-developed analytical skills, information system managers experience a high level of social interaction. With job duties that keep them indoors, 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: \$24.09
- Top Earners: \$34.10

### INFORMATION SYSTEMS MANAGEMENT - A.A.S. DEGREE

#### First Year - First Semester

ISTC1100	Business Communications	3
ISTC1030	Operating Systems I	3
ISTC1040	Network Systems I	3
ISTC1015	Supporting Business Applications	3
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>15</b>

#### First Year - Second Semester

ISTC1000	Introduction to Information Systems Management	3
ISTC1010	Microcomputer Maintenance	3
ISTC1033	Operating Systems II	3
ISTC1050	Database Systems	3
ISTC1060	Security I	3
ENGL1150	Composition I	3
<b>Total Credits</b>		<b>18</b>

#### Second Year - First Semester

ISTC1300	Introduction to Programming	3
ISTC1400	Wireless Systems	3
ISTC2035	Operating System III	3
ISTC2040	Database Management	3
	General Education Elective (MnTC Goal 3 or 4)**	3
	General Education Elective	3
<b>Total Credits</b>		<b>18</b>

#### Second Year - Second Semester

ISTC1230	System Analysis and Design	3
ISTC2065	Security II: Firewalls	3
ISTC2100	Project Management	3
ISTC2120	Financial Accounting for Information Systems	3
ISTC2140	Digital Convergence	3
	General Education Elective**	5
<b>Total Credits</b>		<b>20</b>

**TOTAL PROGRAM REQUIREMENTS 71**

*This is a sample course sequence resulting in an A.A.S. degree.  
 Please consult your program advisor regarding your academic plans.*

*\*\* Select General Education electives from MnTC goal area.  
 See pages 116-118 for MnTC goal areas.*



## INFORMATION SYSTEMS MANAGEMENT - DIPLOMA

### First Year - First Semester

ISTC1100	Business Communications	3
ISTC1015	Supporting Business Applications	3
ISTC1040	Network Systems I	3
ISTC1030	Operating Systems I	3
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>15</b>

### 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
<b>Total Credits</b>		<b>15</b>

### 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
<b>Total Credits</b>		<b>15</b>

### Second Year - Second Semester

ISTC1230	System Analysis and Design	3
ISTC2065	Security II: Firewalls	3
ISTC2120	Financial Accounting for Information Systems	3
ISTC2140	Digital Convergence	3
	General Education Elective	3
<b>Total Credits</b>		<b>15</b>

**TOTAL PROGRAM REQUIREMENTS      60**

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*



## NETWORKING ADMINISTRATION

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

### Outcome

Networking Administration A.A.S. Degree ..... 71 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: \$35.69/hour
- Top Earners: \$49.94/hour

### NETWORKING ADMINISTRATION - A.A.S. DEGREE

#### First Year - First Semester

ISTC1100	Business Communications	3
ISTC1030	Operating Systems I	3
ISTC1040	Network Systems I	3
ISTC1015	Supporting Business Applications	3
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>15</b>

#### First Year - Second Semester

ISTC1010	Microcomputer Maintenance	3
ISTC1033	Operating Systems II	3
ISTC1050	Database Systems	3
ISTC1400	Wireless Systems	3
ISTC2005	Network Systems II	3
ENGL1150	Composition I	3
<b>Total Credits</b>		<b>18</b>

#### Second Year - First Semester

ISTC1060	Security I	3
ISTC2010	Network Systems III	3
ISTC2035	Operating System III	3
ISTC2040	Database Management	3
	General Education Elective**	7
<b>Total Credits</b>		<b>19</b>

#### Second Year - Second Semester

ISTC2015	Network Systems IV	3
ISTC2065	Security II: Firewalls	3
ISTC2070	Security III: Forensics	3
ISTC2100	Project Management	3
ISTC2140	Digital Convergence	3
	General Education Elective (MnTC Goal 3 or 4)**	4
<b>Total Credits</b>		<b>19</b>

**TOTAL PROGRAM REQUIREMENTS 71**

*This is a sample course sequence resulting in an A.A.S. degree.  
 Please consult your program advisor regarding your academic plans.*

*\*\* Select General Education electives from MnTC goal area.  
 See pages 116-118 for MnTC goal areas.*

**NETWORKING ADMINISTRATION - DIPLOMA****First Year - First Semester**

ISTC1100	Business Communications	3
ISTC1030	Operating Systems I	3
ISTC1040	Network Systems I	3
ISTC1015	Supporting Business Applications	3
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>15</b>

**First Year - Second Semester**

ISTC1010	Microcomputer Maintenance	3
ISTC1033	Operating Systems II	3
ISTC1050	Database Systems	3
ISTC1400	Wireless Systems	3
ISTC2005	Network Systems II	3
<b>Total Credits</b>		<b>15</b>

**Second Year - First Semester**

ENGL1150	Composition I	3
ISTC1060	Security I	3
ISTC2010	Network Systems III	3
ISTC2035	Operating System III	3
ISTC2040	Database Management	3
<b>Total Credits</b>		<b>15</b>

**Second Year - Second Semester**

ISTC2015	Network Systems IV	3
ISTC2065	Security II: Firewalls	3
ISTC2070	Security III: Forensics	3
ISTC2140	Digital Convergence	3
	General Education Elective	3
<b>Total Credits</b>		<b>15</b>

**TOTAL PROGRAM REQUIREMENTS 60**

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*

**PC TECHNICIAN - CERTIFICATE****First Year - First Semester**

ISTC1100	Business Communications	3
ISTC1030	Operating Systems I	3
ISTC1040	Network Systems I	3
SPEE1020	Interpersonal Communication	3
ISTC1015	Supporting Business Applications	3
<b>Total Credits</b>		<b>15</b>

**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
<b>Total Credits</b>		<b>15</b>

**TOTAL PROGRAM REQUIREMENTS 30**

*This is a sample course sequence resulting in a certificate.  
Please consult your program advisor regarding your academic plans.*



## SOFTWARE DEVELOPMENT

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

### Outcomes

Software Development A.A.S. Degree ..... 71 cr.  
 Software Development Diploma ..... 60 cr.  
 Web Developer Diploma ..... 32 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 indoors in clean, comfortable 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: \$43.55/hour
- Top Earners: \$60.97/hour

### SOFTWARE DEVELOPMENT - A.A.S. DEGREE

#### First Year - First Semester

ISTC1100	Business Communications	3
ISTC1030	Operating Systems I	3
ISTC1040	Network Systems I	3
ISTC1300	Introduction to Programming	3
ISTC1015	Supporting Business Applications	3
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>18</b>

#### First Year - Second Semester

ISTC1010	Microcomputer Maintenance	3
ISTC1033	Operating Systems II	3
ISTC1050	Database Systems	3
ISTC1060	Security I	3
ISTC1205	Web Client Programming	3
ENGL1150	Composition I	3
<b>Total Credits</b>		<b>18</b>

#### Second Year - First Semester

ISTC1210	Web Server Programming	3
ISTC1230	System Analysis and Design	3
ISTC2310	Java I	3
ISTC2320	.NET I	3
	General Education Elective (MnTC Goal 3 or 4)**	3
	General education Elective	4
<b>Total Credits</b>		<b>19</b>

#### Second Year - Second Semester

ISTC2050	Data Structures	3
ISTC2100	Project Management	3
ISTC2315	Java II	3
ISTC2325	.NET II	3
	General Education Elective	4
<b>Total Credits</b>		<b>16</b>

**TOTAL PROGRAM REQUIREMENTS 71**

*This is a sample course sequence resulting in an A.A.S. degree.  
 Please consult your program advisor regarding your academic plans.*

*\*\* Select General Education electives from MnTC goal area.  
 See pages 116-118 for MnTC goal areas.*



**SOFTWARE DEVELOPMENT - DIPLOMA****First Year - First Semester**

ISTC1100	Business Communications	3
ISTC1030	Operating Systems I	3
ISTC1040	Network Systems I	3
ISTC1300	Introduction to Programming	3
ISTC1015	Supporting Business Applications	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
ISTC1205	Web Client Programming	3

**Total Credits 15**

**Second Year - First Semester**

ISTC1210	Web Server Programming	3
ISTC1230	System Analysis and Design	3
ISTC2310	Java I	3
ISTC2320	.NET I	3
SPEE1020	Interpersonal Communication	3

**Total Credits 15**

**Second Year - Second Semester**

ISTC2050	Data Structures	3
ISTC2315	Java II	3
ISTC2325	.NET II	3
ENGL1150	Composition I	3
	General Education Elective	3

**Total Credits 15**

**TOTAL PROGRAM REQUIREMENTS 60**

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*

**WEB DEVELOPER - DIPLOMA****First Year - First Semester**

ISTC1100	Business Communications	3
ISTC1030	Operating Systems I	3
ISTC1300	Introduction to Programming	3
ISTC1015	Supporting Business Applications	3
VCOM1032	Interactive Design Fundamentals	2

**Total Credits 14**

**First Year - Second Semester**

ISTC1050	Database Systems	3
ISTC1060	Security I	3
ISTC1205	Web Client Programming	3
ISTC1210	Web Server Programming	3
ISTC2320	.NET I	3
SPEE1020	Interpersonal Communication	3

**Total Credits 18**

**TOTAL PROGRAM REQUIREMENTS 32**

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*



## EXECUTIVE & ADMINISTRATIVE ASSISTANT

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

### Outcomes

Executive Assistant A.A.S. Degree .....60 cr.  
 Administrative Assistant Diploma .....38 cr.  
 Receptionist Certificate.....25 cr.

### Major Description

**Executive Assistant:** This program teaches the expertise needed for creating and editing documents, spreadsheets, databases, electronic presentations and Internet navigation research. This is the ideal major for people in the workforce looking for a challenge or ways to advance their careers.

**Administrative Assistant:** This program prepares students for employment in administrative support. Students use computer systems for document processing and file management tasks. Administrative assistants may perform duties such as handling mail, filing and retrieving records and handling telephone calls.

### Work Environment

Graduates find employment in administrative support in a wide variety of businesses, including 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: \$22.15
- Top Earners: \$29.40

### EXECUTIVE ASSISTANT - A.A.S. DEGREE

#### First Year - First Semester

OFFC1005	Keyboarding/Formatting	3
OFFC1010	Business English Skills	2
OFFC1019	Receptionist Skills	2
OFFC1020	Office Procedures	4
OFFC1018	Basic Computer Applications	3
<b>Total Credits</b>		<b>14</b>

#### First Year - Second Semester

OFFC1017	Technology for the Business Professional	3
OFFC1230	MS Publisher	2
OFFC1260	Certification Basics - Word	3
OFFC1275	Certification Basics - PowerPoint	3
OFFC1285	Oral Business Communications/ Job Seeking Skills	2
OFFC1290	Written Business Communications	2
<b>Total Credits</b>		<b>15</b>

#### Second Year - First Semester

SPEE1020	Interpersonal Communication	3
	Technical Electives*	9
	General Education Elective (MnTC Goal 3 or 4)**	4
<b>Total Credits</b>		<b>16</b>

#### Second Year - Second Semester

OFFC1040	Integrated Office Skills	3
	Technical Elective*	3
ENGL1150	Composition I	3
	General Education Electives**	6
<b>Total Credits</b>		<b>15</b>

**TOTAL PROGRAM REQUIREMENTS 60**

*This is a sample course sequence resulting in an A.A.S. degree.  
 Please consult your program advisor regarding your academic plans.*

*\* Technical electives may be selected from the following subject areas:  
 OFFC, ISTC, ENTR, ACCT or SMGT; OFFC1265 is recommended.*

*\*\* Select General Education electives from MnTC goal area.  
 See pages 116-118 for MnTC goal areas.*

**ADMINISTRATIVE ASSISTANT - DIPLOMA****First Year - First Semester**

OFFC1005	Keyboarding/Formatting	3
OFFC1010	Business English Skills	2
OFFC1019	Receptionist Skills	2
OFFC1020	Office Procedures	4
OFFC1018	Basic Computer Applications	3
	Technical Elective*	3
<b>Total Credits</b>		<b>17</b>

**First Year - Second Semester**

OFFC1017	Technology for the Business Professional	3
OFFC1040	Integrated Office Skills	3
OFFC1230	MS Publisher	2
OFFC1260	Certification Basics - Word	3
OFFC1275	Certification Basics - PowerPoint	3
OFFC1285	Oral Business Communications/ Job Seeking Skills	2
OFFC1290	Written Business Communications	2
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>21</b>

**TOTAL PROGRAM REQUIREMENTS 38**

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*

*\* Technical electives may be selected from the following subject areas:  
OFFC, ISTD, ENTR, SMGT or ACCT.*

**RECEPTIONIST - CERTIFICATE****First Year - First Semester**

OFFC1000	Basic Keyboarding	1
OFFC1010	Business English Skills	2
OFFC1018	Basic Computer Applications	3
OFFC1019	Receptionist Skills	2
OFFC1020	Office Procedures	4
<b>Total Credits</b>		<b>12</b>

**First Year - Second Semester**

OFFC1017	Technology for the Business Professional	3
OFFC1285	Oral Business Communications/ Job Seeking Skills	2
OFFC1290	Written Business Communications Technical Elective*	2
		6
<b>Total Credits</b>		<b>13</b>

**TOTAL PROGRAM REQUIREMENTS 25**

*This is a sample course sequence resulting in a certificate.  
Please consult your program advisor regarding your academic plans.*

*\* Technical electives may be selected from the following subject areas:  
OFFC, ISTD, ENTR, SMGT or ACCT.*



## HEALTHCARE DOCUMENTATION SPECIALIST

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

### Outcome

Healthcare Documentation Specialist Diploma . . . . . 39 cr.

### Major Description

Healthcare Documentation Specialists are vital members of healthcare teams, maintaining and providing crucial information for patient care and safety, reimbursement, marketing, legal issues and research. This program focuses on the application of computers to generate, validate, secure and integrate healthcare data so it can be effectively utilized to support the decision-making activities of clinical and administrative professionals. The duties of a Healthcare Documentation Specialist include ensuring the quality of medical documentation by verifying completeness and accuracy of transcribed medical reports, analyzing medical documentation to improve patient care, compliance, safety, coding and familiarity with HER (Electronic Healthcare Record) database management. This diploma involved technical courses to prepare students for careers in this fast growing field. Students utilize state-of-the-art virtual labs and get valuable hands-on experience during internships at healthcare facilities.

### Work Environment

Careers are found in hospitals, clinics, extended-care facilities, medical research groups, and health departments and firms that provide medical transcription services. Transcriptionists may also work from home.

### Potential Job Titles

- Medical Transcriptionist
- Transcribing-Machine Operator
- Medical Biller Coder
- Medical Coding Specialist
- Medical Insurance Clerk
- Medical Voucher Clerk

### Salary Data

- Average Salary: \$31,300
- Top Earners: \$39,700

### HEALTHCARE DOCUMENTATION SPECIALIST - DIPLOMA

#### First Year - First Semester

OFFC1056	Intro to Healthcare Documentation	3
OFFC1071	ICD-9-CM Coding	3
OFFC1010	Business English Skills	2
OFFC1045	Medical Terminology	2
OFFC1018	Basic Computer Applications	3
<b>Total Credits</b>		<b>13</b>

#### First Year - Second Semester

OFFC1005	Keyboarding/Formatting	3
OFFC1052	Medical Transcription I	2
OFFC1073	Coding and Reimbursement	3
OFFC1074	Advanced Coding and Reimbursement	2
OFFC1051	Human Diseases	3
<b>Total Credits</b>		<b>13</b>

#### Second Year - First Semester

HEAL1101	Anatomy and Physiology	4
OFFC1285	Oral Business Communications/ Job Seeking Skills	2
OFFC1053	Medical Transcription II	2
OFFC1054	Speech Recognition Transcription	2
HEAL1702	Pharmacology Basics	1
OFFC2970	Internship for Healthcare Documentation Specialist	2
<b>Total Credits</b>		<b>13</b>

**TOTAL PROGRAM REQUIREMENTS 39**

*This is a sample course sequence resulting in a diploma.  
 Please consult your program advisor regarding your academic plans.*



## LEGAL ADMINISTRATIVE ASSISTANT

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

### Outcome

Legal Administrative Assistant A.A.S. Degree .....60 cr.  
 Legal Administrative Assistant Diploma .....39 cr.  
 Legal Receptionist Certificate .....25 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 Proofreading & Editing. Students also take an array 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 assistants interact often and directly with clients and staff.

### Potential Job Titles

- Legal Administrative Assistant
- Law Secretary
- Legal Secretary
- Paralegal
- Paralegal Secretary

### Salary Data

- Average Wage: \$24.01/hour
- Top Earners: \$31.67/hour

### LEGAL ADMINISTRATIVE ASSISTANT - A.A.S. DEGREE

#### First Year - First Semester

OFFC1005	Keyboarding/Formatting	3
OFFC1010	Business English Skills	2
OFFC1019	Receptionist Skills	2
OFFC1020	Office Procedures	4
OTEC1725	Transactional Law †	3
OFFC1018	Basic Computer Applications	3
<b>Total Credits</b>		<b>17</b>

#### First Year - Second Semester

OFFC1017	Technology for the Business Professional	3
OFFC1040	Integrated Office Skills	3
OFFC1275	Certification Basics - PowerPoint	3
OFFC1290	Written Business Communications	2
OTEC1730	Civil Procedures †	3
<b>Total Credits</b>		<b>14</b>

#### Second Year - First Semester

OFFC1260	Certification Basics - Word	3
OTEC2735	Family Law/Criminal Law †	3
ENGL1150	Composition I	3
PHIL1100	Ethics	3
<b>Total Credits</b>		<b>12</b>

#### Second Year - Second Semester

OFFC1285	Oral Business Communications/ Job Seeking Skills	2
OTEC2740	Legal Proofreading & Editing †	3
SPEE1020	Interpersonal Communication	3
	Technical Elective*	2
	General Education Electives (MnTC Goal 3 or 4)**	3
	General Education Elective**	4
<b>Total Credits</b>		<b>17</b>

**TOTAL PROGRAM REQUIREMENTS 60**

*This is a sample course sequence resulting in an A.A.S. degree. Please consult your program advisor regarding your academic plans.*

*† Courses offered online from South Central College-Mankato.*

*\* Technical electives may be selected from the following subject areas: OFFC, ISTE, ENTR SMGT or ACCT.*

*\*\* Select General Education electives from MnTC goal area. See pages 116-118 for MnTC goal areas.*

**LEGAL ADMINISTRATIVE ASSISTANT - DIPLOMA****First Year - First Semester**

OFFC1005	Keyboarding/Formatting	3
OFFC1010	Business English Skills	2
OFFC1019	Receptionist Skills	2
OFFC1020	Office Procedures	4
OTEC1725	Transactional Law †	3
OFFC1018	Basic Computer Applications	3
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>20</b>

**First Year - Second Semester**

OFFC1017	Technology for the Business Professional	3
OFFC1040	Integrated Office Skills	3
OFFC1260	Certification Basics - Word	3
OFFC1275	Certification Basics - PowerPoint	3
OFFC1285	Oral Business Communications/ Job Seeking Skills	2
OFFC1290	Written Business Communications	2
OTEC1730	Civil Procedures	3
<b>Total Credits</b>		<b>19</b>

**TOTAL PROGRAM REQUIREMENTS 39**

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*

*† Courses offered online from South Central College-Mankato.*

**LEGAL RECEPTIONIST - CERTIFICATE****First Year - First Semester**

OFFC1000	Basic Keyboarding	1
OFFC1010	Business English Skills	2
OFFC1019	Receptionist Skills	2
OFFC1020	Office Procedures	4
OTEC1725	Transactional Law †	3
OFFC1018	Basic Computer Applications	3
<b>Total Credits</b>		<b>15</b>

**First Year - Second Semester**

OFFC1017	Technology for the Business Professional	3
OFFC1285	Oral Business Communications/ Job Seeking Skills	2
OFFC1290	Written Business Communications Technical Elective*	2
		3
<b>Total Credits</b>		<b>10</b>

**TOTAL PROGRAM REQUIREMENTS 25**

*This is a sample course sequence resulting in a certificate.  
Please consult your program advisor regarding your academic plans.*

*† Courses offered online from South Central College-Mankato.*

*\* Technical electives may be selected from the following subject areas:  
OFFC, ISTC, ENTR ACCT or SMGT.*



## MEDICAL ADMINISTRATIVE SPECIALIST

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

### Outcomes

Medical Administrative Specialist A.A.S. Degree . . . . .60 cr.  
 Medical Administrative Specialist Diploma . . . . .39 cr.  
 Medical Receptionist Certificate . . . . .25 cr.

### Major Description

This program prepares students to work in a variety of positions in the medical field. Specialized medical courses include medical office procedures, medical terminology, anatomy and physiology. Students also complete various communications courses and 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 correspondence, controlling doctor schedules, preparing professional presentations, scheduling patient appointments, maintaining patient files and transcribing reports.

### Potential Job Titles

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

### Salary Data

- Average Wage: \$17.49/hour
- Top Earners: \$21.58/hour

### MEDICAL ADMINISTRATIVE SPECIALIST - A.A.S. DEGREE

#### First Year - First Semester

OFFC1005	Keyboarding/Formatting	3
OFFC1010	Business English Skills	2
OFFC1019	Receptionist Skills	2
OFFC1045	Medical Terminology	2
OFFC1057	Medical Office Procedures	4
OFFC1018	Basic Computer Applications	3
<b>Total Credits</b>		<b>16</b>

#### First Year - Second Semester

OFFC1052	Medical Transcription I	2
OFFC1053	Medical Transcription II	2
OFFC1054	Speech Recognition Transcription	2
OFFC1285	Oral Business Communications/ Job Seeking Skills	2
OFFC1290	Written Business Communications	2
HEAL1101	Anatomy and Physiology	4
<b>Total Credits</b>		<b>14</b>

#### Second Year - First Semester

OFFC1260	Certification Basics - Word	3
OFFC1275	Certification Basics - PowerPoint	3
ENGL1150	Composition I	3
PSYC1100	General Psychology	3
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>15</b>

#### Second Year - Second Semester

OFFC1017	Technology for the Business Professional	3
OFFC1040	Integrated Office Skills	3
	Technical Elective*	3
	General Education Elective (MnTC Goal 3 or 4)**	3
	General Education	3
<b>Total Credits</b>		<b>15</b>

**TOTAL PROGRAM REQUIREMENTS 60**

*This is a sample course sequence resulting in an A.A.S. degree. Please consult your program advisor regarding your academic plans.*

\* Technical electives may selected from the following subject areas:  
OFFC, ISTC, ACCT, ENTR or SMGT.

\*\* Select General Education electives from MnTC goal area.  
See pages 116-118 for MnTC goal areas.

## MEDICAL ADMINISTRATIVE SPECIALIST - DIPLOMA

### First Year - First Semester

OFFC1005	Keyboarding/Formatting	3
OFFC1010	Business English Skills	2
OFFC1019	Receptionist Skills	2
OFFC1018	Basic Computer Applications	3
OFFC1045	Medical Terminology	2
OFFC1057	Medical Office Procedures	4
OFFC1275	Certification Basics - Powerpoint	3
<b>Total Credits</b>		<b>19</b>

### First Year - Second Semester

OFFC1017	Technology for Business Professionals	3
OFFC1040	Integrated Office Skills	3
OFFC1260	Certification Basics - Word	3
OFFC1285	Oral Business Communications/ Job Seeking Skills	2
OFFC1290	Written Business Communications	2
HEAL1101	Anatomy and Physiology	4
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>20</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>39</b>

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*

## MEDICAL RECEPTIONIST - CERTIFICATE

### First Year - First Semester

OFFC1000	Basic Keyboarding	1
OFFC1010	Business English Skills	2
OFFC1019	Receptionist Skills	2
OFFC1045	Medical Terminology	2
OFFC1057	Medical Office Procedures	4
OFFC1018	Basic Computer Applications	3
<b>Total Credits</b>		<b>14</b>

### First Year - Second Semester

OFFC1017	Technology for Business Professionals	3
OFFC1285	Oral Business Communications/ Job Seeking Skills	2
OFFC1290	Written Business Communications	2
HEAL1101	Anatomy and Physiology	4
<b>Total Credits</b>		<b>11</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>25</b>

*This is a sample course sequence resulting in a certificate.  
Please consult your program advisor regarding your academic plans.*







# Business & Management

*Our Business and Management programs are delivered at the Partners in Higher Education site in Apple Valley, Minn., where Dakota County Technical College, Inver Hills Community College and Saint Mary's University come together at one convenient location, allowing busy working adults to earn advanced degrees faster on a seamless track.*

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## TAKING CARE OF BUSINESS

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

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

## TRAITS OF THE TRADE

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

- Clarity of purpose
- Outstanding communication skills
- Dedication to success
- Courage to take risks
- Enthusiastic vision
- Drive to found an enterprise
- Positive outlook
- Able to think tactically and strategically
- Desire to lead

*Unless otherwise specified, salary data is sourced from [iseek.org](http://iseek.org).*



# Contact Us

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“Fit no stereotypes. Don’t chase the latest management fads.

The situation dictates which approach best  
accomplishes the team’s mission.”

—Colin Powell —

## BUSINESS MANAGEMENT

**Delivery:** Daytime, Evening and Online Classes  
**Start:** Fall, Spring or Summer Session, Full- or Part-Time  
**Location:** Rosemount Campus, Apple Valley Site

### Outcome

Business Management A.S. Degree. . . . .60 cr.

### Major Description

This program provides essential knowledge and skills that can be applied to the constantly changing and highly competitive world of business. Students complete a core of business courses with an emphasis in management. Graduates can transfer to select four-year institutions to earn more advanced degrees.

### 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 (look up salary)
- Front Line Supervisor
- Project Manager

### Salary Data

#### Office Manager

- Average Wage: \$25.05/hour
- Top Earners: \$36.26/hour

#### Operations Manager

- Average Wage: \$60.29/hour
- Top Earners: \$80+/hour

### BUSINESS MANAGEMENT - A.S. DEGREE

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

ACCT1000	Accounting I	4
ACCT1003	Accounting II	4
ENTR1170	Introduction to Small Business	2
MKTC1000	Principles of Marketing	3
SMGT1033	Business Law & Ethics	3
SMGT1241	Effective Business Communication	3
SMGT1231	Planning & Project Management	2
SMGT2001	Management Skills I	3
SMGT2002	Management Skills II	3
SMGT2003	Management Skills III	3
<b>Total Credits</b>		<b>30</b>

### General Education

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
	MATH (MnTC Goal 4)	4
	Science (MnTC Goal 3)	3
	General Education Elective**	17
<b>Total Credits</b>		<b>30</b>

**TOTAL PROGRAM REQUIREMENTS 60**

*\*\* Select General Education electives from MnTC goal area.  
 See pages 116-118 for MnTC goal areas.*



## BUSINESS &amp; MANAGEMENT

## BUSINESS MARKETING

**Delivery:** Daytime and Online Classes  
**Start:** Fall, Spring or Summer Session, Full- or Part-Time  
**Location:** Rosemount Campus, Apple Valley Site

**Outcomes**

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

**Major Description**

**Marketing Communications Specialist:** This certificate 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.

**Business 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

**Salary Data****Marketing Communications Jobs**

- Average Wage: \$55.74/hour
- Top Earners: \$80+/hour

**Marketing Manager**

- Average Wage: \$60.79/hour
- Top Earners: \$80+/hour

**BUSINESS 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
MKTC2060	Proposal Writing	1
MKTC2220	Promotional Marketing	2
MKTC2105	Marketing Communications Writing	3
MKTC2310	Public Relations	3
MKTC2505	E-Marketing	3
MKTC2600	Marketing Research	3
MKTC2815	Business Law	3
	General Education**	30
<b>Total Credits</b>		<b>60</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>60</b>

\*\* See General Education A.S. degree requirements see page 115.

**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
MKTC2220	Promotional Marketing	2
MKTC2310	Public Relations	3
MKTC2410	Marketing Visual Communications	1
MKTC2505	E-Marketing	3
MKTC2600	Marketing Research	3
MKTC2815	Business Law	3
MKTC2900	Portfolio and Interviewing	1
<b>Total Credits</b>		<b>28</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>28</b>

**BUSINESS MARKETING SPECIALIST – A.A.S. DEGREE**

ACCT1000	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
MKTC2060	Proposal Writing	1
MKTC2105	Marketing Communications Writing	3
MKTC2220	Promotional Marketing	2
MKTC2310	Public Relations	3
MKTC2410	Marketing Visual Communications	1
MKTC2505	E-Marketing	3
MKTC2550	International Marketing	3
MKTC2600	Marketing Research	3
MKTC2815	Business Law	3
MKTC2900	Portfolio and Interviewing	1
MKTC2970	Internship	3
	Technical Elective*	3
<b>Total Credits</b>		<b>45</b>

**General Education**

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

\* Technical electives may be selected from the following subject areas:  
MKTC, SMGT, ENTR or ACCT with advisor approval.

\*\* Select General Education electives from MnTC goal area.  
See pages 116-118 for MnTC goal areas.



# BUSINESS & MANAGEMENT

## ENTREPRENEURSHIP/SMALL BUSINESS

**Delivery:** Evening and Online Classes  
**Start:** Fall or Spring Semester, Full- or Part-Time  
**Location:** Apple Valley Site

### Outcome

Business Entrepreneur Certificate. . . . . 18 cr.  
 Small Business Operations Certificate . . . . . 18 cr.

### Major Description

This program analyzes small-business management combined with the new ways business ventures are created, designed, developed and operated. The program's central core investigates the processes and procedures needed to transform an entrepreneurial idea into a viable business operation. The certificate can stand alone for individuals with existing skills or complement a variety of existing technical programs.

### Work Environment

Entrepreneurs compete in a vast range of business enterprises. Because they are self-employed, entrepreneurs need a broad base of business skills, including a comprehensive business plan, to be successful.

### Potential Job Titles

For entrepreneurs, job titles are not a primary concern. Entrepreneurs focus on what they do, not what they're called. However, experts point out that for the employees of entrepreneurs, job titles are important if not crucial to their work identity.

### Salary Data *(Simplyhired.com)*

Annual salaries for entrepreneurs diverge dramatically due to an immense variety of factors.

- Average salary (U.S.): \$111,000/year

### BUSINESS ENTREPRENEUR - CERTIFICATE

ENTR1170	Introduction to Small Business	2
ENTR1180	Legal Issues for Small Business	3
ENTR1440	Successful Marketing for Small Business	4
ENTR1725	Sales Techniques I	2
ENTR1750	Sales Techniques II	2
ENTR1860	Business Plan Development	3
ENTR1900	Capitalizing a Small Business (or OFFC1340 or SMGT1601)	2
<b>Total Credits</b>		<b>18</b>

**TOTAL PROGRAM REQUIREMENTS 18**

### SMALL BUSINESS OPERATIONS - CERTIFICATE

ENTR1170	Introduction to Small Business	2
ENTR1180	Legal Issues for Small Business	3
SMGT1630	Presentation Skills	2
ENTR1445	E-Commerce for Small Business	3
ENTR1725	Sales Techniques I	2
ENTR1750	Sales Techniques II	2
SMGT1621	Team Dev. for Small Business & Nonprofits	2
ENTR1900	Capitalizing a Small Business (or OFFC1340 or SMGT1601)	2
<b>Total Credits</b>		<b>18</b>

**TOTAL PROGRAM REQUIREMENTS 18**



## INDIVIDUALIZED STUDIES

**Delivery:** Daytime, Evening and Online Classes  
**Start:** Fall, Spring or Summer Session, Full- or Part-Time  
**Location:** Rosemount Campus, Apple Valley Site

### 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

SMGT 2950 or INDS 1000	1
Required Technical Courses*	18
Technical Elective	11
General Education**	30
<b>Total Credits</b>	<b>60</b>
<b>TOTAL PROGRAM CREDITS</b>	<b>60</b>

\* Required technical courses must equal a minimum of nine credits from one program and another nine credits from a different program.

\*\* See General Education A.S. degree requirements on page 115.



MANAGEMENT FOR AIRLINE PROFESSIONALS

**Delivery:** Daytime, Evening and Online Classes  
**Start:** Fall, Spring or Summer Session, Full- or Part-Time  
**Location:** Rosemount Campus, Apple Valley Site

**Outcome**  
Mgmt. for Airline Professionals A.A.S. Degree . . . . . 64 cr.

**Major Description**  
This program is for professionals with experience in the aviation industry looking to advance their career. Students obtain the supervisory 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
  - Airline Ticketing Manager
  - Airline Baggage Manager
  - Airline Ramp Supervisor
  - Supervisor/Manager

**Salary Data** (Payscale.com)  
**Aircraft Maintenance Supervisor**  
• Salary Range: \$55,368-\$74,089/year

MANAGEMENT FOR AIRLINE PROFESSIONALS - A.A.S. DEGREE

Prior Learning Credits (Aviation Experience)	1-30
Technical Elective	14-44
General Education**	20
<b>Total Credits</b>	<b>64</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>	<b>64</b>

*Please consult your program advisor regarding your academic plans.*

*\* Technical electives may be selected from the SMGT subject area.*

*Students that take SMGT2950, Prior Experiential Learning Portfolio Development, will receive one elective credit, reducing the technical elective requirement.*

*\*\* See General Education A.A.S. degree requirements on page 115.*



## MANAGEMENT FOR TECHNICAL PROFESSIONALS

**Delivery:** Daytime, Evening and Online Classes  
**Start:** Fall, Spring or Summer Session, Full- or Part-Time  
**Location:** Rosemount Campus, Apple Valley Site

### Outcome

Mgmt. for Technical Professionals A.A.S. Degree. . . . .64 cr.

### Major Description

This program is highly individualized based on a student's technical (work/life) expertise, previous education or wish to explore more than one of DCTC's programs and couple it with a management emphasis. Gain skills to succeed in leadership positions or enhance career mobility.

### 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

#### Human Resources Manager

- Average Wage: \$56.49/hour
- Top Earners: \$80+/hour

#### Manufacturing Manager

- Average Wage: \$28.02/hour
- Top Earners: \$39.83/hour

### MANAGEMENT FOR TECHNICAL PROFESSIONALS - A.A.S. DEGREE

Prior Learning Credits (Technical Experience 1-30 or from any technical elective)	
Technical Elective*	14
General Education**	20
<b>Total Credits</b>	<b>64</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>	<b>64</b>

*Please consult your program advisor regarding your academic plans.*

*\* Students may be able to apply work/life experience for credit. Take SMGT 2950, Prior Experiential Learning Portfolio Development, for credit evaluation.*

*Students that take SMGT2950, Prior Experiential Learning Portfolio Development, will receive one elective credit, reducing the technical elective requirement.*

*\*\* See General Education A.A.S. degree requirements on page 115.*



## MARKETING DESIGN

**Delivery:** Daytime and Online Classes  
**Start:** Fall, Spring or Summer Session, Full- or Part-Time  
**Location:** Rosemount Campus, Apple Valley Site

### Outcomes

Marketing Design Specialist A.A.S. Degree . . . . . 60 cr.  
Marketing Design Specialist Diploma . . . . . 46 cr.  
Marketing Event Specialist Certificate . . . . . 28 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 Event Specialist:** A marketing event specialist certificate uses knowledge in the areas of publicity, marketing communications writing, promotional marketing, budgeting, scheduling, advertising, and event planning to promote activities involving an event, such as a grand opening, open house, conference, trade show, and social event. These events are designed to bring a product, service, company, or concept to the attention of the public or a targeted audience.

**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 conferencing, 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

### Salary Data

#### Marketing Event Specialist Careers

- Average Wage: \$55.74/hour
- Top Earners: \$80+/hour

#### Marketing Design Careers

- Average Wage: \$60.79/hour
- Top Earners: \$80+/hour



## MARKETING DESIGN SPECIALIST - A.A.S. DEGREE

MKTC1000	Principle 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
MKTC2220	Promotional Marketing	2
MKTC2310	Public Relations	3
MKTC2410	Marketing Visual Communications	1
MKTC2505	E-Marketing	3
MKTC2550	International Marketing	3
MKTC2600	Marketing Research	3
MKTC2815	Business Law	3
MKTC2900	Portfolio and Interviewing	1
MKTC2970	Internship	3
VCOM1010	Introduction to Photoshop	2
VCOM1430	Introduction to InDesign	2
VCOM1410	Introduction to Illustrator	2
VCOM2685	Web Page Construction I	2
<b>Total Credits</b>		<b>45</b>

### General Education

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communications	3
	Science or Math (MnTC Goal 3 or 4)	3
	General Education Elective**	6
<b>Total Credits</b>		<b>15</b>

**TOTAL PROGRAM REQUIREMENTS 60**

*\*\* Select General Education electives from MnTC goal area.  
See pages 116-118 for MnTC goal areas.*

## MARKETING EVENT SPECIALIST - CERTIFICATE

MKTC1000	Principles of Marketing	3
MKTC1100	Fundamentals of Marketing	3
MKTC2000	Advertising Practices and Procedures	3
MKTC2105	Marketing Communications Writing	3
MKTC2220	Promotional Marketing	2
MKTC2310	Public Relations	3
SMGT1160	Fundamental of Meeting, Conference, and Event Management	2
SMGT1161	Advanced Meeting, Conference, and Event Management	3
SMGT1162	Special Event Coordination and Management	3
SMGT1163	Event Promotion	3
<b>Total Credits</b>		<b>28</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>28</b>

## MARKETING DESIGN SPECIALIST - DIPLOMA

MKTC1000	Principles of Marketing	3
MKTC1100	Fundamentals of Sales	3
MKTC1150	Consumer and Professional Buying Behavior	3
MKTC2000	Advertising Practices and Procedures	3
MKTC2220	Promotional Marketing	2
MKTC2310	Public Relations	3
MKTC2410	Marketing Visual Communications	1
MKTC2505	E-Marketing	3
MKTC2600	Marketing Research	3
MKTC2815	Business Law	3
MKTC2900	Portfolio and Interviewing	1
VCOM1010	Introduction to Photoshop	2
VCOM1430	Introduction to InDesign	2
VCOM1435	Proofreading Fundamentals	1
VCOM1410	Introduction to Illustrator	2
VCOM2685	Web Page Construction I	2
<b>Total Credits</b>		<b>37</b>

### General Education

ENGL1150	Composition I (or ENGL1000)	3
SPEE1020	Interpersonal Communications	3
	General Education Elective**	3
<b>Total Credits</b>		<b>9</b>

**TOTAL PROGRAM REQUIREMENTS 46**

*\*\* Select General Education electives from MnTC goal area.  
See pages 116-118 for MnTC goal areas.*

## 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
MKTC2220	Promotional Marketing	2
MKTC2310	Public Relations	3
MKTC2410	Marketing Visual Communications	1
MKTC2505	E-Marketing	3
MKTC2600	Marketing Research	3
MKTC2815	Business Law	3
MKTC2900	Portfolio and Interviewing	1
<b>Total Credits</b>		<b>28</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>28</b>

# BUSINESS & MANAGEMENT

## MEETING & EVENT MANAGEMENT

**Delivery:** Evening and Online Classes  
**Start:** Fall, Spring or Summer Session, Full- or Part-Time  
**Location:** Apple Valley Site

### Outcomes

Meeting & Event Management A.A.S. Degree. . . . . 60 cr.  
 Meeting and Event Management Certificate. . . . . 16 cr.

### Major Description

This program prepares students to enter the hospitality industry, the largest and fastest growing in the world. Coursework provides the knowledge and skill sets to offer premier services and guest satisfaction in meeting, conference and event management businesses, marketing and public relations firms, nonprofit and for-profit corporations, hotels, golf and country clubs, casinos, resorts, and other industry attractions.

### Work Environment

A fast-paced and demanding career, meeting and event management requires the ability to oversee multiple operations simultaneously, face numerous deadlines, and orchestrate the activities of several different groups of people. Meeting and convention planners spend the majority of their time in offices, but frequently work on site at hotels, convention centers or other meeting locations.

### Hospitality Management Emphasis

- For positions in hotels, convention centers, resorts plus other nontraditional venues

### Casino Management Emphasis

- For positions in casinos and other gaming venues

### Potential Job Titles

- Conference Organizer
- Event Planning Manager
- Special Events Coordinator
- Meeting Planner
- Conference Producer
- Convention Services
- Group Sales

### Salary Data

- Average Wage: \$22.80/hour
- Top Earners: \$32.27/hour

### MEETING & EVENT MANAGEMENT - A.A.S. DEGREE

SMGT1160	Fundamentals of Mtg, Conference & Event Mgmt.	2
SMGT1161	Adv. Meeting, Conference and Event Mgmt.	3
SMGT1162	Special Event Coordination and Management	3
SMGT1163	Event Promotion	3
SMGT1660	Introduction to Tourism Management	2
SMGT1666	Lodging Operations and Coordination	2
SMGT1670	Lodging Systems and Technology	2
SMGT1675	Hotel Front Office Management	3
SMGT1680	Hospitality Space and Logistics Management	3
SMGT1685	Hospitality & Tourism Guest Services	2
SMGT1695	Hospitality Risk Management	2
SMGT2001	Management Skills I, Foundations in Mgmt.	3
SMGT2002	Management Skills II, Planning and Organizing	3
SMGT2003	Management Skills III, Leading and Controlling	3
	Industry Specialization Courses†	9
<b>Total Credits</b>		<b>45</b>

### General Education

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communications	3
PHIL1200	Critical Thinking	3
	General Education Electives**	3
	Math/Science (MnTC Goal 3 or 4)	3
<b>Total Credits</b>		<b>15</b>

**TOTAL PROGRAM REQUIREMENTS 60**

† Students select three industry specialization courses.

\*\* Students must select one of the emphasis options listed on the following page to complete their technical emphasis.

\*\* Select General Education electives from MnTC goal area.  
See pages 116-118 for MnTC goal areas.

### INDUSTRY SPECIALIZATION COURSES

(Select a total of 9 credits from list)

SMGT1166	Event Design	3
SMGT1167	Meeting & Event Sponsorship	3
SMGT1168	Trade Show Management	3
SMGT1171	Strat. for Sales and Closing Success	3
SMGT1172	Project Mgmt. for Mtgs. and Events	3
SMGT1173	Life Celebrations	3
SMGT1174	Hospitality Law	3

**MEETING & EVENT MANAGEMENT - CERTIFICATE**

SMGT1160	Fundamentals of Meeting, Conference, and Event Management	2
SMGT1161	Advanced Meeting, Conference, and Event Management	3
SMGT1162	Special Event Coordination and Management	3
SMGT1163	Event Promotion	3
SMGT1695	Hospitality Risk Management	2
	Industry Specialization Course*	3
<b>Total Credits</b>		<b>16</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>16</b>

\* Students select industry specialization course.

**INDUSTRY SPECIALIZATION COURSES**

(Select a total of 3 credits from list)

SMGT1166	Event Design	3
SMGT1167	Meeting & Event Sponsorship	3
SMGT1168	Trade Show Management	3
SMGT1171	Strat. for Sales and Closing Success	3
SMGT1172	Project Mgmt. for Mtgs. and Events	3
SMGT1173	Life Celebrations	3
SMGT1174	Hospitality Law	3



# BUSINESS & MANAGEMENT

## MULTICULTURAL MANAGEMENT

**Delivery:** Evening and Online Classes  
**Start:** Fall, Spring or Summer Session, Full- or Part-Time  
**Location:** Apple Valley Site

### Outcomes

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

### Major Description

These diplomas provide students with the skills and knowledge necessary to succeed in today's multicultural business environments. Skills learned are universal and can be applied to organizations, including manufacturing, event hospitality, retail, health services and other for-profit and nonprofit organizations.

### 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: \$28.02/hour
- Top Earners: \$39.38/hour

### MULTICULTURAL LEADERSHIP - DIPLOMA

SMGT1000	Principles of Supervision	3
SMGT1022	Leadership	3
SMGT1028	Management Effectiveness	3
SMGT1601	Financial Management	2
SMGT1776	Organizational Behavior	3
SMGT2105	Managing Diversity	3
SMGT2110	Leading a Multicultural Workforce	3
SMGT2115	Multicultural Mentorship I	2
SMGT2116	Multicultural Mentorship II	1
SMGT2120	Multicultural Conflict Resolution	2
SMGT2125	International Business	3
SMGT2130	Creativity and Problem Solving	2
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>33</b>

**TOTAL PROGRAM REQUIREMENTS 33**

### MULTICULTURAL HUMAN RESOURCES MANAGEMENT - DIPLOMA

SMGT1033	Business Law & Ethics	3
SMGT1405	Managing Performance	3
SMGT1441	Intro to Human Resource Management	3
SMGT1470	Safety and Compliance Management	2
SMGT1875	Training and Developing Employees	3
SMGT2105	Managing Diversity	3
SMGT2110	Leading a Multicultural Workforce	3
SMGT2115	Multicultural Mentorship I	2
SMGT2116	Multicultural Mentorship II	1
SMGT2120	Multicultural Conflict Resolution	2
SMGT2125	International Business	3
SMGT2130	Creativity and Problem Solving	2
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>33</b>

**TOTAL PROGRAM REQUIREMENTS 33**

**MULTICULTURAL SUPERVISION - CERTIFICATE**

SMGT2105	Managing Diversity	3
SMGT2110	Leading a Multicultural Workforce	3
SMGT2115	Multicultural Mentorship I	2
SMGT2116	Multicultural Mentorship II	1
SMGT2120	Multicultural Conflict Resolution	2
SMGT2125	International Business	3
<b>Total Credits</b>		<b>14</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>14</b>





# BUSINESS & MANAGEMENT

## PROPERTY MANAGEMENT

**Delivery:** Evening Classes  
**Start:** Fall or Spring Full- or Part-Time  
**Location:** Apple Valley Site

### Outcomes

Property Management A.A.S. Degree. . . . . 64 cr.  
 Property Management Certificate. . . . . 16 cr.

### Major Description

This program prepares students to manage and market residential, commercial, industrial and investment real estate. Students are trained to estimate the value of residential and investment properties across the nation. Coursework includes 90 hours of pre-licensing education required for the Minnesota Real Estate license examination.

### Work Environment

A property manager is responsible for making sure the property they manage meets the owner's goals and objectives. This work includes screening prospective tenants, showing rental space and/or apartments, negotiating leases, problem solving and customer service. This work will lead to a career in managing and training other property managers.

### Career Opportunities

According to research conducted by Salary.com and Money Magazine, real estate management ranks 23rd among the best jobs in America. The U.S. department of Labor indicates that the demand for property managers will increase by 15% by the years 2016. In addition to property management there is a growing need for Community Association Managers.

### Potential Job Titles

- Apartment Rental Agent
- Condominium Association Manager
- Facilities Coordinator
- Housing Manager
- Property Manager
- Investment Property Owner

### Salary Data

#### Residential Property Managers

- Average Wage: \$28.83
- Top Earners: \$48.58

### PROPERTY MANAGEMENT - A.A.S. DEGREE\*

*\*Pending MnSCU approval*

PMGT1200	Introduction to Property Management	1
PMGT1213	Managing Residential Property	1
PMGT1214	Life and Safety Issues	1
PMGT1215	Maintenance Management	1
PMGT1216	Managing Commercial/Industrial Properties	1
PMGT1217	Risk Management	1
PMGT1219	Leases and Tenant Relations	1
PMGT1224	Income Capitalization Analysis	1
PMGT1225	MN Landlord/Tenant Law	1
PMGT1228	Community Association Management	1
PMGT1229	Subsidized Housing	1
PMGT1230	Income Property Marketing	1
PMGT1232	Cash Flow Analysis	1
PMGT1302	Planning and Operating a Small Business	1
PMGT1304	Marketing Strategies	1
PMGT2020	Negotiating for Agreement	1
SMGT1000	Principles of Supervision	3
SMGT1022	Leadership	3
SMGT1028	Management Effectiveness	3
SMGT1601	Financial Management	2
SMGT1776	Organizational Behavior	3
SMGT1250	Managing Customer Service	1
SMGT1242	Effective Business Communications	3
SMGT2105	Managing Diversity	3
	Technical Electives*	7
	General Education**	20
<b>Total Credits</b>		<b>64</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>64</b>

*\* Technical electives may be selected from the following subject areas: PMGT, ENTR, MKTC, ISTC, SMGT, LAHT, ACCT or up to 9 credits of internship.*

*\*\* See General Education A.A.S. degree requirements on page 115.*

**PROPERTY MANAGEMENT - CERTIFICATE**

PMGT1200*	Introduction to Property Management	1
PMGT1213*	Managing Residential Property	1
PMGT1214*	Life and Safety Issues	1
PMGT1215	Maintenance Management	1
PMGT1216*	Managing Commercial/Industrial Properties	1
PMGT1217	Risk Management	1
PMGT1219	Leases and Tenant Relations	1
PMGT1224*	Income Capitalization Analysis	1
PMGT1225	MN Landlord/Tenant Law	1
PMGT1228*	Community Association Management	1
PMGT1229	Subsidized Housing	1
PMGT1230*	Income Property Marketing	1
PMGT1232*	Cash Flow Analysis	1
PMGT1302*	Planning and Operating a Small Business	1
PMGT1304*	Marketing Strategies	1
PMGT2020*	Negotiating for Agreement	1
<b>Total Credits</b>		<b>16</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>16</b>

*\*These courses have been approved by the Minnesota Department of Commerce for 15 hours of Real Estate Continuing Education.*



## BUSINESS &amp; MANAGEMENT

## SALES MANAGEMENT

**Delivery:** Daytime and Online Classes  
**Start:** Fall, Spring or Summer Session, Full- or Part-Time  
**Location:** Rosemount Campus, Apple Valley Site

**Outcomes**

Sales Management Specialist A.A.S. Degree. . . . . 60 cr.  
Sales Specialist Certificate . . . . . 12 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.

**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

**Salary Data****Sales Specialist Jobs**

- Average Wage: \$55.74/hour
- Top Earners: \$80+/hour

**Sales Manager Jobs**

- Average Wage: \$60.79/hour
- Top Earners: \$80+/hour

## SALES MANAGEMENT SPECIALIST - A.A.S. DEGREE

MKTC1000	Principles of Marketing	3
MKTC1100	Fundamentals of Sales	3
MKTC1150	Consumer and Professional Buying	3
MKTC1200	Professional Sales	3
MKTC2000	Advertising Practices and Procedures	3
MKTC2060	Proposal Writing	1
MKTC2220	Promotional Writing	2
MKTC2505	E-Marketing	3
MKTC2550	International Marketing	3
MKTC2815	Business Law	3
MKTC2900	Portfolio and Interviewing	1
MKTC2970	Internship	3
SMGT2001	Management Skills I	3
SMGT2002	Management Skills II	3
SMGT2003	Management Skills III	3
SMGT2400	Retail Management	3
	Technical Elective*	2
<b>Total Credits</b>		<b>45</b>

### General Education

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communications	3
	Science or Math (MnTC Goal 3 or 4)	3
	General Education Elective**	6
<b>Total Credits</b>		<b>15</b>

**TOTAL PROGRAM CREDITS 60**

\* Technical electives may be selected from the following subject areas:  
MKTC, SMGT, ENTR or ACCT with advisor approval.

\*\* Select General Education electives from MnTC goal area.  
Visit [dctc.edu/go/mntc](http://dctc.edu/go/mntc) for a list of MnTC goal areas.

## SALES SPECIALIST - CERTIFICATE

MKTC1000	Principles of Marketing	3
MKTC1100	Fundamentals of Sales	3
MKTC1150	Consumer and Professional Buying Behavior	3
MKTC1200	Professional Sales	3
<b>Total Credits</b>		<b>12</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>12</b>



# BUSINESS & MANAGEMENT

## SPA AND RESORT MANAGEMENT

**Delivery:** Evening Classes

**Start:** Fall, Spring or Summer Session, Full- or Part-Time

**Location:** Apple Valley Site

### Outcomes

Spa and Resort Management. . . . .60 cr.

### Major Description

This program prepares students to work in the exciting and luxurious spa and resort industries. Degree graduates will benefit from the multi-disciplinary curriculum that blends information from the Exercise and Sports Science and Meeting and Event Management areas of study. This blended body of knowledge produces the fascinating and dynamic objective shared by spas and resorts – an environment in which guests may escape and be rejuvenated.

### Work Environment

The work environment is fast-paced. Staff members offer a variety of services simultaneously while maintaining a pleasant and gracious demeanor. Resorts are open around the clock, while spas have an established schedule. Spas and resorts offer a variety of services and amenities that must be adequately and efficiently managed to provide an optimal experience for guests.

### Potential Job Titles

- Manicure/Pedicure Manager
- Aestheticians Manager
- Body Treatments Manager
- Spa Director
- Resort Manager
- Resort Operations Manager

### Salary Data

- Average Wage: \$40,678-\$73,958/annually

### SPA AND RESORT MANAGEMENT - A.A.S. DEGREE

SMGT1666	Lodging Operations and Coordination	2
SMGT1680	Hospitality Space and Logistics Management	3
SMGT1695	Hospitality Risk Management	2
SMGT2001	Management Skills I Foundations in Management	3
SMGT2002	Management Skills II, Planning and Organizing	3
SMGT2003	Management Skills III, Leading and Controlling	3
SMGT1670	Lodging Systems and Technology	2
SMGT1675	Hotel Front Office Management	3
SMGT1685	Hospitality and Tourism Guest Services	2
SMGT1171	Strategies for Sales and Closing Success	3
SMGT1174	Hospitality Law	3
SMGT1655	Introduction to Resort Operations	2
EXER2215	Fundamentals of Exercise and Dietary Programming	3
EXER2210	Industry to the Spa Industry, Services and Treatments	2
EXER1065	Psychology of Sports and Performance	3
EXER1050	Nutrition for Health and Performance	3
EXER2245	Holistic Health*	3
SPEE1020	Interpersonal Communications	3
ENGL1150	Composition I	3
	Math or Science (MnTC Goal 3 or 4)	3
	General Education Electives**	6
<b>Total Credits</b>		<b>60</b>

**TOTAL PROGRAM REQUIREMENTS 60**

\*\* Select General Education electives from MnTC goal area.  
See pages 116-118 for MnTC goal areas.



**Delivery:** Daytime, Evening and Online Classes  
**Start:** Fall, Spring or Summer Session, Full- or Part-Time  
**Location:** Apple Valley Site

## Outcomes

Supervisory Management A.A.S. Degree.....64 cr.  
 Supervisory Leadership Certificate..... 17 cr.  
 Human Resource Development Certificate..... 17 cr.  
 .Quality Improvement Certificate ..... 16 cr.  
 Multicultural Supervision Certificate..... 14 cr.

## Major Description

This program provides working adults with the skills and knowledge necessary to succeed in today's increasingly competitive business environment. Skills learned are universal and can be applied to business entrepreneurship or any type of business or enterprise, including manufacturing, event hospitality, retail, health services and other for-profit and nonprofit organizations. Students can individualize their degrees by selecting an emphasis area through the completion of two of the following certificates:

- Human Resources
- Multicultural Supervision
- Quality Improvement

## 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: \$28.02/hour
- Top earners: \$39.38/hour

## SUPERVISORY MANAGEMENT – A.A.S. DEGREE

SMGT1000	Principles of Supervision	3
SMGT1022	Leadership	3
SMGT1028	Management Effectiveness	3
SMGT1601	Financial Management	2
SMGT1776	Organizational Behavior	3
	Technical Elective*	1-5
<b>Total Credits</b>		<b>15-19</b>

## Graduation Project

Graduation Project must have advisor approval and registration in the last semester of attendance. Credits are variable, based on project scope. Substitutions may be offered by another program. See advisor for details.

**Total Credits** **1-6**

## Technical Emphasis \*\*

**Choose two of the following emphasis area certificates:**

Human Resource Development Certificate	17
Multicultural Supervision Certificate	14
Quality Improvement Certificate	16
<b>Total Credits</b>	<b>30-33</b>

## General Education

ENGL 1150	Composition I	3
SPEE1020	Interpersonal Communication	3
	Science or Math (MnTC Goal 3 or 4)	3
	General Education Electives**	11
<b>Total Credits</b>		<b>20</b>

**TOTAL PROGRAM REQUIREMENTS** **64**

\* Technical electives may be selected from the following subject areas: SMGT, ACCT, ENTR, MKTC or OFFC.

\*\* Students must select two of the emphasis options listed on the following page to complete their technical emphasis.

\*\* Select General Education electives from MnTC goal area. See pages 116-118 for MnTC goal areas.



**HUMAN RESOURCE DEVELOPMENT -  
CERTIFICATE \*\***

SMGT1033	Business Law & Ethics	3
SMGT1405	Managing Performance	3
SMGT1441	Intro to Human Resource Management	3
SMGT1470	Safety and Compliance Management	2
SMGT1875	Training and Developing Employees	3
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>17</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>17</b>

**MULTICULTURAL SUPERVISION - CERTIFICATE \*\***

SMGT2105	Managing Diversity	3
SMGT2110	Leading a Multicultural Workforce	3
SMGT2115	Multicultural Mentorship I	2
SMGT2116	Multicultural Mentorship II	1
SMGT2120	Multicultural Conflict Resolution	2
SMGT2125	International Business	3
<b>Total Credits</b>		<b>14</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>14</b>

**QUALITY IMPROVEMENT - CERTIFICATE \*\***

SMGT1205	Total Quality Management	4
SMGT1260	Managing Teams	3
SMGT1242	Effective Business Communications	3
SMGT1231	Planning and Project Management	2
SMGT1250	Managing Customer Service	1
ENGL1150	Composition I	3
<b>Total Credits</b>		<b>16</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>16</b>

**SUPERVISORY LEADERSHIP - CERTIFICATE**

SMGT1000	Principles of Supervision	3
SMGT1022	Leadership	3
SMGT1028	Management Effectiveness	3
SMGT1601	Financial Management	2
SMGT1776	Organizational Behavior	3
	General Education Elective	3
<b>Total Credits</b>		<b>17</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>17</b>



# Design



## PROGRAMS OF STUDY

Architectural Technology . . . . .	51
Interior Design . . . . .	52
Landscape Horticulture . . . . .	54
Visual Communications . . . . .	56-66
- Applied Visual Arts . . . . .	56
- Electronic Publishing . . . . .	58
- Graphic Design Technology . . . . .	60
- Multimedia & Web Design . . . . .	62
- Photographic Imaging Technology . . . . .	63
- Photography . . . . .	65
Wood Finishing Technology . . . . .	66

## EXCELLENCE BY DESIGN

Our Design 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.

In every aspect of the modern world, design stands at the heart of communication, informing, persuading, entertaining, enlightening and delighting. Offering a full spectrum of design opportunities, our Design 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.

## TRAITS OF THE TRADE

**Successful professionals in the design fields have personalities that are:**

- Creative
- Imaginative
- Attuned to shape and symmetry
- At ease with dimensional thinking
- Self-disciplined
- Attentive to detail
- Computer savvy
- Inquisitive
- Individualistic

*Unless otherwise specified, salary data is sourced from [iseek.org](http://iseek.org).*

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## DEAN

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“Design is not for philosophy; it’s for life.”

— Issey Miyake —

# ARCHITECTURAL TECHNOLOGY

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

Architectural Technology A.A.S. Degree . . . . . 72 cr.

This program prepares the student to work in architectural - construction-related fields, providing training in the latest computer-aided design (CAD) and building information modeling (BIM) software. 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.

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.

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

- Average Wage: \$25.63/hour
- Top Earners: \$35.28/hour

## First Year - First Semester

ARCT1100	Architectural Studio I	8
ARCT1103	Building Technology I	3
ARCT1300	Intro to SketchUp Modeling	3
ARCT1107	CAD I	3
<b>Total Credits</b>		<b>17</b>

## First Year - Second Semester

ARCT1200	Architectural Studio II	8
ARCT1203	Building Technology II	3
ARCT1207	CAD II	3
ARTS1300	History of Architecture	4
<b>Total Credits</b>		<b>18</b>

## Second Year - First Semester

ARCT2100	Architectural Studio III	8
ARCT2103	Building Technology III	3
ARCT2107	CAD III	3
ENGL1150	Composition I	3
	General Education Elective**	2
<b>Total Credits</b>		<b>19</b>

## Second Year - Second Semester

ARCT2200	Architectural Studio IV	5
ARCT2970	Internship	5
ARCT2210	Architectural Technology Portfolio	2
SPEE1020	Interpersonal Communications	3
	General Education Elective (MnTC Goal 3 or 4)**	3
<b>Total Credits</b>		<b>18</b>

**TOTAL PROGRAM REQUIREMENTS 72**

*This is a sample course sequence resulting in an A.A.S. degree.  
 Please consult your program advisor regarding your academic plans.*

\* Technical electives may be selected from the following subject area: ARCT.

\*\* Select General Education electives from MnTC goal area.  
 See pages 116-118 for MnTC goal areas.

## DESIGN

## INTERIOR DESIGN

**Delivery:** Daytime Classes (Evening Classes Limited)

**Start:** Fall Semester, Full- or Part-Time

**Location:** Rosemount Campus

### Outcomes

Interior Design A.A.S. Degree. . . . . 85 cr.

Interior Design Diploma . . . . . 64 cr.

### Major Description

This program prepares students to enter the interior design profession. Developing skills and knowledge to design functional and aesthetically pleasing environments, students use design theory, interior materials, building codes, manual and computer aided drafting, three-dimensional drawings, and sustainable design approaches to prepare design solutions for residential, kitchen and bath, and commercial projects.

### Work Environment

Interior designers work closely with clients. They frequently work as members of a design team. Working in a highly competitive field, utilizing the design process is critical to meeting project deadlines.

### Potential Job Titles

- Commercial Interior Designer
- Kitchen and Bath Designer
- Residential Interior Designer
- Interior Design Coordinator
- Facilities Coordinator
- Store Planner

### Salary Data

- Average Wage: \$22.99/hour
- Top Earners: \$34.63/hour

## INTERIOR DESIGN - A.A.S. DEGREE

### First Year - First Semester

IDES1100	Design Fundamentals	4
IDES1110	Drafting for Interiors	4
IDES1120	Critical Thinking and Programming	4
IDES1135	Visual and Verbal Presentation	3
<b>Total Credits</b>		<b>15</b>

### First Year - Second Semester

IDES1206	Residential Studio I	3
IDES1217	Commercial Studio I	3
ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>12</b>

### Second Year - First Semester

IDES2106	Color and Light	3
IDES2110	Materials, Estimating, and Specifications	3
IDES2140	Advanced Visual Presentation Techniques	3
General Education Electives (MnTC Goal 3 & 4)**		6
<b>Total Credits</b>		<b>15</b>

### Second Year - Second Semester

IDES1225	Computer Aided Drafting	3
IDES1230	History of Art, Architecture, and Interiors	4
General Education Electives (MnTC Goal 5 & 8)**		6
<b>Total Credits</b>		<b>13</b>

### Third Year - First Semester

IDES2100	Interior Design Career Directions	1
IDES2136	Commercial Studio II	4
IDES2146	Residential Studio II (Kitchen and Bath)	4
General Education Electives**		6
<b>Total Credits</b>		<b>15</b>

### Third Year - Second Semester

IDES2200	Professional Business Practices and Sales	3
IDES2210	Senior Studio	5
IDES2970	Internship	4
General Education (MnTC Goal 10)**		3
<b>Total Credits</b>		<b>15</b>

### TOTAL PROGRAM REQUIREMENTS

**85**

*This is a sample course sequence resulting in an A.A.S. degree.  
Please consult your program advisor regarding your academic plans.*

*\*\* General Education - Students must select one course from each of the following Minnesota Transfer Curriculum Goal areas: 3, 4, 5, 8, and 10; and six additional credits from any MnTC Goal area.*

*See pages 116-118 for MnTC goal areas.*



## INTERIOR DESIGN - DIPLOMA

### First Year - First Semester

IDES1100	Design Fundamentals	4
IDES1110	Drafting for Interiors	4
IDES1120	Critical Thinking and Programming	4
IDES1135	Visual and Verbal Presentation	3
SPEE1020	Interpersonal Communications	3
<b>Total Credits</b>		<b>18</b>

### First Year - Second Semester

IDES1206	Residential Studio I	3
IDES1217	Commercial Studio I	3
IDES1225	Computer Aided Drafting	3
IDES1230	History of Art, Architecture, and Interiors	4
ENGL1150	Composition I	3
<b>Total Credits</b>		<b>16</b>

### Second Year - First Semester

IDES2100	Interior Design Career Directions	1
IDES2106	Color and Light	3
IDES2110	Materials, Estimating, and Specifications	3
IDES2136	Commercial Studio II	4
IDES2146	Residential Studio II (Kitchen and Bath)	4
<b>Total Credits</b>		<b>15</b>

### Second Year - Second Semester

IDES2200	Professional Business Practices and Sales	3
IDES2210	Senior Studio	5
IDES2970	Internship	4
General Education (Recommend MnTC Goal 10)***		3
<b>Total Credits</b>		<b>15</b>

**TOTAL PROGRAM REQUIREMENTS 64**

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*

\*\*\*General Education - It is recommended students select one  
course from the Minnesota Transfer Curriculum Goal 10.  
See page 116-118 for MnTC Goal areas.





## DESIGN

## LANDSCAPE HORTICULTURE

**Delivery:** Daytime Classes

**Start:** Fall or Spring Semester, Full- or Part-Time

**Location:** Rosemount Campus

### Outcomes

Landscape Horticulture A.A.S. Degree..... 72 cr.

Landscape Horticulture Diploma..... 64 cr.

### Major Description

This program provides the technical and business skills needed to succeed in the landscape industry. First-year students learn the fundamental science and technical skills related to all fields of landscape horticulture. Second-year students may elect to specialize in one of three interest areas:

- Greenhouse Production
- Landscape Construction
- Landscape Design and Sales

### Work Environment

Landscape professionals design, install and care for residential, commercial and public landscapes. They find work with companies that provide landscape design, construction and maintenance services, as well as garden centers, nurseries, golf courses and municipal parks and public works departments.

### Potential Job Titles

- Landscape Designer/Project Manager
- Landscape Construction/Maintenance Supervisor
- Professional Gardener
- Turf & Grounds Manager
- Irrigation Technician
- Plant Production Specialist
- Hardscape Technician

### Salary Data

- Average wage: \$14.13/hour
- Top Earners: \$21.26/hour

## LANDSCAPE HORTICULTURE - A.A.S. DEGREE

### First Year - First Semester

LAHT1010	Soil Science	3
LAHT1100	Woody Plant Materials I	2
LAHT1200	Plant Pests	3
LAHT1300	Landscape Construction I	3
LAHT1502	Safety and Equipment	1
LAHT1510	Landscape Mathematics	1
ENGL1150	Composition I	3
<b>Total Credits</b>		<b>16</b>

### First Year - Second Semester

LAHT1000	Plant Science	2
LAHT1110	Woody Plant Materials II	2
LAHT1310	Plant Maintenance	2
LAHT1320	Turf Management	3
LAHT1420	Protected Horticulture	3
LAHT1600	Landscape Design I	3
LAHT2970	Internship I	1
LAHT2970	Internship II	1
General Education Elective (MnTC Goal 3 or 4)**		3
<b>Total Credits</b>		<b>20</b>

### Second Year - First Semester

LAHT2000	Herbaceous Plant Materials	2
LAHT2510	Landscape Estimating	3
SPEE1020	Interpersonal Communication	3
Technical Electives*		8
<b>Total Credits</b>		<b>16</b>

### Second Year - Second Semester

ECON1100	Principles of Microeconomics	3
LAHT2500	Landscape Business Management	4
LAHT2970	Internship III	1
LAHT2970	Internship IV	1
Technical Electives*		8
General Education Elective**		3
<b>Total Credits</b>		<b>20</b>

**TOTAL PROGRAM REQUIREMENTS 72**

*This is a sample course sequence resulting in an A.A.S. degree.  
Please consult your program advisor regarding your academic plans.*

\* Technical electives may be selected from the following subject area: LAHT.

\*\* Select General Education electives from MnTC goal area.  
See pages 116-118 for MnTC goal areas.

## LANDSCAPE HORTICULTURE - DIPLOMA

### First Year - First Semester

LAHT1010	Soil Science	3
LAHT1100	Woody Plant Materials I	2
LAHT1200	Plant Pests	3
LAHT1300	Landscape Construction I	3
LAHT1502	Safety and Equipment	1
LAHT1510	Landscape Mathematics	1
ENGL1150	Composition I	3
<b>Total Credits</b>		<b>16</b>

### First Year - Second Semester

LAHT1000	Plant Science	2
LAHT1110	Woody Plant Materials II	2
LAHT1310	Plant Maintenance	2
LAHT1320	Turf Management	3
LAHT1420	Protected Horticulture	3
LAHT1600	Landscape Design I	3
LAHT2970	Internship I	1
LAHT2970	Internship II	1
<b>Total Credits</b>		<b>17</b>

### Second Year - First Semester

LAHT2000	Herbaceous Plant Materials	2
LAHT2510	Landscape Estimating	3
SPEE1020	Interpersonal Communication	3
	Technical Electives*	7
<b>Total Credits</b>		<b>15</b>

### Second Year - Second Semester

ECON1100	Principles of Microeconomics	3
LAHT2500	Landscape Business Management	4
LAHT2970	Internship III	1
LAHT2970	Internship IV	1
	Technical Electives*	7
<b>Total Credits</b>		<b>16</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>64</b>

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*

\* Technical electives may be selected from the following subject area: LAHT.

## LANDSCAPE HORTICULTURE PROFESSIONAL GARDENING - CERTIFICATE

### First Year - First Semester

LAHT1010	Soil Science	3
LAHT1100	Woody Plant Materials I	2
LAHT1200	Plant Pests	3
LAHT2000	Herbaceous Plant Materials	2
LAHT 2520	Professional gardening	2
<b>Total Credits</b>		<b>12</b>

### First Year - Second Semester

LAHT1000	Plant Science	2
LAHT1110	Woody Plant Materials II	2
LAHT1420	Protected Horticulture	3
LAHT2970	Professional Gardening Internship	1
<b>Total Credits</b>		<b>8</b>

**TOTAL PROGRAM REQUIREMENTS 20**

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*



## DESIGN

## APPLIED VISUAL ARTS

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

**Outcomes**

Applied Visual Arts A.A.S. Degree ..... 72 cr.  
 Applied Visual Arts Diploma ..... 64 cr.

**Major Description**

Students work with various art media and methods such as drawing, painting, collage, and computer graphics to produce artwork for both commercial and fine art applications. Coursework includes a foundation in design principles, creative problem solving, illustration, layout, color and typography.

**Work Environment**

Visual artists often work in art or design studios both private and commercial. Job opportunities exist in the publishing, advertising, marketing and visual merchandising industries. Employment could be permanent or seasonal at business locations. Freelance artists in their own studios often work on a contract basis.

**Potential Job Titles**

- Illustrator
- Visual Artist
- Historical Artist
- Mural Painter
- Production Illustrator
- Exhibit Artist

**Salary Data**

- Average Wage: \$21.57/hour
- Top Earners: \$33.31/hour

**APPLIED VISUAL ARTS - A.A.S. DEGREE****First Year - First Semester**

VCOM1001	Introduction to Visual Communications	2
VCOM1015	Layout I	2
VCOM1030	Visual Design Fundamentals	3
VCOM1040	Basic Drawing	3
VCOM1415	Typography Fundamentals	2
ENGL1150	Composition I	3
<b>Total Credits</b>		<b>15</b>

**First Year - Second Semester**

VCOM1006	Color Theory and Applications	2
VCOM1060	Creative Problem Solving	3
VCOM1095	Illustration Fundamentals	3
VCOM1410	Introduction to Illustrator	2
	General Education Elective (MnTC Goal 3 or 4)**	3
	General Education Electives**	6
<b>Total Credits</b>		<b>19</b>

**Second Year - First Semester**

VCOM1010	Introduction to Photoshop	2
VCOM1021	Introduction to Photography	3
VCOM1051	Scale and Perspective	2
VCOM1430	Intro to InDesign	2
VCOM2085	Drawing for Illustration	2
VCOM2420	Advanced Computer Illustration	3
SPEE1020	Interpersonal Communication	3
	General Education Elective**	2
<b>Total Credits</b>		<b>19</b>

**Second Year - Second Semester**

VCOM2035	Layout II	3
VCOM2095	Painting for Illustration	2
VCOM2724	Portfolio for Applied Visual Arts	2
VCOM2730	Career Research Skills	1
	Technical Elective*	8
	General Education Elective**	3
<b>Total Credits</b>		<b>19</b>

**TOTAL PROGRAM REQUIREMENTS 72**

*This is a sample course sequence resulting in an A.A.S. degree.  
 Please consult your program advisor regarding your academic plans.*

\* Technical electives may be selected from the following subject area: VCOM.

\*\* Select General Education electives from MnTC goal area.  
 See pages 116-118 for MnTC goal areas.

## APPLIED VISUAL ARTS - DIPLOMA

### First Year - First Semester

VCOM1001	Introduction to Visual Communications	2
VCOM1015	Layout I	2
VCOM1030	Visual Design Fundamentals	3
VCOM1040	Basic Drawing	3
VCOM1415	Typography Fundamentals	2
ENGL1150	Composition I	3
<b>Total Credits</b>		<b>15</b>

### First Year - Second Semester

VCOM1006	Color Theory and Applications	2
VCOM1060	Creative Problem Solving	3
VCOM1095	Illustration Fundamentals	3
VCOM1410	Introduction to Illustrator	2
	Technical Electives*	4
	General Education Elective**	3
<b>Total Credits</b>		<b>17</b>

### Second Year - First Semester

VCOM1010	Introduction to Photoshop	2
VCOM1021	Introduction to Photography	3
VCOM1051	Scale and Perspective	2
VCOM1430	Intro to InDesign	2
VCOM2085	Drawing for Illustration	2
VCOM2420	Advanced Computer Illustration	3
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>17</b>

### Second Year - Second Semester

VCOM2035	Layout II	3
VCOM2095	Painting for Illustration	2
VCOM2724	Portfolio for Applied Visual Arts	2
VCOM2730	Career Research Skills	1
	Technical Elective*	7
<b>Total Credits</b>		<b>15</b>

**TOTAL PROGRAM REQUIREMENTS 64**

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*

\* Technical electives may be selected from the following subject area: VCOM.

\*\* Select General Education electives from MnTC goal area.  
See pages 116-118 for MnTC goal areas.



## DESIGN

## ELECTRONIC PUBLISHING

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

**Outcomes**

Electronic Publishing A.A.S. Degree ..... 72 cr.  
 Electronic Publishing Diploma ..... 64 cr.

**Major Description**

This program trains students to use different computer software programs to format and combine text, data, photographs, charts, and other graphic art to produce books, brochures, calendars, magazines, newsletters, newspapers, product packaging, business forms and other printed pieces. Program graduates will become knowledgeable about input devices such as scanners and output devices such as in-house and commercial printers. Graduates will understand production workflow and will have learned to work under tight deadlines.

**Work Environment**

Electronic publishers generally work in pleasant, climate-controlled office settings. They are subject to tight deadlines and spend long hours seated in front of computer monitors.

**Potential Job Titles**

- Electronic Publishing Specialist
- Production Designer
- Electronic Prepress Technician
- Preflight Technician/Troubleshooter
- Customer Service Representative

**Salary Data**

- Average Wage: \$23.07/hour
- Top Earners: \$31.67/hour

**ELECTRONIC PUBLISHING – A.A.S. DEGREE****First Year - First Semester**

VCOM1001	Introduction to Visual Communications	2
VCOM1006	Color Theory and Applications	2
VCOM1015	Layout I	2
VCOM1021	Introduction to Photography	3
VCOM1030	Visual Design Fundamentals	3
VCOM1060	Creative Problem Solving	3
VCOM1415	Typography Fundamentals	2
VCOM1422	Print Processes I	2
<b>Total Credits</b>		<b>19</b>

**First Year - Second Semester**

VCOM1010	Introduction to Photoshop	2
VCOM1430	Intro to InDesign	2
VCOM1410	Introduction to Illustrator	2
VCOM1435	Proofreading Fundamentals	1
	General Education Elective**	3
	Technical Elective*	8
<b>Total Credits</b>		<b>18</b>

**Second Year - First Semester**

VCOM2415	Advanced Electronic Publishing	3
VCOM2422	Print Processes II	3
	Technical Elective*	8
	General Education Elective (MnTC Goal 3 or 4)**4	
<b>Total Credits</b>		<b>18</b>

**Second Year - Second Semester**

VCOM2970	VisCom Internship	4
SPEE1020	Interpersonal Communication	3
ENGL1150	Composition I (or ENGL1000)	3
	General Education Elective**	7
<b>Total Credits</b>		<b>17</b>

**TOTAL PROGRAM REQUIREMENTS 72**

*This is a sample course sequence resulting in an A.A.S. degree.  
 Please consult your program advisor regarding your academic plans.*

*\* Technical electives may be selected from the following subject area: VCOM.*

*\*\* Select General Education electives from MnTC goal area.  
 See pages 116-118 for MnTC goal areas.*





## DESIGN

## GRAPHIC DESIGN TECHNOLOGY

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

**Outcomes**

Graphic Design Technology A.A.S. Degree . . . . . 72 cr.  
 Graphic Design Technology Diploma . . . . . 64 cr.

**Major Description**

This program prepares students to explore, plan, design and produce visual solutions to communications problems. Graphic designers work to discover the most effective way to communicate in print, on the Web, and through multimedia and interactive media projects. Students develop skills and knowledge in design concepts, layout and computer software to create multipurpose visual communications materials.

**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

**Salary Data**

- Average Wage: \$23.86/hour
- Top Earners: \$38.37/hour

**GRAPHIC DESIGN TECHNOLOGY -  
A.A.S. DEGREE****First Year - First Semester**

VCOM1001	Introduction to Visual Communications	2
VCOM1006	Color Theory and Applications	2
VCOM1015	Layout I	2
VCOM1030	Visual Design Fundamentals	3
VCOM1051	Scale and Perspective Drawing	2
VCOM1060	Creative Problem Solving	3
VCOM1415	Typography Fundamentals	2
VCOM1422	Print Processes I	2
<b>Total Credits</b>		<b>18</b>

**First Year - Second Semester**

VCOM1010	Introduction to Photoshop	2
VCOM1021	Introduction to Photography	3
VCOM1430	Intro to InDesign	2
VCOM1410	Introduction to Illustrator	2
VCOM2422	Print Processes II	3
VCOM2685	Web Page Construction I	2
	General Education Electives**	4
<b>Total Credits</b>		<b>18</b>

**Second Year - First Semester**

VCOM2400	Advanced Photoshop	3
VCOM2415	Advanced Electronic Publishing	3
VCOM2420	Advanced Computer Illustration	3
VCOM2680	Introduction to Flash	2
	Technical Electives*	6
<b>Total Credits</b>		<b>17</b>

**Second Year - Second Semester**

VCOM2721	Portfolio for Graphic Design	2
VCOM2730	Career Research Skills	1
SPEE1020	Interpersonal Communication	3
ENGL1150	Composition I	3
	General Education Electives (MnTC Goal 3 or 4)**	4
	General Education Electives**	6
<b>Total Credits</b>		<b>19</b>

**TOTAL PROGRAM REQUIREMENTS 72**

*This is a sample course sequence resulting in an A.A.S. degree.  
 Please consult your program advisor regarding your academic plans.*

*\* Technical electives may be selected from the following subject area: VCOM.*

*\*\* Select General Education electives from MnTC goal area.  
 See pages 116-118 for MnTC goal areas.*

## GRAPHIC DESIGN TECHNOLOGY - DIPLOMA

### First Year - First Semester

VCOM1001	Introduction to Visual Communications	2
VCOM1006	Color Theory and Applications	2
VCOM1015	Layout I	2
VCOM1030	Visual Design Fundamentals	3
VCOM1051	Scale and Perspective Drawing	2
VCOM1060	Creative Problem Solving	3
VCOM1415	Typography Fundamentals	2
	Technical Elective*	2
<b>Total Credits</b>		<b>18</b>

### First Year - Second Semester

VCOM1010	Introduction to Photoshop	2
VCOM1021	Introduction to Photography	3
VCOM1430	Intro to InDesign	2
VCOM1410	Introduction to Illustrator	2
VCOM1422	Print Processes I	2
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>14</b>

### Second Year - First Semester

VCOM2400	Advanced Photoshop	3
VCOM2415	Advanced Electronic Publishing	3
VCOM2420	Advanced Computer Illustration	3
VCOM2422	Print Processes II	3
VCOM2680	Introduction to Flash	2
VCOM2685	Web Page Construction I	2
<b>Total Credits</b>		<b>16</b>

### Second Year - Second Semester

VCOM2721	Portfolio for Graphic Design	2
VCOM2730	Career Research Skills	1
ENGL1150	Composition I (or ENGL1000)	3
	General Education Electives**	7
	Technical Elective*	3
<b>Total Credits</b>		<b>16</b>

**TOTAL PROGRAM REQUIREMENTS 64**

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*

\* Technical electives may be selected from the following subject area: VCOM.

\*\* Select General Education electives from MnTC goal area.  
See pages 116-118 for MnTC goal areas.



## DESIGN

## MULTIMEDIA &amp; WEB DESIGN

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

**Outcome**

Multimedia & Web Page Design A.A.S. Degree . . . . . 72 cr.

**Major Description**

This program prepares students to create interactive media and content for websites, applications and stand-alone delivery. Using industry-standard software, students design and develop images, 2D and 3 D animations, audio, video, and navigation for use in the advertising, educational and entertainment industries. They also study interface design, basic web page programming, usability, testing, and project management.

**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: \$36.96
- Top Earners: \$53.21

**MULTIMEDIA & WEB DESIGN - A.A.S. DEGREE****First Year - First Semester**

VCOM1001	Introduction to Visual Communications	2
VCOM1006	Color Theory and Applications	2
VCOM1015	Layout I	2
VCOM1021	Introduction to Photography	3
VCOM1030	Visual Design Fundamentals	3
VCOM1032	Interactive Design Fundamentals	2
VCOM1051	Scale and Perspective	2
VCOM1415	Typography Fundamentals	2

**Total Credits** **18**

**First Year - Second Semester**

VCOM1010	Introduction to Photoshop	2
VCOM1060	Creative Problem Solving	3
VCOM1430	Intro to InDesign	2
VCOM1410	Introduction to Illustrator	2
VCOM2680	Introduction to Flash	2
	General Education Electives**	7

**Total Credits** **18**

**Second Year - First Semester**

VCOM2660	3D Modeling and Animation	3
VCOM2685	Web Page Construction I	2
VCOM2694	Advanced Multimedia Production	2
VCOM2700	Advanced Flash Animation	3
SPEE1020	Interpersonal Communication	3
ENGL1150	Composition I	3
	Technical Elective(s)*	2

**Total Credits** **18**

**Second Year - Second Semester**

VCOM2605	Audio/Video for Multimedia	3
VCOM2650	Multimedia Project Management	2
VCOM2690	Web Page Construction II	3
VCOM2722	Portfolio for Multimedia and Web Page Design	2
VCOM2730	Career Research Skills	1
	General Education Elective (MnTC Goal 3 or 4)**	3
	General Education Elective**	4

**Total Credits** **18**

**TOTAL PROGRAM REQUIREMENTS** **72**

*This is a sample course sequence resulting in an A.A.S. degree.  
 Please consult your program advisor regarding your academic plans.*

\* Technical electives may be selected from the following subject area: VCOM.

\*\* Select General Education electives from MnTC goal area.  
 See pages 116-118 for MnTC goal areas.

# PHOTOGRAPHIC IMAGING TECHNOLOGY

**Delivery:** Daytime Classes

**Start:** Fall or Spring Semester, Full- or Part-Time

**Location:** Rosemount Campus

## Outcomes

Photographic Imaging Technology A.A.S. Degree. . . . . 64 cr.

Photographic Imaging Technology Diploma. . . . . 32 cr.

Digital Imaging Technician Certificate . . . . . 24 cr.

Photographer Assistant Certificate. . . . . 19 cr.

## Major Description

Students in this program use their creative abilities to plan and capture unique photographs and then process, manage, and digitally enhance the images to produce professional quality prints. The program teaches skills in photography, digital workflow and color management of images, advanced PhotoShop and large format printing techniques for the well-rounded photographer and photo technician. Using a wide variety of studio, darkroom, and digital equipment, students practice the hands-on skills that they will face during their careers in the photo industry.

## Work Environment

Graduates become photographers of all types as well as traditional and digital photo lab 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

- Freelance Photographer
- Studio Photographer
- Digital Production Specialist
- Digital Printing Specialist
- Quality Control Technician
- Digital Asset Management Technician
- Commercial Photographer/Assistant

## Salary Data

- Average Wage: \$19.36/hour
- Top Earners: \$32.58/hour

## PHOTOGRAPHIC IMAGING TECHNOLOGY - A.A.S. DEGREE

### First Year - First Semester

VCOM1001	Introduction to Visual Communications	2
VCOM1021	Introduction to Photography	3
VCOM1515	Photo Lighting Techniques	2
VCOM1524	Black and White Darkroom	3
	Technical Electives*	2
	General Education Elective (MnTC Goal 3 or 4)**	3
<b>Total Credits</b>		<b>15</b>

### First Year - Second Semester

VCOM1300	Intro to Adobe Lightroom	2
VCOM1010	Introduction to Photoshop	2
VCOM1730	Advanced Photo Lighting Techniques	2
VCOM1570	Portrait Photography	2
VCOM1580	Introduction to Digital Imaging	2
SPEE1020	Interpersonal Communication	3
	Technical Elective*	3
<b>Total Credits</b>		<b>16</b>

### Second Year - First Semester

VCOM1430	Introduction to InDesign	2
VCOM2510	Commercial Photography	2
VCOM2520	Digital Photography	2
VCOM2551	Digital Studio Workflow I	2
	Technical Electives*	2
ENGL1150	Composition I	3
	General Education Elective**	4
<b>Total Credits</b>		<b>17</b>

### Second Year - Second Semester

VCOM2552	Digital Studio Workflow II	2
VCOM2581	Photography Portfolio	2
VCOM2605	Audio/Video for Presentation	3
VCOM1565	Color Printing Systems	4
	Technical Elective*	1
	General Education Elective**	4
<b>Total Credits</b>		<b>16</b>

## TOTAL PROGRAM REQUIREMENTS 64

*This is a sample course sequence resulting in an A.A.S. degree. Please consult your program advisor regarding your academic plans.*

\* Technical electives may be selected from the following subject area: VCOM.

\*\* Select General Education electives from MnTC goal area. See pages 116-118 for MnTC goal areas.

## PHOTOGRAPHIC IMAGING TECHNOLOGY - DIPLOMA

### First Year - First Semester

VCOM1001	Introduction to Visual Communications	2
VCOM1021	Introduction to Photography	3
VCOM1515	Photo Lighting Techniques	2
VCOM1524	Black and White Darkroom	3
	Technical Electives*	3
	General Education Electives**	3
<b>Total Credits</b>		<b>16</b>

### First Year - Second Semester

VCOM1010	Introduction to Photoshop	2
VCOM1565	Color Printing Systems	4
VCOM1570	Portrait Photography	2
VCOM1580	Introduction to Digital Imaging	2
VCOM2581	Photography Portfolio	2
	Technical Electives*	4
<b>Total Credits</b>		<b>16</b>

**TOTAL PROGRAM REQUIREMENTS 32**

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*

\* Technical Elective may be selected from course subject area: VCOM.

\*\* General Education - Select from SPEE1020 or ENGL 1150.

## DIGITAL IMAGING TECHNICIAN - CERTIFICATE

### First Year - First Semester

VCOM1001	Introduction to Visual Communications	2
VCOM1021	Introduction to Photography	3
VCOM1010	Introduction to Photoshop	2
VCOM1430	Introduction to InDesign	2
VCOM1410	Introduction to Illustrator	2
VCOM1580	Introduction to Digital Imaging	2
	Technical Elective*	2
<b>Total Credits</b>		<b>15</b>

### First Year - Second Semester

VCOM2520	Digital Photography	2
VCOM2552	Digital Studio Workflow II	2
VCOM2605	Audio/Visual for Presentations	3
VCOM2500	Photography Portfolio	2
<b>Total Credits</b>		<b>9</b>

**TOTAL PROGRAM REQUIREMENTS 24**

## PHOTOGRAPHER ASSISTANT - CERTIFICATE

### First Year - First Semester

VCOM1021	Introduction to Photography	3
VCOM1360	Photography Workshop	1
VCOM1515	Photo Lighting Techniques	2
VCOM1010	Introduction to Photoshop	2
VCOM1570	Portrait Photography	2
<b>Total Credits</b>		<b>10</b>

### First Year - Second Semester

VCOM2510	Commercial Photography	2
VCOM2520	Digital Photography	2
VCOM2540	The Business of Photography	2
VCOM2580	Photography Portfolio	2
	Technical Elective*	1
<b>Total Credits</b>		<b>9</b>

**TOTAL PROGRAM REQUIREMENTS 19**

*This is a sample course sequence resulting in a certificate.  
Please consult your program advisor regarding your academic plans.*

\* Technical Elective may be selected from course subject area: VCOM.



## PHOTOGRAPHY

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

**Outcome**

Photography A.S. Degree .....64 cr.

**Major Description**

Meshing the art, science and business of photography in a dynamic curriculum, this program allows students to achieve one or more of the following goals:

1. Starting a photography business
2. Entering a specific sector of the visual communications workplace
3. Acceptance to a four-year college

**Work Environment**

Professional photographers, self-employed or employed by large organizations, succeed in a multitude of niches. Harnessing creativity to strong technical skills, photographers typically take on some form of scientific, commercial or artistic specialization.

**Potential Job Titles**

- Advertising Photographer
- Forensic Photographer
- Photojournalist
- Portrait Photographer
- Sports Photographer
- Wedding Photographer
- Wildlife Photographer

**Salary Data**

- Average Wage: \$23.39/hour
- Top Earners: \$39.25/hour

**PHOTOGRAPHY – A.S. DEGREE**

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

**First Year - First Semester**

ARTS1000	Visual Communication	3
ARTS1200	The Creative Process	3
VCOM1021	Introduction to Photography	3
VCOM1010	Introduction to Photoshop	2
VCOM1515	Photo Lighting Techniques	2
	General Education Electives**	4
<b>Total Credits</b>		<b>17</b>

**First Year - Second Semester**

ARTS1100	History of Photography	3
SPEE1020	Interpersonal Communication	3
VCOM1570	Portrait Photography	2
VCOM1580	Introduction to Digital Imaging	2
	Technical Electives*	6
<b>Total Credits</b>		<b>16</b>

**Second Year - First Semester**

ENGL1150	Composition I	3
VCOM1025	Law and Ethics for VisCom	1
VCOM2510	Commercial Photography	2
VCOM2520	Digital Photography	2
VCOM2551	Digital Studio Workflow I	2
	Technical Electives*	2
	General Education Electives (MnTC Goal 4)**	4
<b>Total Credits</b>		<b>16</b>

**Second Year - Second Semester**

VCOM1730	Advanced Lighting Techniques	2
VCOM2552	Digital Studio Workflow II	2
VCOM2580	Photography Portfolio	2
	Technical Electives*	2
	General Education Electives (MnTC Goal 3)**	3
	General Education Elective**	4
<b>Total Credits</b>		<b>15</b>

**TOTAL PROGRAM REQUIREMENTS 64**

*This is a sample course sequence resulting in an A.S. degree. Please consult your program advisor regarding your academic plans.*

*\* Technical electives may be selected from the following subject areas: ENTR and VCOM.*

*\*\* See General Education A.S. degree requirements on page 115.*



# WOOD FINISHING TECHNOLOGY

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

## Outcomes

Wood Finishing Technology Diploma. . . . . 36 cr.  
 Furniture Service Technician Certificate . . . . . 19 cr.  
 Commercial Furniture Repair Technician. . . . . 11 cr.

## Major Description

A perfect blend of art and science, the world of the wood finisher combines the knowledge and skills of the past and present to preserve wood creations for the future. Students specialize in a wide range of areas. They can beautify and enhance the appearance of today's wood objects. They can honor proven craftsmanship by repairing and restoring wood artifacts from the past.

## Work Environment

Skilled furniture restorers will work for or start their own furniture restoration shops. Commercial finishing technicians will find employment with any furniture or architectural mill work manufacturer. They specialize in color matching and creating custom colors with today's new finishes. A Furniture Service Technician repairs new furniture at furniture stores or is self employed repairing damaged wood in any form at the on-site location.

## Potential Job Titles

- Furniture Restorer
- Furniture Finisher
- Commercial Finishing Technician
- Furniture Service Technician
- Furniture Restoration Specialist
- Wood Finisher

## Salary Data

- Average Wage: \$20.89/hour
- Top Earners: \$25.75/hour

## WOOD FINISHING TECHNOLOGY - DIPLOMA

### First Year - First Semester

WOOD1004	Woodworking	3
WOOD1007	Methods of Fastening	3
WOOD1012	Color Theory	3
WOOD1015	Spot Repair I	3
WOOD1019	Spot Repair II	5
<b>Total Credits</b>		<b>17</b>

### First Year - Second Semester

WOOD1010	Wood and Finishing Technology	5
WOOD1021	Wood Refinishing	6
WOOD1026	Advanced Finishing Techniques	5
WOOD1032	Antique Furniture Conservation	3
<b>Total Credits</b>		<b>19</b>

### TOTAL PROGRAM REQUIREMENTS 36

*This is a sample course sequence resulting in a diploma.  
 Please consult your program advisor regarding your academic plans.*

## FURNITURE SERVICE TECHNICIAN - CERTIFICATE

### First Year - First Semester

WOOD1010	Wood and Finishing Technology	5
WOOD1012	Color Theory	3
WOOD1015	Spot Repair I	3
WOOD1019	Spot Repair II	5
WOOD1032	Antique Furniture Conservation	3
<b>Total Credits</b>		<b>19</b>

### TOTAL PROGRAM REQUIREMENTS 19

*This is a sample course sequence resulting in a diploma.  
 Please consult your program advisor regarding your academic plans.*

## COMMERCIAL FURNITURE REPAIR TECHNICIAN

### First Year - First Semester

WOOD1012	Color Theory	3
WOOD1015	Spot Repair I	3
WOOD1019	Spot Repair II	5
<b>Total Credits</b>		<b>11</b>

### TOTAL PROGRAM REQUIREMENTS 11

*This is a sample course sequence resulting in a diploma.  
 Please consult your program advisor regarding your academic plans.*

# Health & Human Services



## PROGRAMS OF STUDY

Dental Assistant.....	69
Early Childhood & Youth Development.....	71
Exercise & Sport Science.....	74
Medical Assistant.....	77
Nursing Assistant.....	79
Practical Nursing.....	80

## SERVICE FOR LIFE

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

DCTC also provides courses leading to MN State Certification for Emergency Medical Technicians (EMT) and First Responders. See [www.dctc.edu](http://www.dctc.edu).

From nursing to child development, professionals in health and human services 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 human services are generally:**

- Mature
- Friendly
- Patient
- Warm-hearted
- Supportive
- Dependable
- Serious about their responsibilities
- Practical
- Empathetic
- Compassionate
- Nurturing
- Conscientious

*Unless otherwise specified, salary data is sourced from [iseek.org](http://iseek.org).*

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“It is health that is real wealth and not  
pieces of gold and silver.”  
— Mohandas Gandhi —

## DENTAL ASSISTANT

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

### Outcomes

Dental Assistant A.A.S. Degree .....64 cr.  
 Dental Assistant Diploma .....44 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: \$21.21/hour
- Top Earners: \$26.26/hour

### DENTAL ASSISTANT - A.A.S. DEGREE

#### 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
<b>Total Credits</b>		<b>17</b>

#### First Year - Second Semester

DENT1250	Radiology	5
DENT1260	Expanded Functions	5
DENT1275	Chairside Assisting II	4
DENT1280	Dental Practice Management	2
<b>Total Credits</b>		<b>16</b>

#### First Year - Summer Session

DENT2970	Externship	8
	General Education Elective (MnTC Goal 3 or 4)**	4
<b>Total Credits</b>		<b>12</b>

#### Second Year - First Semester

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
	General Education Elective (MnTC Goal 3 or 4)**	4
	General Education Electives**	9
<b>Total Credits</b>		<b>19</b>

**TOTAL PROGRAM REQUIREMENTS 64**

*This is a sample course sequence resulting in an A.A.S. degree.  
 Please consult your program advisor regarding your academic plans.*

*\*\* Select General Education electives from MnTC goal area.  
 See pages 116-118 for MnTC goal areas.*

## DENTAL ASSISTANT - DIPLOMA

### 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
<b>Total Credits</b>		<b>17</b>

### First Year - Second Semester

DENT1250	Radiology	5
DENT1260	Expanded Functions	5
DENT1275	Chairside Assisting II	4
DENT1280	Dental Practice Management	2
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>19</b>

### First Year - Summer Session

DENT2970	Externship	8
<b>Total Credits</b>		<b>8</b>

**TOTAL PROGRAM REQUIREMENTS      44**

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*



## EARLY CHILDHOOD AND YOUTH DEVELOPMENT\*

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

### Outcomes

Early Childhood and Youth Development A.S. degree\* . . . .60 cr.  
 Early Childhood and Youth Development A.A.S. degree\* . .60 cr.  
 Child Life Assistant A.A.S. degree. . . . .60 cr.  
 Early Childhood and Youth Development Diploma. . . . .18 cr.  
 National CDA Training Program Certificate. . . . .12 cr.

### Major Description

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

#### Early Childhood and Youth Development AS/AAS 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 many courses are also available online. Additionally, it links with a selection of four-year colleges for completion of advanced degrees.

**Child Life Assistant AAS Degree:** This program delivers knowledge and skills necessary for working with children in hospitalized 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 many courses are also available online. Additionally, it links with a selection of four-year colleges for bachelor's degree completion.

**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 and 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.

#### National Child Development Associate (CDA) Training Program:

This certificate provides knowledge of learning environments, principles of child development and behavior, working with families, child health and safety, and professionalism. It fulfills the training requirement for the National CDA credential. This certificate is available online.

### Work Environment

Early Childhood and Youth Development professionals work with infants, toddlers, preschoolers, school-aged children/youth, and special-needs children in homes, schools, and community centers. 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 Worker
- Family Day Care Provider
- Nanny
- School District Paraprofessional
- Child Life Assistant

### Salary Data

#### Child Care

- Average Wage: \$10.07/hour
- Top Earners: \$13.39/hour

#### Preschool Teacher

- Average Wage: \$15.44/hour
- Top Earners: \$22.40/hour

#### Child Life Assistant

- Average Wage: \$14/hour
- Top Earners: \$20/hour

*\*Pending MnSCU approval.*



## EARLY CHILDHOOD AND YOUTH DEVELOPMENT - A.S. DEGREE

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

### First Year - First Semester

ECYD1100	Introduction to Early Childhood Careers	3
ECYD1210	Child Growth and Development	3
ECYD1220	Health, Safety, and Nutrition	3
ECYD1230	Guiding Children's Behaviors	3
ECYD1240	Learning Environment and Curriculum	3
ENGL1150	Composition I	3
<b>Total Credits</b>		<b>18</b>

### First Year - Second Semester

ECYD1325	Observation and Assessment	3
ECYD2320	Children with Differing Abilities	3
ECYD1340	Curriculum Planning	3
SPEE1020	Interpersonal Communication	3
	General Education Elective (MnTC Goal 5)**	3
<b>Total Credits</b>		<b>15</b>

### Second Year - First Semester

ECYD1510	Practicum I	3
	General Education Elective (MnTC Goal 3)**	3
	General Education Elective (MnTC Goal 4)**	3
	General Education Electives	3
<b>Total Credits</b>		<b>12</b>

### Second Year - Second Semester

ECYD2600	Organizational Leadership and Management	3
	General Education **	12
<b>Total Credits</b>		<b>15</b>

**TOTAL PROGRAM REQUIREMENTS 60**

*This is a sample course sequence resulting in an A.A.S. degree.  
Please consult your program advisor regarding your academic plans.*

*\*\*See General Education A.S. degree requirements on page 115.*

## EARLY CHILDHOOD AND YOUTH DEVELOPMENT - A.A.S. DEGREE

### First Year - First Semester

ECYD1100	Introduction to Early Childhood Careers	3
ECYD1210	Child Growth and Development	3
ECYD1220	Health, Safety, and Nutrition	3
ECYD1230	Guiding Children's Behaviors	3
ECYD1240	Learning Environment and Curriculum	3
ENGL1150	Composition I	3
<b>Total Credits</b>		<b>18</b>

### First Year - Second Semester

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

### Second Year - First Semester

ECYD1510	Practicum I	3
ECYD2570	Working with Diverse Families and Children	3
	Technical Credits	4
	Math or Science (MnTC Goal 3 or 4)	4
<b>Total Credits</b>		<b>14</b>

### Second Year - Second Semester

ECYD2600	Organizational Leadership and Management	3
ECYD2510	Practicum II	3
	General Education Electives**	7
<b>Total Credits</b>		<b>13</b>

**TOTAL PROGRAM REQUIREMENTS 60**

*This is a sample course sequence resulting in an A.A.S. degree.  
Please consult your program advisor regarding your academic plans.*

*\*Technical electives may be selected from the following subject area: ECYD.*

*\*\*See pages 116-118 for MnTC goal areas*

**CHILD LIFE ASSISTANT - A.A.S. DEGREE****First Year - First Semester**

ECYD1100	Introduction to Early Childhood Careers	3
ECYD1210	Child Growth and Development	3
ECYD1220	Health, Safety, and Nutrition	3
ECYD1230	Guiding Children's Behaviors	3
HEAL1502	Medical Terminology	2

**Total Credits 14**

**First Year - Second Semester**

ECYD1240	Learning Environment and Curriculum	3
ECYD1325	Observation and Assessment	3
ECYD2320	Children with Differing Abilities	3
PSYC1300	Child/Adolescent Psychology	3
SPEE1020	Interpersonal Communication	3
ECYD2715	Sign Language in Early Childhood	1

**Total Credits 16**

**Second Year - First Semester**

ENGL1150	Composition I	3
BIOL1310	Introduction to Anatomy and Physiology	4
ECYD2501	Experiential Learning	1
SOCY1010	Marriage & Family	3
PSYC1450	Death & Dying	2
ISTC1020	Introduction to Computer Applications	3

**Total Credits 16**

**Second Year - Second Semester**

ECYD2600	Organizational Leadership & Management	3
ECYD2713	Culture, Family and Providers	1
MATS	(1300, 1350 or 1251)	4
PHIL1350	Medical Ethics	3
ECYD2950	Field Experience	3

**Total Credits 14**

**TOTAL PROGRAM REQUIREMENTS 60**

*This is a sample course sequence resulting in an A.A.S. degree.  
Please consult your program advisor regarding your academic plans.*

*\*Technical electives may be selected from the following subject area: ECYD.*

*\*\*See pages 116-118 for MnTC goal areas and General Education options.*

**EARLY CHILDHOOD & YOUTH DEVELOPMENT - DIPLOMA\***

*\*Pending MnSCU approval*

**First Year - First Semester**

ECYD1100	Introduction to Early Childhood Careers	3
ECYD1210	Child Growth and Development	3
ECYD1220	Health, Safety, and Nutrition	3
ECYD1230	Guiding Children's Behaviors	3
ECYD1240	Learning Environment and Curriculum	3
ENGL1150	Composition I	3

**Total Credits 18**

**First Year - First Semester**

ECYD1325	Observation and Assessment	3
ECYD1340	Curriculum Planning	3
ECYD1510	Practicum I	3
SPEE1020	Interpersonal Communication	3
	General Education Electives**	3

**Total Credits 15**

**TOTAL PROGRAM REQUIREMENTS 33**

*This is a sample course sequence resulting in an diploma.  
Please consult your program advisor regarding your academic plans.*

*\*\*See pages 116-118 for MnTC goal areas and General Education options.*

**NATIONAL CDA TRAINING PROGRAM - CERTIFICATE****First Year - First Semester**

ECYD1205	Professional Resources	1
ECYD1206	Parent and Professional Relations	2
ECYD1210	Child Growth and Development	3

**Total Credits 6**

**First Year - Second Semester**

ECYD1220	Health, Safety, and Nutrition	3
ECYD1230	Guiding Children's Behaviors	3

**Total Credits 6**

**TOTAL PROGRAM REQUIREMENTS 12**

*This is a sample course sequence resulting in an certificate.  
Please consult your program advisor regarding your academic plans.*

## HEALTH &amp; HUMAN SERVICES

## EXERCISE &amp; SPORT SCIENCE

**Delivery:** Daytime or Evening 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.  
 Advanced Personal Training Certificate..... 16 cr.  
 Community Coaching Certificate ..... 17 cr.

**Major Description**

This program offers training and development directly related to positions in a variety of health, fitness and sports occupations. Core coursework covers exercise and sport science. Supporting courses involve academic areas such as health science and physiology. The curriculum provides ongoing practical education and experiences in conjunction with a final semester internship for the A.A.S. degree.

**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: \$13.93/hour
- Top Earners: \$20.63/hour

**EXERCISE & SPORT SCIENCE - A.S. DEGREE**

*Pending MnSCU Board Approval*

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

**First Year - First Semester**

EXER1000	Introduction to Human Performance Studies	3
EXER1020	Strength Training	2
EXER1065	Psychology of Sport and Performance	3
BIOL1500	General Biology	4
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>15</b>

**First Year - Second Semester**

EXER1015	Personal Health and Wellness	3
EXER1025	Physical Conditioning	2
	Technical Elective*	3
ENGL1150	Composition I	3
PSYC1100	General Psychology	3
	General Education Electives**	3
<b>Total Credits</b>		<b>17</b>

**Second Year - First Semester**

BIOL2000	Anatomy and Physiology I	4
	Technical Elective*	5
ISTC1025	Computer Basics	1
SOCY1110	Intro to Sociology or (SOCY1010)	3
<b>Total Credits</b>		<b>13</b>

**Second Year - Second Semester**

EXER2295	Social and Ethical Aspects of Sport	3
BIOL2010	Anatomy and Physiology II	4
	Technical Elective*	4
	General Education Elective (MnTC Goal 4)**	4
<b>Total Credits</b>		<b>15</b>

**TOTAL PROGRAM REQUIREMENTS 60**

*This is a sample course sequence resulting in an A.S. degree.  
 Please consult your program advisor regarding your academic plans.*

*\* Technical electives may be selected from the following subject area: EXER.*

*\*\* See General Education A.S. degree requirements on page 115..*

**EXERCISE & SPORT SCIENCE - A.A.S. DEGREE***Pending MnSCU Board Approval***First Year - First Semester**

BIOL1500	General Biology	4
EXER1000	Introduction to Human Performance Studies	3
EXER1020	Strength Training	2
EXER1065	Psychology of Sport and Performance	3
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>15</b>

**First Year - Second Semester**

ENGL1150	Composition I	3
EXER1015	Personal Health and Wellness	3
EXER1025	Physical Conditioning	2
EXER1050	Nutrition for Health & Human Performance	3
	Technical Elective*	3
PSYC1100	General Psychology	3
<b>Total Credits</b>		<b>17</b>

**Second Year - First Semester**

BIOL2000	Anatomy and Physiology I	4
EXER2020	Personal Training and Exercise Leadership I	2
EXER2090	Exercise for Special Populations	2
EXER2115	Applied Exercise Physiology	3
ISTC1025	Computer Basics	1
<b>Total Credits</b>		<b>12</b>

**Second Year - Second Semester**

BIOL2010	Anatomy and Physiology II	4
EXER2060	Personal Training and Exercise Leadership II	2
EXER2295	Social and Ethical Aspects of Sport	3
EXER2975	Practicum	3
	Technical Elective*	3
INTS1010	Job Seeking Skills	1
<b>Total Credits</b>		<b>16</b>

**TOTAL PROGRAM REQUIREMENTS 60**

*This is a sample course sequence resulting in an A.A.S. degree.  
Please consult your program advisor regarding your academic plans.*

\* Technical electives may be selected from the following subject area: EXER.

**PERSONAL TRAINING - CERTIFICATE****First Year - First Semester**

EXER1020	Strength Training	2
EXER1065	Psychology of Sport and Performance	3
EXER2020	Personal Training and Exercise Leadership I	2
EXER2975	Practicum	1
HEAL1000	First Aid/CPR †	1
HEAL1101†	Anatomy and Physiology	4
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>16</b>

**TOTAL PROGRAM REQUIREMENTS 16**

*This is a sample course sequence resulting in an certificate.  
Please consult your program advisor regarding your academic plans.*

† Students can substitute HLTW1000 for HEAL1000.  
‡ Students can substitute BIOL2000 and BIOL2010 for HEAL1101.

**GROUP FITNESS - CERTIFICATE****First Year - First Semester**

EXER1020	Strength Training	2
EXER1065	Psychology of Sport and Performance	3
EXER2020	Personal Training and Exercise Leadership I	2
EXER2250	Group Fitness Instruction	2
EXER2975	Practicum	2
HEAL1000	First Aid/CPR †	1
HEAL1101†	Anatomy and Physiology	4
<b>Total Credits</b>		<b>16</b>

**TOTAL PROGRAM REQUIREMENTS 16**

*This is a sample course sequence resulting in an certificate.  
Please consult your program advisor regarding your academic plans.*

† Students can substitute HLTW1000 for HEAL1000.  
‡ Students can substitute BIOL2000 and BIOL2010 for HEAL1101.

**GERIATRIC HEALTH & FITNESS - CERTIFICATE****First Year - First Semester**

EXER1020	Strength Training	2
EXER2020	Personal Training and Exercise Leadership I	2
EXER2090	Exercise for Special Populations	2
EXER2250	Group Fitness Instruction	2
EXER2280	Health and Aging	3
HEAL1000	First Aid/CPR †	1
HEAL1101‡	Anatomy and Physiology	4

**Total Credits** **16**

**TOTAL PROGRAM REQUIREMENTS** **16**

*This is a sample course sequence resulting in an certificate.  
Please consult your program advisor regarding your academic plans.*

*† Students can substitute HLTW1000 for HEAL1000.*

*‡ Students can substitute BIOL2000 and BIOL2010 for HEAL1101.*

**COMMUNITY COACHING - CERTIFICATE****First Year - First Semester**

EXER1045	Organization and Management of Sports	3
EXER1200	Team and Individual Games	2
EXER2060	Personal Training and Exercise Leadership II	2
EXER2225	Theory of Coaching	2
EXER2235	Introduction to Athletic Training	3
EXER2975	Practicum	2
EMRG1017	First Responder	3

**Total Credits** **17**

**TOTAL PROGRAM REQUIREMENTS** **17**

*This is a sample course sequence resulting in an certificate.  
Please consult your program advisor regarding your academic plans.*

**ADVANCED PERSONAL TRAINING - CERTIFICATE**

*Must be ACE certified or have completed the Personal Training Certificate.*

**First Year - First Semester**

ENTR1650	Selling Strategies for the Entrepreneur	3
EXER1025	Physical Conditioning	2
EXER1050	Nutrition for Health and Human Performance	3
EXER2060	Personal Training and Exercise Leadership II	2
EXER2125	Applied Biomechanics & Movement Anatomy	3
MKTC1000	Principles of Marketing	3

**Total Credits** **16**

**TOTAL PROGRAM REQUIREMENTS** **16**

*This is a sample course sequence resulting in an certificate.  
Please consult your program advisor regarding your academic plans.*



## MEDICAL ASSISTANT

**Delivery:** Daytime or Online Classes  
**Start:** Fall Semester (classroom) or Spring Semester  
 (online enhanced), Full-Time Recommended  
 Part-time options available  
**Location:** Rosemount Campus

### Outcomes

Medical Assisting A.A.S. Degree ..... 62 cr.  
 Medical Assisting Diploma ..... 42 cr.

### Major Description

Accredited by the Commission on Accreditation of Allied Health Education Programs, or CAAHEP, on recommendation of the Medical Assisting Education Review Board, 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.

### 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: \$16.66/hour
- Top Earners: \$20.79/hour

### MEDICAL ASSISTANT - A.A.S. DEGREE

#### First Year - First Semester

HEAL1101	Anatomy and Physiology	4
HEAL1502	Medical Terminology	2
MDAS1124	Laboratory Skills I	4
MDAS1130	Clinical Procedures I	3
MDAS1140	Phlebotomy	1
OFFC1130	MS Word I	2
<b>Total Credits</b>		<b>16</b>

#### First Year - Second Semester

MDAS1211	Disease/Medical Treatment including Nutrition	4
MDAS1223	Laboratory Skills II	4
MDAS1230	Clinical Procedures II	3
MDAS1270	Administrative Procedures	3
MDAS1701	Pharmacology & Math for Medical Assistants	4
<b>Total Credits</b>		<b>18</b>

#### First Year - Summer Session

MDAS1250	Fundamentals of Radiographic Imaging	2
MDAS2970	Practicum	6
<b>Total Credits</b>		<b>8</b>

#### Second Year - First Semester

ENGL1150	Composition I	3
SPEE1020	Interpersonal Communication	3
	General Education Elective**	3
<b>Total Credits</b>		<b>9</b>

#### Second Year - Second Semester

	General Education Elective (MnTC Goal 3 or 4)**	4
	General Education Elective**	7
<b>Total Credits</b>		<b>11</b>

**TOTAL PROGRAM REQUIREMENTS 62**

*This is a sample course sequence resulting in an A.A.S. degree.  
 Please consult your program advisor regarding your academic plans.*

*\*\* Select General Education electives from MnTC goal area.  
 See pages 116-118 for MnTC goal areas.*



## MEDICAL ASSISTANT - DIPLOMA

### First Year - First Semester

HEAL1101	Anatomy and Physiology	4
HEAL1502	Medical Terminology	2
MDAS1124	Laboratory Skills I	4
MDAS1130	Clinical Procedures I	3
MDAS1140	Phlebotomy	1
OFFC1130	MS Word I	2
<b>Total Credits</b>		<b>16</b>

### First Year - Second Semester

MDAS1211	Disease/Medical Treatment including Nutrition	4
MDAS1223	Laboratory Skills II	4
MDAS1230	Clinical Procedures II	3
MDAS1270	Administrative Procedures	3
MDAS1701	Pharmacology & Math for Medical Assistants	4
<b>Total Credits</b>		<b>18</b>

### First Year - Summer Session

MDAS1250	Fundamentals of Radiographic Imaging	2
MDAS2970	Practicum	6
<b>Total Credits</b>		<b>8</b>

**TOTAL PROGRAM REQUIREMENTS 42**

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*



## NURSING ASSISTANT

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

### Outcome

Nursing Assisting Certificate ..... 5 cr.

### Major Description

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 MN 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: \$14.28/hour
- Top Earners: \$18.29/hour

### NURSING ASSISTANT - CERTIFICATE

#### First Year - First Semester

HEAL1060	Nursing Assistant	5
<b>Total Credits</b>		<b>5</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>5</b>

# HEALTH & HUMAN SERVICES

## PRACTICAL NURSING

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

### Outcomes

Practical Nursing A.A.S. Degree ..... 63 cr.  
 Practical Nursing Diploma ..... 51 cr.

### Major Description

This 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), physician 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: \$20.59
- Top Earners: \$25.01

### Prerequisites

- Applicants must have successfully completed:
- A Nurse Assistant/Home Health Aid course (5 credits) and be certified by the Minnesota Department of Human Services.
  - A First Aid course.
  - A CPR for Professional Rescuer course or BLS for Healthcare Provider course, and have a current valid CPR/BLS card.
  - Qualifying scores on the ACCUPLACER test.

### PRACTICAL NURSING - A.A.S. DEGREE

#### Pre-Nursing\*

BIOL1500	General Biology	4
PSYC1350	Lifespan Development	4
SPEE1020	Interpersonal Communication	3
ENGL1150	Composition I	3
<b>Total Credits</b>		<b>14</b>

#### Practical Nursing: First Semester

PNSG1025	Core Values & Integrating Concepts in Nursing	1
HEAL1150	Health Career Math	1
PNSG1250	Nutrition and Diet Therapy	2
PNSG1000	Foundations of Nursing Practice I	2
BIOL2000	Anatomy and Physiology I	4
PHIL1350	Medical Ethics	3
<b>Total Credits</b>		<b>13</b>

#### Practical Nursing: First Year - Summer Session

BIOL2010	Anatomy and Physiology II	4
<i>(Must be completed before beginning of second semester.)</i>		
<b>Total Credits</b>		<b>4</b>

#### Practical Nursing: Second Semester

PNSG1100	Foundations of Nursing Practice II	2
PNSG1350	Pharmacology	2
PNSG1400	Adult Health Nursing I	4
PNSG1500	Adult Health Nursing II	3
PNSG1530	Beginning Clinical	3
PNSG1540	Clinical Practice I	2
<b>Total Credits</b>		<b>16</b>

#### Second Year - Third Semester

PNSG1750	Mental Health Nursing	2
PNSG1560	Clinical Practice II	3
PNSG1570	Clinical Practice III	2
PNSG1580	Clinical Practice IV	3
PNSG1805	Maternal and Child Health	2
BIOL2020	Microbiology	4
<b>Total Credits</b>		<b>16</b>

#### TOTAL PROGRAM REQUIREMENTS 63

*This is a sample course sequence resulting in an A.A.S. degree. Please consult your program advisor regarding your academic plans.*

*\*Students pursuing the AAS degree and starting Pre-Nursing spring semester must complete the following 3 courses in this order:  
 1) BIOL1500 - General Biology during the spring Pre-Nursing semester; 2) BIOL2000 Anatomy & Physiology I during summer semester; 3) BIOL2010 Anatomy & Physiology II during first fall semester of Practical Nursing.*

## PRACTICAL NURSING - DIPLOMA

Pending MnSCU Board Approval

### Pre-Nursing

PSYC1350	Lifespan Development	4
SPEE1020	Interpersonal Communication	3
ENGL1150	Composition I	3
BIOL1500	General Biology	4
<b>Total Credits</b>		<b>14</b>

### Practical Nursing - First Semester

PNSG1025	Core Values & Integrating Concepts in Nursing	1
HEAL1101	Anatomy and Physiology	4
HEAL1150	Health Career Math	1
PNSG1250	Nutrition and Diet Therapy	2
PNSG1000	Foundations of Nursing Practice I	2
<b>Total Credits</b>		<b>10</b>

### Practical Nursing - Second Semester

PNSG1100	Foundations of Nursing Practice II	2
PNSG1350	Pharmacology	2
PNSG1400	Adult Health Nursing I	4
PNSG1500	Adult Health Nursing II	3
PNSG1530	Beginning Clinical	3
PNSG1540	Clinical Practice I	2
<b>Total Credits</b>		<b>16</b>

### Practical Nursing - Third Semester

PNSG1750	Mental Health Nursing	2
PNSG1560	Clinical Practice II	3
PNSG1570	Clinical Practice III	2
PNSG1580	Clinical Practice IV	3
PNSG1805	Maternal and Child Health	2
<b>Total Credits</b>		<b>12</b>

**TOTAL PROGRAM REQUIREMENTS 52**

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*





# Technical Careers



## PROGRAMS OF STUDY

Biomedical Equipment Technology . . . . .	85
Civil Engineering Technology . . . . .	87
Concrete & Masonry . . . . .	88
Electrical Construction & Maintenance . . . . .	90
Electrical Lineworker . . . . .	92
Energy Technical Specialist . . . . .	94
Nanoscience Technology . . . . .	96
Welding Technology . . . . .	96

## 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 Technical Careers programs offer a range of choices for students searching for their place in a technological world. From the tried-and-true methods of the master mason to the futuristic endeavors of the nanotechnologist, people in technical careers are the keystones of civilization.

## 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 [iseek.org](http://iseek.org).*



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“Skill and confidence are an unconquered army.”

— George Herbert —

## BIOMEDICAL EQUIPMENT TECHNOLOGY

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

### Outcomes

Biomedical Equipment Technology A.A.S. Degree . . . . . 69 cr.  
 Biomedical Equipment Technology Certificate . . . . . 26 cr.

### Major Description

Students are trained to work 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 life support 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

- Average Wage: \$26.45/hour
- Top Earners: \$35.96/hour

### BIOMEDICAL EQUIPMENT TECHNOLOGY - A.A.S. DEGREE

#### First Year - First Semester

BMET1112	DC Electricity	3
BMET1116	Solid State Electric	5
BMET1123	AC Electricity	3
ISTC1040	Network Systems I	3
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>17</b>

#### First Year - Second Semester

BMET1136	Managing Customer Satisfaction in the Health Care Environment	1
BMET1530	Digital and Micro Processors	3
ISTC1010	Microcomputer Maintenance	3
ISTC2005	Network Systems II	3
PHYS1050	Intro to Physics	3
	General Education Elective**	3
<b>Total Credits</b>		<b>16</b>

#### Second Year - First Semester

BMET1241	Mechanical Systems	3
BMET1130	Anatomy and Physiology	3
EMRG1017	First Responder	3
HEAL1502	Medical Terminology	2
PHIL1200	Critical Thinking	3
ENGL1150	Composition I	3
<b>Total Credits</b>		<b>17</b>

#### Second Year - Second Semester

BMET1110	Introduction to Biomedical Technology	3
BMET1114	Wireless Communication	1
BMET1225	Instrumentation I	3
BMET1231	Instrumentation II	4
BMET2970	Biomedical Equipment Tech. Internship	2
ISTC2020	Advanced Networking	3
BMET1121	Administrative Functions	3
<b>Total Credits</b>		<b>19</b>

**TOTAL PROGRAM REQUIREMENTS 69**

*This is a sample course sequence resulting in an A.A.S. degree. Please consult your program advisor regarding your academic plans.*

*\*\*See General Education A.A.S. degree requirements on page 115.*

## BIOMEDICAL EQUIPMENT TECHNOLOGY - CERTIFICATE

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

### First Year - First Semester

BMET1241	Mechanical Systems	3
BMET1130	Anatomy and Physiology	3
HEAL1502	Medical Terminology	2
<b>Total Credits</b>		<b>8</b>

### First Year - Second Semester

BMET1110	Introduction to Biomedical Technology	3
BMET1114	Wireless Communication	1
BMET1225	Instrumentation I	3
BMET1231	Instrumentation II	4
BMET2970	Internship	3
BMET1136	Managing Customer Service in Health Care	1
BMET1121	Administrative Functions	3
<b>Total Credits</b>		<b>18</b>

**TOTAL PROGRAM REQUIREMENTS      26**

*This is a sample course sequence resulting in an certificate.  
Please consult your program advisor regarding your academic plans.*



## CIVIL ENGINEERING TECHNOLOGY

**Delivery:** Cohort-based, meaning students will complete technical credits with the same group of students from start to graduation

**Start:** Fall Semester, Full-Time

**Location:** Rosemount Campus

### Outcome

Civil Engineering Technology A.A.S. Degree. . . . . 72 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 buildings, bridges, highways, subdivisions, and commercial and industrial facilities.

### 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
- Civil Engineering Technical Analyst

### Salary Data

- Average Wage: \$26.74/hour
- Top Earners: \$34.89/hour

### CIVIL ENGINEERING TECHNOLOGY - A.A.S. DEGREE

#### First Year - First Semester

CIVL1121	Basic CAD	4
CIVL1130	Beginning Surveying	3
CIVL1141	Civil Engineering Technology and Government	1
CIVL1150	Introduction to GIS	3
CIVL1161	Project Management	3
	General Education Electives**	3
<b>Total Credits</b>		<b>17</b>

#### First Year - Second Semester

CIVL1211	Materials Testing	3
CIVL1221	Civil Engineering Technology Drafting	5
CIVL1230	Intermediate Surveying	4
CIVL1240	GPS and Construction Staking	3
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>18</b>

#### Second Year - First Semester

CIVL2970	Internship	3
CIVL2120	Construction Inspection	3
CIVL2130	Soil Mechanics Survey	3
CIVL2141	Hydrology and Storm Water Management	3
CIVL2150	Eco-Sensitive Design	3
MATS1300	College Algebra	4
<b>Total Credits</b>		<b>19</b>

#### Second Year - Second Semester

CIVL2210	Project Design: Utilities Design, Road Design, Grading	5
CIVL2220	Properties of Construction Materials	3
CIVL2231	Specifications and Contract Administration	2
CIVL2240	Estimating	3
ENGL1150	Composition I	3
MATS1320	College Trigonometry	2
<b>Total Credits</b>		<b>18</b>

**TOTAL PROGRAM CREDITS 72**

*This is a sample course sequence resulting in an A.A.S. degree. Please consult your program advisor regarding your academic plans.*

*\*\* See General Education A.A.S. degree requirements on page 115.*

# TECHNICAL CAREERS

## CONCRETE & MASONRY

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

### Outcomes

Concrete & Masonry A.A.S. Degree. . . . . 67 cr.  
 Concrete & Masonry Diploma. . . . . 33 cr.

### Major Description

This program prepares students for careers as cement, brick and block masons in both residential and commercial construction. Students learn fundamental construction skills while studying concrete properties, testing and repair. Specialty concrete properties, concrete production facilities operation and concrete construction methods are also covered in the program's curriculum.

### Work Environment

Cement, block and brick masons work with concrete, one of the most common and durable of all construction materials. They usually work outdoors. Winter work slowdowns are diminishing thanks to new processes and materials that permit work in harsher weather conditions.

### Potential Job Titles

- Concrete Finisher
- Cementer
- Bricklayer
- Block Worker
- Stonemason
- Tile Setter

### Salary Data

- Average Wage: \$31.83/hour
- Top Earners: \$41.46/hour

### CONCRETE & MASONRY - A.A.S. DEGREE

#### First Year - First Semester

CONC1600	Shop Theory	2
CONC1601	Shop I: Site Preparation for Construction	6
CONC1602	Shop II: Brick and Block Construction	4
CONC1604	Foundations, Concrete, & Safety for Masons	4
CONC1605	Math for Masons	2
<b>Total Credits</b>		<b>18</b>

#### First Year - Second Semester

CONC1606	Testing of Mortar and Concrete	3
CONC1610	Concrete Problems: Diagnosis, Prevention, & Resolution	2
CONC1613	Shop III: Advanced. Brick & Block Construction	4
CONC1614	Shop IV: Integrated Concrete Systems	4
CONC1615	Blueprint Reading Estimating	2
<b>Total Credits</b>		<b>15</b>

#### Second Year - First Semester

ENTR1860	Business Plan Development	3
OFFC1340	Quick Books Pro Basics	2
SMGT1000	Principles of Supervision	3
SPEE1020	Interpersonal Communication	3
	General Education Elective (MnTC Goal 3 or 4)**	3
	General Education Elective	4
<b>Total Credits</b>		<b>18</b>

#### Second Year - Second Semester

SMGT1028	Management Effectiveness	3
SMGT1033	Business Law and Ethics	3
ENGL1150	Composition I	3
	General Education Elective**	8
<b>Total Credits</b>		<b>17</b>

**TOTAL PROGRAM REQUIREMENTS 68**

*This is a sample course sequence resulting in an A.A.S. degree.  
 Please consult your program advisor regarding your academic plans.*

*\*\* Select General Education electives from MnTC goal area.  
 See pages 116-118 for MnTC goal areas.*



## CONCRETE & MASONRY - DIPLOMA

### First Year - First Semester

CONC1600	Shop Theory	2
CONC1601	Shop I: Site Preparation for Construction	6
CONC1602	Shop II: Brick and Block Construction	4
CONC1604	Foundations, Concrete, & Safety for Masons	4
CONC1605	Math for Masons	2
<b>Total Credits</b>		<b>18</b>

### First Year - Second Semester

CONC1606	Testing of Mortar and Concrete	3
CONC1610	Concrete Problems: Diagnosis, Prevention, & Resolution	2
CONC1613	Shop III: Adv. Brick & Block Construction	4
CONC1614	Shop IV: Integrated Concrete Systems	4
CONC1615	Blueprint Reading Estimating	2
<b>Total Credits</b>		<b>15</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>33</b>

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*





# TECHNICAL CAREERS

## ELECTRICAL CONSTRUCTION & MAINTENANCE TECHNOLOGY

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

### Outcome

Electrical Construction & Maintenance A.A.S. Degree . . . 83 cr.  
 Electrical Construction & Maintenance Diploma . . . . . 72 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, private companies and plants, home owners, 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: \$29.94/hour
- Top Earners: \$40.15/hour

### ELECTRICAL CONSTRUCTION & MAINTENANCE TECHNOLOGY – A.A.S. DEGREE

#### 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
ELEC1140	Blueprint Reading for Technicians	3
MATS1205	Math for Electricians	3
ELEC1138	Computer Applications for Electricians	2
ELEC1137	Construction Site Safety	1
<b>Total Credits</b>		<b>18</b>

#### 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
<b>Total Credits</b>		<b>18</b>

#### First Year - Summer Session

ENGL1150	Composition I	3
	General Education Elective (MnTC Goal 3 or 4)	3
<b>Total Credits</b>		<b>6</b>

#### 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
<b>Total Credits</b>		<b>18</b>

#### 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
<b>Total Credits</b>		<b>18</b>

#### Summer Session – Second Year

	General Education Elective (MnTC Goal 3 or 4)**	3
<b>Total Credits</b>		<b>3</b>

**TOTAL PROGRAM REQUIREMENTS 81**

*This is a sample course sequence resulting in an A.A.S. degree.  
 Please consult your program advisor regarding your academic plans.*

*\*\* Select General Education electives from MnTC goal area.  
 See pages 116-118 for MnTC goal areas.*

## ELECTRICAL CONSTRUCTION & MAINTENANCE TECHNOLOGY - DIPLOMA

### 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
ELEC1140	Blueprint Reading for Technicians	3
MATS1205	Math for Electricians	3
ELEC1138	Computer Applications for Electricians	2
ELEC1137	Construction Site Safety	1
<b>Total Credits</b>		<b>18</b>

### 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
<b>Total Credits</b>		<b>18</b>

### 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
<b>Total Credits</b>		<b>18</b>

### 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
<b>Total Credits</b>		<b>18</b>

### First Year - Summer Session

General Education Elective		3
<b>Total Credits</b>		<b>3</b>

**TOTAL PROGRAM REQUIREMENTS 75**

*This is a sample course sequence resulting in an diploma.  
Please consult your program advisor regarding your academic plans.*



# TECHNICAL CAREERS

## ELECTRICAL LINEWORKER

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

### Outcomes

Electrical Lineworker A.A.S. Degree . . . . . 60 cr.  
 Electrical Lineworker Diploma . . . . . 43 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 line-workers work outdoors building overhead power lines and/or laying underground cable. Tool use and care plus safety awareness are extremely important.

### Potential Job Titles

- Construction Lineman
- Line Crewman
- Electric Power Line Installer
- Line Erector
- Line Installer-Repairer
- Power Lineman

### Salary Data

- Average Wage: \$34/hour
- Top Earners: \$43.06/hour

### ELECTRICAL LINEWORKER - A.A.S. DEGREE

#### July Start

ELLW1110	Distribution I	4
ELLW1120	Utility Equipment and Tools	2
<b>Total Credits</b>		<b>6</b>

#### First Year - Fall Semester

ELLW1130	Basic Electricity	2
ELLW1140	Distribution IIA	4
ELLW1141	Distribution IIB	4
ELLW1150	Construction Planning and Practices	2
ELLW1160	Transformers I	4
	General Education Elective**	3
<b>Total Credits</b>		<b>19</b>

#### First Year - Spring Semester

ELLW1162	Transformers II	4
ELLW1170	Line Construction and Maintenance A	4
ELLW1172	Line Construction and Maintenance B	4
ELLW1180	Underground Cable and Fault Locating	2
ELLW1185	Electrical Industry Search Skills	1
HEAL1030	Emergency Care Technical Trades	3
<b>Total Credits</b>		<b>18</b>

#### First Year - Summer Session

SPEE1020	Interpersonal Communication	3
ENGL1150	Composition I	3
	General Education Elective (MnTC Goal 3 or 4)**	3
	General Education Elective**	8
<b>Total Credits</b>		<b>17</b>

**TOTAL PROGRAM REQUIREMENTS 60**

*This is a sample course sequence resulting in an A.A.S. degree.  
 Please consult your program advisor regarding your academic plans.*

*\*\* Select General Education electives from MnTC goal area.  
 See pages 116-118 for MnTC goal areas.*

## ELECTRICAL LINEWORKER - DIPLOMA

### July Start

ELLW1110	Distribution I	4
ELLW1120	Utility Equipment and Tools	2
<b>Total Credits</b>		<b>6</b>

### First Year - Fall Semester

ELLW1130	Basic Electricity	2
ELLW1140	Distribution IIA	4
ELLW1141	Distribution IIB	4
ELLW1150	Construction Planning and Practices	2
ELLW1160	Transformers I	4
	General Education**	3
<b>Total Credits</b>		<b>19</b>

### First Year - Spring Semester

ELLW1162	Transformers II	4
ELLW1170	Line Construction and Maintenance A	4
ELLW1172	Line Construction and Maintenance B	4
ELLW1180	Underground Cable and Fault Locating	2
ELLW1185	Electrical Industry Search Skills	1
HEAL1030	Emergency Care Technical Trades	3
<b>Total Credits</b>		<b>18</b>

**TOTAL PROGRAM REQUIREMENTS      43**

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*

*\*\*General Education courses should be selected from SPEE1020,  
ENGL1150, or ENGL1000.*



## TECHNICAL CAREERS

## 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.

Nuclear Energy Certificate ..... 10 cr.

**Major Description**

The Energy Technical Specialist A.A.S. is a new degree that 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: coal-fired electric power generation, natural gas distribution, ethanol production, biodiesel production, wind turbine maintenance or solar energy.

DCTC offers additional training as nuclear energy maintenance technicians that meets the Nuclear Energy Institute (NEI) standards. It is the goal to have the graduates of the Energy Technical Specialist A. A. S. degree and the nuclear energy advanced training to meet the Nuclear Energy Institutes (NEI) standards. These graduates will have the skills and knowledge necessary to obtain entry-level employment in the nuclear energy industry. This program will utilize the Uniform Curriculum Guide, which was developed as part of an industry-wide workforce strategy to standardize curriculum and increase efficiency of new and qualified nuclear workers focused on maintenance and non-licensed operators.

**Work Environment**

Energy maintenance technicians work in energy generation plants. It depends on the areas of focus, these technicians work in 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.

**Potential Job Titles**

- Nuclear Technician
- Nuclear Technology Specialist
- Nuclear Energy Maintenance Technician

**Salary Data**

- Average Wage (U.S.): \$36.15/hour
- Top Earners (U.S.): \$48.90/hour

## ENERGY TECHNICAL SPECIALIST - A.A.S. DEGREE

### First Year - First Semester

SHA1600	Intro to Industrial Safety and Health (ONLINE at Hibbing Community College)	2
RNEW1300	Intro to Trad/Renewable Energy (ONLINE at Minnesota West)	3
ETSA1511	Fundamentals of AC/DC Electricity I	3
ETSA1512	Fundamentals of AC/DC Electricity II	3
	General Education Elective (Goal 4 Math)	3
<b>Total Credits</b>		<b>14</b>

## First Year - Second Semester

ETSA1507	Digital Electronics	3
ETSA1523	Print Reading	3
ETSA1531	Process Controls/Instrumentation I	3
ETSA1541	Mechanical Fundamentals	3
PHYS1050	Introduction to Physics	3
<b>Total Credits</b>		<b>15</b>

### Second Year - First Semester

ETSA2516	Mechanical Systems II (Fossil Fuel Emphasis)	4
ETSA1552	Metal Joining and Fabrication (Fossil Fuel Emphasis)	2
ETSA2513	Pneumatics	3
ETSA2512	Hydraulics	3
BIOL1110	Environmental Science	3
<b>Total Credits</b>		<b>15</b>

### Second Year - Second Semester

ETSA2546	Powerplant Technology (Fossil Fuel Emphasis)	4
ETSA2547	Mechanical Fundamentals for Process Controls	3
ETSA2543	PLC Fundamentals	3
ENGL1150	Composition I	3
SPEE1020	Interpersonal Communications	3
<b>Total Credits</b>		<b>16</b>

TOTAL PROGRAM REQUIREMENTS	60
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*This is a sample course sequence resulting in an A.A.S. degree.  
Please consult your program advisor regarding your academic plans.*

## NUCLEAR ENERGY - CERTIFICATE

### First Year - First Semester

*NUCP2500	Nuclear Energy Foundations	3
*NUCP2504	Nuclear Plant Materials	4
*NUCP2508	Nuclear Plant Operating Systems	3
<b>Total Credits</b>		<b>10</b>

\* Courses under development.

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*





# TECHNICAL CAREERS

## NANOSCIENCE TECHNOLOGY

Delivery: Daytime Classes  
 Start: Fall Semester, Full- or Part-Time  
 Location: Rosemount Campus (Semester 1-3),  
 University of Minnesota (Capstone Semester 4)

### Outcome

Nanoscience Technology A.A.S. Degree . . . . . 72 cr.

### Major Description

This program prepares students for careers in nanobiotech, nanomaterials and nanoelectronics industries. The program also provides a strong foundation applicable to environmental, energy and agricultural industries. The curriculum is a combination of classroom and laboratory experiences, with hands on use of nanoscale equipment in all 4 semesters. Students have several opportunities for individual research and exploration of nanoscale concepts. Offered in partnership with the University of Minnesota, the program provides skills and knowledge required for employment in a large number of companies. The DCTC program also provides a starting point to four year degrees at multiple institutions in many degree programs. Processes of scientific inquiry, experiment and research design, critical thinking, and communication are aspects that are woven into each course.

### Work Environment

Nanoscience technologists work in multiple business environments including research, production, testing, training and marketing. Often this role is a bridge between scientists, engineers and other technicians. Program graduates may work independently in some aspects but most often are part of a team. Your job will not be a desk job and will likely include sample creation and testing, documentation and analysis and communication of your results. These technologists do not usually do the same thing for many months at a time. Finally, time will be spent in a combination of different type of lab environments. The options and work environments are varied and expanding with the U.S> nanotech market expected to mushroom to 1 trillion \$ by 2015.

### Potential Job Titles

- Nanotechnologist
- Nanobiotech Research Assistant
- Nanoscale Fabrication Technician
- Nanomaterials Research Associate
- Research Assistant
- Lab Technician
- Chemical Technician
- Quality Control Technician
- Manufacturing Technician

### Salary Data (cbsalary.com)

- Average Salary (Global): \$49,687/year

**NANOSCIENCE TECHNOLOGY - A.A.S. DEGREE****First Year - First Semester**

NANO1100	Fundamentals of Nanoscience I	3
PHYS1100	College Physics I	4
BIOL1500	General Biology	4
SPEE1020	Interpersonal Communication	3
MATS1300	College Algebra	4

**Total Credits 18**

**First Year - Second Semester**

NANO1200	Fundamentals of Nanoscience II	3
NANO1210	Computer Simulation	1
CHEM1500	Introduction to Chemistry	4
MATS1251	Statistics	4
PHYS1200	College Physics II	4
NANO1211	Student Research	3

**Total Credits 19**

**Second Year - First Semester**

NANO2101	Nanoelectronics	3
NANO2111	Nanobiotechnology/Agriculture	3
NANO2121	Nanomaterials	3
NANO2131	Manufacturing Quality Assurance	2
NANO2140	Interdisciplinary Lab	3
NANO2151	Career Planning and Industry Tours	1
ENGL1150	Composition I	3

**Total Credits 18**

**Second Year - Second Semester**

Capstone at the University of Minnesota		
MT 3111	Elements of Microelectronic Manufacturing	3
MT 3112	Elements of Micro & Nano Manufacturing Lab	1
MT 3121	Thin Films Deposition	3
MT 3131	Introduction to Materials Characterization	3
MT 3132	Materials Characterization Laboratory	1
MT 3141	Principles & Applications of Bionanotechnology	3
MT 3142	Nanoparticles and Biotechnology Laboratory	1
NANO2970	Industry Internship & Observation	2

**Total Credits 17**

**TOTAL PROGRAM REQUIREMENTS 72**

*This is a sample course sequence resulting in an A.A.S. degree.  
Please consult your program advisor regarding your academic plans.*



# TECHNICAL CAREERS

## WELDING TECHNOLOGY

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

### Outcome

Welding Diploma ..... 32 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, Safety are covered in the curriculum.

### Work Environment

Welders with the ability to fabricate and weld metal products from blueprints are needed 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

#### Manufacturing Plants

- Packaging Machines
- Trailers
- Automotive
- Aerospace
- Railway
- Sporting
- Recreational Vehicles
- Agricultural
- Aggregate and Mining Equipment

#### Construction

- Ship Yards
- Bridges
- Buildings
- Pipe Welders/Fitters

#### Custom Job Shops

- Iron Railings
- Docks
- Stairways

### Salary Data

- Average Wage: \$21.20/hour
- Top Earners: \$27.89/hour

### WELDING TECHNOLOGY - DIPLOMA

#### First Year - First Semester

WELD1100	Welding Safety and Theory	2
WELD1102	Shielded Metal Arc Welding I	4
WELD1104	Semi-Automatic Arc Welding I	3
WELD1106	Gas Tungsten Arc Welding I	3
WELD1108	Blueprint Reading	3
<b>Total Credits</b>		<b>15</b>

#### First Year - Second Semester

WELD1110	Layout	3
WELD1112	Welding Fabrication/Qualification	3
WELD1114	Shielded Metal Arc Welding II	4
WELD1116	Semi-Automatic Arc Welding II	2
WELD1118	Gas Tungsten Arc Welding II	2
	General Education**	3
<b>Total Credits</b>		<b>17</b>

**TOTAL PROGRAM REQUIREMENTS 32**

*This is a sample course sequence resulting in an A.A.S. degree.  
 Please consult your program advisor regarding your academic plans.*

*\*\* General Education - Select from SPEE1020 or ENGL1150.*

# Transportation



## PROGRAMS OF STUDY

Auto Body Collision Technology .....	101
Automotive Technician.....	103
GM Automotive Service Program .....	106
Heavy Construction Equipment Technology .....	107
Heavy Duty Truck Technology .....	109
Railroad Conductor Technology.....	111

## 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 as a railway conductor on the engineer track 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 [iseek.org](http://iseek.org).*

# Contact Us

## FACULTY

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### Robert Engberg

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## DEAN

### Mike Opp

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“There can be no doubt that the transportation sector is  
the most critical sector of our economy.”

— Robert Brady —

# AUTO BODY COLLISION TECHNOLOGY

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 "Live" Collision Repair Training.

## Work Environment

Skilled graduates find challenging 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: \$26.33/hour
- Top Earners: \$38.77/hour

## AUTO BODY COLLISION TECHNOLOGY - A.A.S. DEGREE

### 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
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>18</b>

### 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
ENGL1150	Composition I	3
	General Education Elective (MnTC Goal 3 or 4)	3
<b>Total Credits</b>		<b>18</b>

### Second Year - First Semester

ABCT2102	Shop Management and Estimating	2
ABCT2106	Collision Damage Repair/Replacement	6
ABCT2108	Unibody/Frame/Wheel Alignment I	4
ABCT2230	Body Mechanical and Air Conditioning	3
	General Education Electives**	3
<b>Total Credits</b>		<b>18</b>

### Second Year - Second Semester

ABCT2100	Body Electrical	2
ABCT2212	Unibody/Frame/Wheel Alignment II	6
ABCT2240	Emerging Technologies	2
ABCT2970	Autobody Internship	5
	General Education Electives**	3
<b>Total Credits</b>		<b>18</b>

**TOTAL PROGRAM REQUIREMENTS 72**

*This is a sample course sequence resulting in an A.A.S. degree.  
 Please consult your program advisor regarding your academic plans.*

*\*\* Select General Education electives from MnTC goal area.  
 See pages 116-118 for MnTC goal areas.*



## AUTO BODY COLLISION TECHNOLOGY - DIPLOMA

### 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
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>18</b>

### 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
ENGL1000	Applied Business Writing (or ENGL1150)	3
<b>Total Credits</b>		<b>15</b>

### Second Year - First Semester

ABCT2100	Body Electrical	2
ABCT2102	Shop Management and Estimating	2
ABCT2106	Collision Damage Repair/Replacement	6
ABCT2108	Unibody/Frame/Wheel Alignment I	4
ABCT2230	Body Mechanical and Air Conditioning	3
	General Education Elective**	3
<b>Total Credits</b>		<b>20</b>

### Second Year - Second Semester

ABCT2212	Unibody/Frame/Wheel Alignment II	6
ABCT2100	Body Electrical	2
ABCT2970	Autobody Internship	5
<b>Total Credits</b>		<b>13</b>

**TOTAL PROGRAM REQUIREMENTS 64**

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*

**\*\* Select General Education electives from MnTC goal area.  
See pages 116-118 for MnTC goal areas.**



## BODY TECHNICIAN - CERTIFICATE

### First Year - First Semester

ABCT1111	Collision Repair Welding I	2
ABCT1120	Sheet Metal Repair	5
ABCT1142	Glass, Trim and Hardware	4
ABCT1212	Collision Repair Welding II	2
<b>Total Credits</b>		<b>13</b>

### First Year - Second Semester

ABCT2100	Body Electrical	2
ABCT2106	Collision Damage Repair/Replacement	6
ABCT2108	Unibody/Frame/Wheel Alignment I	4
ABCT2230	Body Mechanical and Air Conditioning	3
<b>Total Credits</b>		<b>15</b>

**TOTAL PROGRAM REQUIREMENTS 28**

*This is a sample course sequence resulting in a certificate.  
Please consult your program advisor regarding your academic plans.*

## PAINT PREPARATION - CERTIFICATE

### First Year - First Semester

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**	3
<b>Total Credits</b>		<b>21</b>

**TOTAL PROGRAM REQUIREMENTS 21**

*This is a sample course sequence resulting in a certificate.  
Please consult your program advisor regarding your academic plans.*

**\*\* General Education - Select from SPEE1020 or ENGL1150.**

## ESTIMATOR - CERTIFICATE

### First Year - First Semester

ABCT1120	Sheet Metal Repair	5
ABCT2102	Shop Management and Estimating	2
ABCT2108	Unibody/Frame/Wheel Alignment I	4
	General Education**	3
<b>Total Credits</b>		<b>14</b>

**TOTAL PROGRAM REQUIREMENTS 14**

*This is a sample course sequence resulting in a certificate.  
Please consult your program advisor regarding your academic plans.*

**\*\* General Education - Select from SPEE1020 or ENGL1150.**

## AUTOMOTIVE TECHNICIAN

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 ..... 65 cr.  
Driveability Certificate..... 18 cr.  
Engines & Transmission Certificate..... 18 cr.  
Electrical, Electronics, and HVAC Certificate ..... 18 cr.  
Brakes, Suspension and Driveline 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.

### 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

- Automobile Mechanic
- Automobile Service Advisor
- Automotive Repair Technician
- Automotive Technician
- Auto Mechanic
- Automotive Engineer

### Salary Data

- Average Wage: \$20.37/hour
- Top Earners: \$29.42/hour

### AUTOMOTIVE TECHNICIAN - A.A.S. DEGREE

#### First Year - First Semester

AUTM2100	Basic Electricity	1
AUTM2110	Automotive Engine Electrical Systems	3
AUTM2115	Automotive Body Electrical Systems	3
AUTM2136	Heating, Ventilation and Air Conditioning	3
AUTM2141	Advanced Automotive Electronic Systems	5
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>18</b>

#### First Year - Second Semester

AUTM2125	Engine Theory and Operation	4
AUTM2215	Automatic Transmission/Transaxle Theory and Operation	4
AUTM2225	Advanced Engine and Transmission and Repair	6
ENGL1150	Composition I	3
<b>Total Credits</b>		<b>17</b>

#### Second Year - First Semester

AUTM2315	Ignition System Operation, Diagnosis and Repair	3
AUTM2322	Fuel System Operation Diagnosis and Repair	3
AUTM2325	Computer Systems Op. Diagnosis and Repair	3
AUTM2330	Advanced Driveability	5
	General Education Elective (MnTC Goal 3 or 4)**	3
	General Education Elective**	3
<b>Total Credits</b>		<b>20</b>

#### Second Year - Second Semester

AUTM2011	Suspensions, Steering and Alignment Systems	3
AUTM2025	Brakes	3
AUTM2032	Manual Transaxle, Clutches, Transfer Cases and Differentials	3
AUTM2205	Advanced Driveline and Chassis Systems	5
	General Education Elective**	3
<b>Total Credits</b>		<b>17</b>

**TOTAL PROGRAM REQUIREMENTS 72**

*This is a sample course sequence resulting in an A.A.S. degree.  
Please consult your program advisor regarding your academic plans.*

*\*\* Select General Education electives from MnTC goal area.  
See pages 116-118 for MnTC goal areas.*

**AUTOMOTIVE TECHNICIAN - DIPLOMA****First Year - First Semester**

AUTM2100	Basic Electricity	1
AUTM2110	Automotive Engine Electrical Systems	3
AUTM2115	Automotive Body Electrical Systems	3
AUTM2136	Heating, Ventilation and Air Conditioning	3
AUTM2141	Advanced Automotive Electronic Systems	5
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>18</b>

**First Year - Second Semester**

AUTM2125	Engine Theory and Operation	4
AUTM2215	Automatic Transmission/Transaxle Theory and Operation	4
AUTM2225	Advanced Engine and Transmission and Repair	6
ENGL1150	Composition I (or ENGL1000)	3
<b>Total Credits</b>		<b>17</b>

**Second Year - First Semester**

AUTM2315	Ignition System Operation, Diagnosis and Repair	3
AUTM2322	Fuel System Operation Diagnosis and Repair	3
AUTM2325	Computer Systems Operation Diagnosis and Repair	3
AUTM2330	Advanced Driveability	5
	General Education Elective**	2
<b>Total Credits</b>		<b>16</b>

**Second Year - Second Semester**

AUTM2011	Suspensions, Steering and Alignment Systems	3
AUTM2025	Brakes	3
AUTM2032	Manual Transaxle, Clutches, Transfer Cases and Differentials	3
AUTM2205	Advanced Driveline and Chassis Systems	5
<b>Total Credits</b>		<b>14</b>

**TOTAL PROGRAM REQUIREMENTS 65**

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*

*\*\* Select General Education electives from MnTC goal area.  
See pages 116-118 for MnTC goal areas.*

**DRIVEABILITY - CERTIFICATE**

*Pending MnSCU Board Approval*

**First Year - First Semester**

AUTM2100	Basic Electricity	1
AUTM2305	Fuel System Operation Diagnosis and Repair	3
AUTM2315	Ignition System Operation, Diagnosis and Repair	3
AUTM2325	Computer Systems Operation Diagnosis and Repair	3
AUTM2330	Advanced Driveability	5
	General Education**	3
<b>Total Credits</b>		<b>18</b>

**TOTAL PROGRAM REQUIREMENTS 18**

*This is a sample course sequence resulting in a certificate.  
Please consult your program advisor regarding your academic plans.*

*\*\* General Education - Select from SPEE1020 or ENGL1150.*

**ENGINES & TRANSMISSION - CERTIFICATE**

*Pending MnSCU Board Approval*

**First Year - First Semester**

AUTM2100	Basic Electricity	1
AUTM2125	Engine Theory and Operation	4
AUTM2215	Automatic Transmission/Transaxle Theory and Operation	4
AUTM2225	Advanced Engine and Transmission and Repair	6
	General Education**	3
<b>Total Credits</b>		<b>18</b>

**TOTAL PROGRAM REQUIREMENTS 18**

*This is a sample course sequence resulting in a certificate.  
Please consult your program advisor regarding your academic plans.*

*\*\* Select General Education electives from MnTC goal area.  
See pages 116-118 for MnTC goal areas.*

## ELECTRICAL, ELECTRONICS, & HVAC - CERTIFICATE

*Pending MnSCU Board Approval*

### First Year - First Semester

AUTM2100	Basic Electricity	1
AUTM2110	Automotive Engine Electrical Systems	3
AUTM2136	Heating, Ventilation, and Air Conditioning	3
AUTM2141	Advanced Automotive Electronic Systems	5
AUTM2115	Automotive Body Electrical Systems	3
	General Education**	3
<b>Total Credits</b>		<b>18</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>18</b>

*This is a sample course sequence resulting in a certificate.  
Please consult your program advisor regarding your academic plans.*

**\*\* Select General Education electives from MnTC goal area.  
See pages 116-118 for MnTC goal areas.**

## BRAKES, SUSPENSION AND DRIVELINE - CERTIFICATE

*Pending MnSCU Board Approval*

### First Year - First Semester

AUTM2100	Basic Electricity	1
AUTM2011	Suspension, Steering & Alignment	3
AUTM2025	Brakes	3
AUTM2032	Manual Transmission and Driveline	3
AUTM2205	Advanced Driveline and Chassis System	5
	General Education**	3
<b>Total Credits</b>		<b>18</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>18</b>

*This is a sample course sequence resulting in a certificate.  
Please consult your program advisor regarding your academic plans.*

**\*\* Select General Education electives from MnTC goal area.  
See pages 116-118 for MnTC goal areas.**



## TRANSPORTATION

## GM AUTOMOTIVE SERVICE EDUCATIONAL PROGRAM (ASEP)

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 ACDelco, ASEP trains highly specialized service technicians for GM dealers and ACDelco Total Service Support shops. 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 grads work as service technicians in General Motors dealerships, including Buick, Cadillac, Chevrolet, GMC or an ACDelco TSS Service Center.

**Potential Job Titles**

- Automobile Mechanic
- Automobile Service Advisor
- Automotive Repair Technician
- Automotive Technician
- Automotive Engineer
- Automotive Service Manager

**Salary Data**

- Average Wage: \$20.37/hour
- Top Earners: \$29.42/hour

**AUTOMOTIVE SERVICE - A.A.S. DEGREE****First Year - First Semester**

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

**First Year - Second Semester**

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

**First Year - Summer Session**

ASEP1104	Body Electronics	3
ASEP2110	Automatic Transmissions	3
ASEP2303	Dealer Work Experience III	5
ENGL1150	Composition I	3
<b>Total Credits</b>		<b>14</b>

**Second Year - First Semester**

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

**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
<b>Total Credits</b>		<b>17</b>

**TOTAL PROGRAM REQUIREMENTS 82**

*This is a sample course sequence resulting in an A.A.S. degree.  
 Please consult your program advisor regarding your academic plans.*

# HEAVY CONSTRUCTION EQUIPMENT TECHNOLOGY

**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. Technology Diploma. . . . . 64 cr.  
 Heavy Construction Equip. Technology Certificate. . . . . 28 cr.

## Major Description

Coursework prepares students to succeed as well-trained, mechanically minded, hard-working mechanics with heavy equipment dealers and contractors. Instruction involves classroom theory, mock-up demonstrations and repair of customer-owned heavy equipment. Making repairs on actual equipment is vital to skill development. Mechanics already in the field can update their knowledge by registering for specific courses.

## 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 Mechanic
- Construction Equipment Overhauler
- Caterpillar Mechanic
- Construction Equipment Mechanic
- Machine Overhauler
- Field Service Technician

## Salary Data

- Average Wage: \$25.70/hour
- Top earners: \$31.84/hour

## HEAVY CONSTRUCTION EQUIPMENT TECHNOLOGY - A.A.S. DEGREE

*Completion of this degree will also satisfy the requirements for the Advanced Caterpillar Technology A.A.S. degree, which prepares students for a challenging career with a focus on the Caterpillar product line.*

### First Year - First Semester

HCEM1101	General Shop Mechanics - Introduction	2
HCEM1110	Welding and Flame Cutting	2
HCEM1132	Heavy Duty Electrical	3
HCEM1140	Diesel Engine Overhaul I	4
HCEM1161	Specialized Lab I	2
HCEM1170	CAT Basics Training I	1
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>17</b>

### 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
HCEM1270	CAT Basics Training II	2
ENGL1150	Composition I	3
<b>Total Credits</b>		<b>18</b>

### Second Year - First Semester

HCEM2265	Differentials	2
HCEM2115	Transmissions	4
HCEM2135	Hydraulics I	3
HCEM2238	Hydraulics II	3
HCEM2177	Machine Electronics I	2
	Math or Science (MnTC Goal 3 or 4)**	3
	General Education Elective**	3
<b>Total Credits</b>		<b>20</b>

### Second Year - Second Semester

HCEM2225	Track Drive Systems	3
HCEM2145	Hydrostatic Systems	3
HCEM2256	Steering Systems	2
HCEM2260	Machine Electronics II	2
HCEM2270	CAT Advanced Training III	2
HCEM2280	Climate Control	2
	General Education Elective**	3
<b>Total Credits</b>		<b>17</b>

### TOTAL PROGRAM REQUIREMENTS

**72**

*This is a sample course sequence resulting in an A.A.S. degree. Please consult your program advisor regarding your academic plans.*

*\*\* Select General Education electives from MnTC goal area. See pages 116-118 for MnTC goal areas.*



## HEAVY CONSTRUCTION EQUIPMENT TECHNOLOGY - DIPLOMA

### First Year - First Semester

HCEM1101	General Shop Mechanics - Introduction	2
HCEM1110	Welding and Flame Cutting	2
HCEM1132	Heavy Duty Electrical	3
HCEM1140	Diesel Engine Overhaul I	4
HCEM1161	Specialized Lab I	2
HCEM1170	CAT Basics Training I	1
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>17</b>

### 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
HCEM1270	CAT Basics Training II	2
ENGL1150	Composition I	3
<b>Total Credits</b>		<b>18</b>

### Second Year - First Semester

HCEM2115	Transmissions	4
HCEM2135	Hydraulics I	3
HCEM2238	Hydraulics II	3
HCEM2265	Differentials	2
HCEM2177	Machine Electronics I	2
	General Education Elective**	3
<b>Total Credits</b>		<b>17</b>

### Second Year - Second Semester

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

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*

*\* Technical Electives - Student must choose between HCEM2279  
Specialized Lab IV 1-3 credits and/or HCEM2280 Climate Control 2 credits.*

## HEAVY CONSTRUCTION EQUIPMENT MAINTENANCE - CERTIFICATE

### First Year - First Semester

HCEM1101	General Shop Mechanics - Introduction	2
HCEM1110	Welding and Flame Cutting	2
HCEM1132	Heavy Duty Electrical	3
HCEM1140	Diesel Engine Overhaul I	4
HCEM1160	Specialized Lab I	3
<b>Total Credits</b>		<b>14</b>

### First Year - Second Semester

HCEM1234	Heavy Duty Electronics	3
HCEM1246	Diesel Engine Overhaul II	3
HCEM1250	Brakes	2
HCEM1256	Diesel Engine Tune-up	3
HCEM1260	Specialized Lab II	3
<b>Total Credits</b>		<b>14</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>28</b>

*This is a sample course sequence resulting in a certificate.  
Please consult your program advisor regarding your academic plans.*



# HEAVY DUTY TRUCK TECHNOLOGY

Delivery: Daytime Classes  
 Start: Fall 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 . . . . . 31 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 and 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.

## 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: \$22.77/hour
- Top earners: \$30.41/hour

## HEAVY DUTY TRUCK TECHNOLOGY - A.A.S. DEGREE

### First Year - First Semester

HDTT1100	Truck Technology Fundamentals	4
HDTT1103	Air Brake Systems	6
HDTT1106	Welding Procedures	2
HDTT1109	Fluid Power Systems	2
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>17</b>

### First Year - Second Semester

HDTT1212	Preventive Maintenance	4
HDTT1215	Suspensions and Steering Systems	4
HDTT1218	Electrical Systems	4
HDTT1223	Truck A/C	3
ENGL1150	Composition I	3
	General Education Elective**	3
<b>Total Credits</b>		<b>21</b>

### Second Year - First Semester

HDTT2101	Drive Train I	6
HDTT2104	Drive Train II	4
HDTT2107	Diesel Fundamentals	3
HDTT2110	Diesel Fuel Systems	1
	General Education Elective (MnTC Goal 3 or 4)	3
<b>Total Credits</b>		<b>17</b>

### Second Year - Second Semester

HDTT2213	Diesel Engine Fundamentals	4
HDTT2216	Diesel Electronics	3
HDTT2230	Heavy Truck Industry Training	2
HDTT2970	Internship or HDTT2222 Diesel Engine Lab	5
	General Education Electives**	3
<b>Total Credits</b>		<b>17</b>

**TOTAL PROGRAM REQUIREMENTS 72**

*This is a sample course sequence resulting in an A.A.S. degree.  
 Please consult your program advisor regarding your academic plans.*

*\*\* Select General Education electives from MnTC goal area.  
 See pages 116-118 for MnTC goal areas.*

**HEAVY DUTY TRUCK TECHNOLOGY - DIPLOMA****First Year - First Semester**

HDTT1100	Truck Technology Fundamentals	4
HDTT1103	Air Brake Systems	6
HDTT1106	Welding Procedures	2
HDTT1109	Fluid Power Systems	2
SPEE1020	Interpersonal Communication	3
<b>Total Credits</b>		<b>17</b>

**First Year - Second Semester**

HDTT1212	Preventive Maintenance	4
HDTT1215	Suspensions and Steering Systems	4
HDTT1218	Electrical Systems	4
HDTT1223	Truck A/C	3
ENGL1150	Composition I	3
<b>Total Credits</b>		<b>18</b>

**Second Year - First Semester**

HDTT2101	Drive Train I	6
HDTT2104	Drive Train II	4
HDTT2107	Diesel Fundamentals	3
HDTT2110	Diesel Fuel Systems	1
	General Education Elective**	3
<b>Total Credits</b>		<b>17</b>

**Second Year - Second Semester**

HDTT2213	Diesel Engine Fundamentals	4
HDTT2216	Diesel Electronics	3
HDTT2970	Internship (or HDTT2222 Diesel Engine Lab)	5
<b>Total Credits</b>		<b>12</b>
<b>TOTAL PROGRAM REQUIREMENTS</b>		<b>64</b>

*This is a sample course sequence resulting in a diploma.  
Please consult your program advisor regarding your academic plans.*

**\*\* Select General Education electives from MnTC goal area.  
See pages 116-118 for MnTC goal areas.**

**TRUCK FLEET MAINTENANCE - CERTIFICATE****First Year - First Semester**

HDTT1100	Truck Technology Fundamentals	4
HDTT1103	Air Brake Systems	6
HDTT1106	Welding Procedures	2
HDTT1109	Fluid Power Systems	2
<b>Total Credits</b>		<b>14</b>

**First Year - Second Semester**

HDTT1212	Preventive Maintenance	4
HDTT1215	Suspensions and Steering Systems	4
HDTT1218	Electrical Systems	4
HDTT1222	Truck A/C	3
<b>Total Credits</b>		<b>15</b>

**TOTAL PROGRAM REQUIREMENTS 29**

*This is a sample course sequence resulting in a certificate.  
Please consult your program advisor regarding your academic plans.*



## RAILROAD CONDUCTOR TECHNOLOGY

**Delivery:** Daytime Classes  
**Start:** January, March, May or August  
 (7 weeks), Full-Time  
**Location:** Rosemount Campus

### Outcomes

Railroad Conductor Technology Certificate . . . . . 16 cr.

### Major Description

This program prepares students to serve as railroad conductors in the railway industry, which is critical to our nation's livelihood. Retirement rates of current conductors promise excellent job opportunities. DCTC formed partnerships with Canadian Pacific Railway, Union Pacific Railroad and many other regional and short lines to develop a curriculum that puts graduates on the fast track to employment in the industry.

### Work Environment

Railroad conductors oversee train routes, movements and car switching through a range of duties, including the relay of signals for safe train movements. Conductors work irregular hours, including holidays, weekends, days and nights for shifts up to 12 hours. Constantly alert to changing conditions, they are trained to act safely and responsibly.

### Potential Job Titles

- Train Conductor
- Locomotive Engineer
- Train Dispatcher
- Trainmaster

### Salary Data

- Average Wage: \$26.17/hour
- Top Earners: \$31.37/hour

### RAILROAD CONDUCTOR TECHNOLOGY - CERTIFICATE

#### 15 Week Term

RRCC1110	Orientation	1
RRCC1120	Introduction to Conductor Service	4
RRCC1130	General Code of Operating Rules	4
RRCC1140	Mechanical Operations	2
RRCC1150	Conductor Duties	2
RRCC1160	Utilization of RR Equip. & Safety Standards	2
RRCC2970	Railroad Conductor Internship	1
<b>Total Credits</b>		<b>16</b>

**TOTAL PROGRAM REQUIREMENTS 16**

*This is a sample course sequence resulting in a certificate.  
 Please consult your program advisor regarding your academic plans.*





# General Education



## PHILOSOPHY OF GENERAL EDUCATION

Dakota County Technical College incorporates General Education 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. This goal states: This education will empower individuals to obtain and retain employment, enhance their opportunities for career advancement, and furnish a supportive environment in which they can develop the knowledge, skills, and attitudes necessary to succeed in a global economy.

## OUTCOME STATEMENT

General Education is a requirement of all programs of 45 or more semester credits in length and is an integral part of the formal technical 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 that 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 offering, visit, <http://dctc.edu/go/courses>.**



# Contact Us

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*M.S., Metro State University*

“Education is learning what you didn’t  
even know you didn’t know.”

— Daniel J. Boorstin —

## GENERAL EDUCATION

### A.S. DEGREE REQUIREMENTS

An Associate in Science degree requires a minimum of 30 semester credits of general education as outlined below. See your advisor or program page in this catalog for program specific requirements.

#### REQUIRED COURSES

<b>Communication</b>		
ENGL1150	Composition I	3
<b>Human Diversity</b>		
SPEE1020	Interpersonal Communication	3
<b>Mathematics</b> (choose one course numbered over 1000):		
MATS	any Math course (except 1205)	4
<b>Science</b>		
BIOL	any Biology course (except 1200)	3
CHEM	any Chemistry course	4
PHYS	any Physics course	3
<b>Total Credits</b>		<b>20</b>

#### ELECTIVE COURSES

Students must complete a minimum of 13-15 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	
<b>Total Credits</b>		<b>16-18</b>
<b>TOTAL REQUIREMENTS</b>		<b>30</b>

### 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

<b>Communication</b>		
ENGL1150	Composition I	3
<b>Human Diversity</b>		
SPEE1020	Interpersonal Communication	3
<b>Mathematics or Science</b> (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 1205)	3-4
<b>Total Credits</b>		<b>9-10</b>

#### 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
<hr/>	
<b>Total Credits</b>	<b>5-6</b>
<b>TOTAL REQUIREMENTS</b>	<b>15</b>

## 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 advisor or program page in this catalog for program specific requirements.

### REQUIRED COURSES

<b>Communication</b>		
ENGL1150	Composition I	3
<b>Human Diversity</b>		
SPEE1020	Interpersonal Communication	3
<b>General Education Elective</b> (from any MnTC goal area)		3
<b>Total Credits</b>		<b>9</b>
<b>TOTAL REQUIREMENTS</b>		<b>9</b>

#### Please note:

The following diploma programs may substitute ENGL1000 for ENGL1150 (confirm with your advisor before taking):

- Accounting
- Auto Body Collision Technology
- Automotive Technician
- Electrical Construction
- Graphic Design Technology
- Marketing Design Specialist

ENGL1000 is available only to diploma students and is not designed to be a transfer level general education course. ENGL1000 does not fulfill the English requirements of the degree track.

## MINNESOTA TRANSFER CURRICULUM

The Minnesota Transfer Curriculum (MnTC) is the format in which general education is accomplished within the public two- and four-year colleges and universities in Minnesota. The MnTC defines a common curriculum format for general education. Completion of a defined MnTC course(s) at one institution enables a student to receive credit for lower-division general education MnTC coursework upon admission to other MnSCU colleges and universities and the University of Minnesota.

DCTC provides general education in the MnTC format and accepts MnTC courses from other MnSCU 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 the MnTC goal number(s).

#### 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 italic text after the goal area descriptive paragraph. 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.*

ENGL1150	Composition I	3 cr.
ENGL1300	Introduction to Creative Writing	3 cr.
ENGL1200	Technical Writing	3 cr.
ENGL2000	English Composition II	3 cr.
SPEE1015	Fundamentals of Public Speaking	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 students' awareness of their own thinking and problem-solving procedures. *This goal can be met by completing Goal 1 and completing the technical program.*

PHIL1200	Critical Thinking	3 cr.
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**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:**

BIOL1310	Intro to Anatomy & Physiology	4 cr.
BIOL1400	Ecology Field Studies	4 cr.
BIOL1500	General Biology	4 cr.
BIOL1600	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.
BIOL1120	Minnesota Nature Study	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.

**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.
HIST1300	World History	4 cr.
HIST1400	American Environmental History	3 cr.
HIST1450	The History of Minnesota	3 cr.
HIST1500	History of Western Civilization	3 cr.
POLS1000	Introduction to Political Science	3 cr.
PSYC1100	General Psychology	3 cr.
PSYC1200	Abnormal Psychology	3 cr.
PSYC1300	Child/Adolescent Psychology	3 cr.
PSYC1350	Lifespan Development	4 cr.
PSYC1400	Adult/Geriatric Psychology	2 cr.
PSYC 1450	Death & Dying	2 cr.
PSYC1600	Human Sexuality	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.
SOCY1300	Introduction to Anthropology	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.*

ARTS1200	The Creative Process	3 cr.
ARTS1300	History of Architecture	4 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	3 cr.
ENGL1575	The Natural World in Literature	2 cr.
ENGL1625	Film Studies	4 cr.
ENGL1630	Genre Film	1 cr.
ENGL1650	Greek Mythology	4 cr.
ENGL1725	Selected Works in Literature	3 cr.
ENGL1750	Fantasy/Science Fiction Literature	3 cr.
ENGL1800	Mystery & Detective Literature	3 cr.
ENGL1900	Creative Writing Workshop	3 cr.
ENGL2000	English Composition II	3 cr.
HUMA1100	Introduction to the Humanities	4 cr.
HUMA1125	The Humanities in Modern Minnesota	3 cr.
PHIL1300	Introduction to Philosophy	3 cr.
PHIL1350	Medical Ethics	3 cr.
PHIL1400	World Religions	3 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.*

SOCY1150	Race and Gender	2 cr.
SPEE1020	Interpersonal Communication	3 cr.
SPEE1030	Intercultural Communication	3 cr.

## 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.*

COMM1221	American Sign Language-Level I	3 cr.
HIST1300	World History	4 cr.
PHIL1400	World Religions	3 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.*

ENGL1570	The Literature of Nature	3 cr.
ENGL1575	The Natural World of Literature	2 cr.
PHIL1100	Ethics	3 cr.
PHIL1300	Introduction to Philosophy	3 cr.
PHIL1350	Medical Ethics	3 cr.

## PEOPLE AND THE ENVIRONMENT (GOAL 10)

To improve students' understanding of today's complex environmental challenges. Students will examine the inter-relatedness of human society and the natural environment. Knowledge of both bio-physical principles and socio-cultural 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.
SOCY1300	Introduction to Anthropology	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

ENGL0118	Basic English and Writing Review	3 cr.
ENGL0130	English Essentials	3 cr.
ENGL0114	College Reading I	3 cr.
ENGL0215	College Reading II	3 cr.
ENGL0123	Medical Reading and Study Skills	4 cr.

### English for Speakers of Other Languages

ESOL0030	ESOL Listening and Speaking I	4 cr.
ESOL0032	ESOL Reading I	4 cr.
ESOL0035	ESOL Writing and Grammar I	4 cr.
ESOL0040	ESOL Listening and Speaking II	4 cr.
ESOL0042	ESOL Reading II	4 cr.
ESOL0045	ESOL Writing and Grammar II	4 cr.

### Mathematical/Logic Reasoning

MATS0200	Basic Mathematics	3 cr.
MATS0305	Introduction to Algebra	4 cr.
MATS0600	Intermediate Algebra	4 cr.

# COURSE DESCRIPTIONS

## ACCOUNTING

**ACCT1000 Principles of Accounting I 4**  
This course covers the fundamental accounting concepts and principles that are used in a business environment. It serves as the introductory course to financial accounting as it relates to accrual accounting. \*\*Articulated\*\*

**ACCT1003 Principles of Accounting II 4**  
This course provides instruction for the analysis and recording of transactions relating to partnerships and corporations in both merchandising and manufacturing environments.

**ACCT1005 Principles of Bookkeeping 2**  
This course is an introduction to basic accounting procedures, including analyzing business transactions, recording transactions in the general journal, preparing financial statements, handling cash and completing the accounting cycle for non-accounting majors.

**ACCT1100 Business Law and Ethics 3**  
This course is an introductory course in the principles of law as they apply to citizens and business. \*\*Articulated\*\*

**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.

**ACCT1226 Payroll Accounting 3**  
This course covers the various state and federal laws pertaining to the computation and payment of salaries and wages. Topics include preparation of employment records, payroll registers, employee earnings records, and state and federal reports.

**ACCT1236 Business Payroll 2**  
This course covers the various state and federal laws pertaining to the computation and payment of salaries and wages. Topics include preparation of employment records, payroll registers, employee earnings records, and state and federal reports.

**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.

**ACCT1406 Income Tax 4**  
This course provides a practical explanation of the Internal Revenue Code as it applies to individuals and businesses. Tax forms are an integral part of this course.

**ACCT2000 Intermediate Accounting I 4**  
This course is part one of a two-part course of 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, statement of cash flows, and the study of cash, marketable securities, notes and accounts receivable and plant and intangible assets.

**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.

**ACCT2100 Cost Accounting I 4**  
This course covers accounting for materials, labor and factory overhead in 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.

**ACCT2103 Cost 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.

**ACCT2200 Accounting Computer Applications I 3**  
This course is an introduction to computerized accounting applications. Topics include general ledger, payroll, accounts receivable, accounts payable and inventory.

**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.

**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.

**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.

**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.

## ARCHITECTURAL TECHNOLOGY

**ARCT1100 Architectural Studio I 8**  
This course will introduce the beginning architectural student to wood-framed and masonry structures, including basic manual drafting techniques, zoning and building code sources, fundamental building design concepts and current building technology principles. Students will prepare architectural drawings of residential and light commercial projects in a simulated professional design office setting.

**ARCT1103 Building Technology I 3**  
This course will introduce the beginning architectural technology student to the characteristics and properties of common building materials: wood, masonry, concrete and metals. Fundamentals of current building technology principles will be learned in association with studio projects. Students will research building technology principles from library resources, manufacturer's catalogs and professionally prepared construction documents.

**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 CAD environment will be taught with a hands-on approach to learning. Students will complete self-paced drafting exercises. \*\*Articulated\*\*



<b>ARCT1200 Architectural Studio II</b>	<b>8</b>
Students prepare design construction documents for a small-scale commercial building in a simulated professional design office. Students learn to integrate building codes, ADA, and structural systems into their designs.	
<b>ARCT1203 Building Technology II</b>	<b>3</b>
Various commercial building codes will be presented and analyzed. The student will do a building codes research project. The completed research will be documented and integrated into design projects.	
<b>ARCT1207 CAD II</b>	<b>3</b>
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 1200.	
<b>ARCT1300 Intro. to SketchUp Modeling Software</b>	<b>3</b>
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: <a href="http://www.sketchup.com">http://www.sketchup.com</a> .	
<b>ARCT1400 Residential Planning and Design</b>	<b>4</b>
This course will introduce the interested student to the fundamentals of residential design. The course curriculum is intended to guide the learner toward a basic understanding of Plot Plan layout, Floor Plan development and current Architectural styles.	
<b>ARCT1425 Architectural Drawings and Methods</b>	<b>4</b>
This course will introduce the interested student to the fundamentals of Architectural drawings. the course curriculum is intended to guide the learner toward a basic understanding of Sketching to Scale, Orthographic Images and required project Drawings for the purposes of design and construction.	
<b>ARCT1450 Wood Frame Building Technologies</b>	<b>4</b>
This course will introduce the interested student to the fundamentals of Wood Frame construction. The course curriculum is intended to guide the learner toward a basic understanding of Foundation Construction, Wood Frame assemblies and conventional building systems.	
<b>ARCT1475 Residential Construction and Costs</b>	<b>4</b>
This course will introduce the interested students to the construction process for residential structures. The course curriculum is intended to guide the learner toward a basic understanding of contracting, cost estimating and building official inspections.	
<b>ARCT2100 Architectural Studio III</b>	<b>8</b>
Students prepare architectural drawings for a small-scale commercial building. This course builds on the students' architectural technology skills as they prepare projects for their portfolios.	
<b>ARCT2103 Building Technology III</b>	<b>3</b>
This course will introduce the student to acoustics, electrical/lighting, plumbing, HVAC, insulation and vapor barriers, and fire protection. The student will integrate research on various building systems into design projects.	
<b>ARCT2107 CAD III</b>	<b>3</b>
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 2100.	

<b>ARCT2200 Architectural Studio IV</b>	<b>5</b>
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 commercial project elevation detail sheet. Students will incorporate the completed drawings into their portfolios for internship interviews with future employers.	
<b>ARCT2970 Internship</b>	<b>8</b>
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.	

## ARTS

<b>ARTS1000 Visual Communications</b>	<b>3</b>
We live in a world that often places us in a position of visual overload. The ease with which materials can be produced and shared with global audiences means that in our daily lives we are often overwhelmed by visual information. It is important that we learn to read, interpret and use images for communication purposes. It is also imperative that we explore how to place visual work in a context that allows us to understand the social, political and cultural implications of various visual productions. This course is an introduction about the theories and hands-on aspects of visual communications. We will explore both the production and consumption of visual images.	
<b>ARTS1100 History of Photography</b>	<b>3</b>
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.	
<b>ARTS1200 The Creative Process</b>	<b>3</b>
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. 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.	
<b>ARTS1300 History of Architecture</b>	<b>4</b>
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 buildings and architecture as cultural artifacts emblematic of culture. Meets MnTC Goal 6.	

## AUTO BODY COLLISION TECHNOLOGY

**ABCT1111 Collision Repair Welding I 2**  
This course covers welding safety, familiarization with oxyacetylene equipment and MIG welder operations.

**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. \*\*Articulated\*\*

**ABCT1130 Refinishing Preparation I 2**  
This course covers refinishing safety, refinishing equipment, masking and surface preparation procedures. \*\*Articulated\*\*

**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.

**ABCT1150 Reconditioning and Detailing 2**  
This course covers various methods of vehicle cleanup and reconditioning. \*\*Articulated\*\*

**ABCT1212 Collision Repair Welding II 2**  
This course covers aluminum welding, resistance type spot welding, weld bonding and the I-CAR welding qualification test. \*\*Articulated\*\*

**ABCT1214 Refinishing Preparation II 3**  
This course covers procedures for preparation and application of undercoat systems. Panel preparation techniques are also covered.

**ABCT1216 Refinishing Application 5**  
This course covers the application of undercoats and topcoats in refinishing. Color theory, adjustment, and blending will be covered.

**ABCT1230 Auto Body Plastic Repair 2**  
This course covers the different methods of repairing automotive plastics.

**ABCT2100 Body Electrical 2**  
This course will focus on electrical troubleshooting and repair problems and procedures relating to collision electrical damage problems. It covers operation, servicing of chassis wiring, instruments, and accessories.

**ABCT2102 Shop Management and Estimating 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.

**ABCT2106 Collision Damage Repair/Replacement 6**  
This course will focus on sheetmetal, unitized body and full frame sectioning and replacement of parts and components. Content will be based on proper methods that are approved and tested to meet O.E.M. and I-Car standards for proper structural integrity of the repair and the vehicle.

**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.

**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.

**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.

**ABCT2240 Emerging Technologies 20**  
This course covers emerging automotive technologies and how they will impact the collision repair field.

**ABCT2970 Autobody Internship 3**  
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. \*\*Articulated\*\*

## AUTOMOTIVE RESTORATION

**ARES2960 Auto Restoration - Skill Development 0**  
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.

## AUTOMOTIVE TECHNICIAN

**AUTM2011 Suspension, Steering & Alignment 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. Alignments angles and their relationship to vehicle handling.

**AUTM2025 Brakes 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.

**AUTM2032 Manual Transaxle, Clutches, Transfer Cases and Dif 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.

**AUTM2100 Basic Automotive Electricity 1**  
This course covers 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 text book.

**AUTM2110 Automotive Engine Electrical 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 your textbook.

**AUTM2115 Automotive Body Electrical 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 your textbook.

**AUTM2125 Engine Theory and Operation 4**  
This course includes general engine diagnoses, cylinder head diagnoses and repair, valve train diagnoses and repair, engine block

diagnoses and repair. The class stresses how engines work and how to repair them.

#### **AUTM2136 Heating, Ventilation and Air Conditioning 3**

This course covers the theory, operation, and repair of modern automotive air conditioning systems. The course includes practical work on air conditioning systems such as recovering refrigerant, evacuating, component service, charging, and performance testing.

#### **AUTM2141 Adv. Automotive Electronic Systems 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 your textbook.

#### **AUTM2205 Advanced Driveline and Chassis Systems 5**

This course includes the advanced diagnosis and electrical repairs of the driveline components. Emphasis will be placed on anti-lock brakes and traction control.

#### **AUTM2215 Automatic Transmission/Transaxle Theory and Op. 4**

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.

#### **AUTM2225 Advanced Engine and Transmission and Repair 6**

This course includes: advanced automatic transmission and engine diagnostic procedures. Advanced repair of automatic transmissions and engines.

#### **AUTM2315 Ignition System Operation, Diagnosis & Repair 3**

This course covers the operation and servicing techniques required to diagnose and repair ignition system related concerns encountered on modern automobiles.

#### **AUTM2322 Fuel Systems Operation, Diagnosis, and Repair 3**

This course will cover the theory and operating principles of automotive computers and throttle body and multi-port injection systems.

#### **AUTM2325 Comp. Systems Op. Diagnosis and Repair 3**

This course covers the operation and servicing techniques required to diagnose and repair ignition system related concerns encountered on modern automobiles.

#### **AUTM2330 Advanced Driveability 5**

This course covers the operation and servicing techniques required to diagnose and repair driveability concerns encountered on modern automobiles. Live work will be stressed in this course.

## **BIOLOGY**

#### **BIOL1110 Environmental Science 3**

This course emphasizes the fundamental concepts in ecology as they pertain to the impact of humans on the environment. It addresses such issues as the stresses placed on the biosphere by the exploitation of natural resources and energy, the creation of pollution and the disposal of waste. Meets MnTC Goal 3, 10.

#### **BIOL1120 Minnesota Nature Study 3**

This course covers the natural habitats of Minnesota and the plants and animals that live in them. It includes such topics as our physical environment, ecology, and animal traits and behaviors such as mimicry or migration. Human interactions with these habitats are stressed. Meets MnTC Goal 3.

#### **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.

#### **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.

#### **BIOL2010 Anatomy and 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.

#### **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.

## BIOMEDICAL EQUIPMENT TECHNOLOGY

**BMET1110 Introduction to Biomedical Technology 3**  
This course provides students with an industry overview/perspective in the biomedical technology field. In this course students will learn the relationships between equipment and patient care.

**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.

**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.

**BMET1121 Administrative Functions 3**  
This course introduces students to the basic operation of hospitals; the requirements of regulatory agencies; biomedical department policies and procedures and the managing of information, work orders and vendors.

**BMET1123 A. C. 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.

**BMET1130 Anatomy & Physiology 3**  
This lecture based course is designed for introductory study of human anatomy and physiology. It emphasizes the structure and function of the systems of the body including the skeletal, muscular, cardiovascular, respiratory, nervous, endocrine, renal, digestive, urinary, and reproductive systems. 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.

**BMET1136 Managing Customer Satisfaction in Health Care 1**  
This course will consist of class lecture and practical exercises. The student will learn to differentiate between internal and external customers in the Health Care Environment. They will be able to identify good customer service when they see it. They will understand the three areas of focus for customer service improvement. Customer service issues specific to the Health Care field and technical service will be covered

**BMET1225 Biomedical Instrumentation I 3**  
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.

**BMET1231 Biomedical Instrumentation II 4**  
This course provides a foundation in the theory and operation of medical laboratory equipment, fiber optics, computers, radiology, nuclear medicine and ultrasound.

**BMET1241 Mechanical Systems 3**  
This course is designed to teach the fundamentals of hydraulics and pneumatics and basic mechanical applications. The curriculum incorporated in the system includes instruction in the mathematics component of hydraulics and pneumatics, and provides experiences in problem solving, data management, and self-directed learning.

**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.

**BMET2970 Internship 1**  
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.

## BUSINESS ENTREPRENEUR

**ENTR1150 The Successful Entrepreneur 2**  
Students taking this course will learn what it takes to own, operate, and manage 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 examine the various skills and habits necessary for making a business a success. Various case studies will be examined as to why some businesses fail while others succeed. The student will identify their individual strengths and weakness and will learn what area they need to work on to insure success in their small business venture. The student will be exposed to many types of small businesses and other types of entrepreneurial ventures, and will generate personal preferences for the type of small business they would like to own.

**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 succeeds. 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 policies for each of these areas.

**ENTR1440 Successful Mktg. Strategies for Small Business 4**

Students will be given a complete overview of all aspects of marketing for a small business. Specific topics will include research, determining the target market, developing a marketing strategy, identifying over 30 marketing tactics, and positioning. The student will be exposed to various case studies and will use these to develop a marketing strategy for a specific product or service. The student will also create a complete market plan and present that plan to the class.

**ENTR1445 E-commerce for Small Business 3**

This course provides the basics of "e-commerce" for the small business owner/entrepreneur. Students will be introduced to typical Internet-based business models including e-retailing, supply chain management and online auctions. The course provides an overview of the technologies used in e-commerce applications and how to set up an Internet-based sales operation. The course will also cover e-marketing and online customer service utilizing web-based technology.

**ENTR1650 Selling Strategies for the Entrepreneur 3**

The success of an entrepreneurial venture is directly related to entrepreneur's ability to constantly and consistently sell. The student will learn the three vital aspects of small business selling including, one on one selling, presentation selling, and creating win/win negotiations. Even if the student has never sold before, they will become proficient at all aspects of the sales, presentation, and the negotiation process. The student will have the opportunity to practice multiple aspects of selling in a safe classroom environment. In addition, the student will develop specific sales strategies for their individual business and be able to "try" these strategies with other members of the class.

**ENTR1725 Sales Techniques I 2**

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 why customers buy and the six decisions a buyer makes before the sales actually closes. The student will be exposed to many actual selling situations and will learn how to identify such things as positive buying signals, negative buying signals, when to attempt a trial close, when to close, and what type of questions to ask at the appropriate time.

**ENTR1750 Sales Techniques II 2**

The student will learn the importance of developing a CAP (Customer Acquisition Plan) for his or her own business and will create a CAP plan that can be implemented immediately. The student will learn how to negotiate and will be able to practice negotiation skills and techniques in a safe environment. The student will learn the importance of a "win/win" negotiation and will learn the consequences when one party wins, and the other party loses. The student will be

required to work on 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, customers 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.

**ENTR1900 Capitalizing a Small Business 2**

This course will provide the student with the information and tools necessary to fund a small business. The student will be exposed to various methods of raising both start-up and operating capital. These methods include bank loans, SBA loans, venture financing, and grant opportunities. The student will practice presenting his or her company in preparation for presenting to bankers and investors.

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**CHEMISTRY****CHEM1500 Introduction to Chemistry 4 cr.**

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****CIVL1121 Basic Computer Aid Design 4**

First course in computer aided design (CAD) labwork using AutoCAD software. Topics include fundamentals of DOS, AutoCAD command structure, setting units and limits, drafting primitives, layering, use of editing tools, grid, snap, and axis commands. Assignments requiring extensive use of the CAD lab.

**CIVL1130 Beginning Surveying 3**

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.

**CIVL1141 Civil Engineering Technology and Government 1**

A practical course explaining the engineering principles used in the design, construction and operation of municipal engineering facilities. Highlights the various functions of the Civil Technician as they relate to employment in the municipal working environment.

**CIVL1150 Introduction to GIS 3**

Students develop basic skills in applications of geographic information systems (GIS). Through hands-on projects, students will learn how to use GIS software, plan a project, create a database, conduct spatial analysis and create presentation graphics. No official prerequisites are required, but students should have basic computer literacy skills.

**CIVL1161 Project Management 3**

This course will provide student with the knowledge and skills necessary to plan, organize and control a Civil Engineering Technology project. It will introduce the student to basic project management

concepts and reinforce those concepts through the use of automated project management software.

#### **CIVL1211 Materials Testing 3**

This course 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.

#### **CIVL1221 Civil Engineering Technology Drafting 5**

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 bearings and azimuths for line direction and location utilizing Cartesian Coordinates, elevation is represented by contours and profiles.

#### **CIVL1230 Intermediate Surveying 4**

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.

#### **CIVL1240 GPS and Construction Staking 3**

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.

#### **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 contract.

#### **CIVL2130 Soil Mechanics Survey 3**

Determination of soil composition and structure is the first phase of project delivery for every type of 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.

## **COMMUNICATIONS**

#### **COMM1221 American Sign Language - Level I 3**

This course is an introduction to American Sign Language (ASL), visual/gestural Language used by deaf people in the United States and parts of Canada. Communicative functions, vocabulary, grammar and cultural aspects of the deaf community are included. Meets MnTC Goal 8.

## **CONCRETE AND MASONRY**

#### **CONC1600 Shop Theory 2**

Students examine the IBC/IRC as it applies to residential and commercial practices. OSHA regulations covering construction and job-site safety are covered.

#### **CONC1601 Shop I: Site Preparation for Construction 6**

In this course students will evaluate and manage site preparation for foundations and flat concrete work. Excavation and fill requirements, managing construction site ground conditions, sub-contractor considerations, and building layout will be included.

#### **CONC1602 Shop II: Brick and Block Construction 4**

This course will develop skill in concrete block construction. The course will utilize practice applications and actual construction projects. Cold weather shelter construction and block laying will be included.

#### **CONC1604 Foundations, Concrete and Safety for Masons 4**

This is an intro-level course constructing footings and foundations. Techniques, procedures and practices for concrete block, poured walls, and flatwork are studied. Building forms for flatwork and walls are also studied.

#### **CONC1605 Math for Masons 2**

The students use basic mathematics as it relates to the building construction industry. Students perform fundamental construction applications.

#### **CONC1606 Properties and Testing of Mortar and Concrete 3**

This course will provide students with an understanding of the effects of concrete materials on concrete construction. Aggregate properties, cement properties, supplemental materials, and admixtures will be discussed. Concrete mix proportioning and hardened concrete properties will be included in this course.

#### **CONC1610 Concrete Pblms: Diagnosis, Prevention and Resol 2**

This course is focused on quality in concrete construction by teaching awareness of potential problems. Instruction will teach diagnosis and resolution of problems in fresh and hardened concrete. Customer job relations is integrated into the problem resolution instruction.

#### **CONC1613 Shop III: Advanced Brick and Block Construction 4**

This shop class would incorporate actual projects at various job sites to gain skills in flat and or poured concrete applications. Applications would include residential, agricultural, renovation, and commercial construction.

#### **CONC1614 Shop IV: Integrated Concrete Systems 4**

This course is hands-on remodeling and new construction projects. The work will be done on-site and will integrate applications learned from previous courses for site preparation, concrete block, and poured concrete. The focus will be to build proficiency in concrete working skills and will include form work on the job.

#### **CONC1615 Blueprint Reading Estimating 2**

This course is designed to teach an understanding of building principles and how the specifications and requirements are presented through blueprints. Basic blueprint reading is addressed.

## **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. \*\*Articulated\*\*

#### **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. \*\*Articulated\*\*

#### **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.

#### **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.

#### **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.

#### **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.

#### **DENT2970 Externship 8**

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.

### **EARLY CHILDHOOD & 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.

#### **ECYD1220 Health, Safety, & 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.

#### **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.

#### **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.

#### **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.

#### **ECYD1340 Curriculum Planning 3**

Provides an advanced level of curriculum planning. Emphasis is on organizing, implementing, and evaluating developmentally appropriate curricula.

**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.

**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.

**ECYD2501 Experiential Learning 1**  
This course provides students with an opportunity to experience both clinical and non-clinical sites, as well as expertise in the field. Emphasis will include volunteer experience in a selected setting. Course goals are based on individual need.

**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.

**ECYD2560 Language Dev. and Lit./Literacy Exper 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.

**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.

**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.

**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 modelings signs, identify strategies for parental involvement with sign, and discover how to create learning opportunities in daily activities.

## ECONOMICS

**ECON1100 Principles of Microeconomics 3**  
This course is an introduction: price mechanisms, supply and demand, resource allocation, analysis of market structures, distribution of income, and business decisions regard to cost analysis. 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.

## ELECTRICAL CONSTRUCTION & MAINTENANCE

**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. \*\*Articulated\*\*

**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 resonance. \*\*Articulated\*\*

**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.

**ELEC1138 Computer Applications for Electricians 2**  
This course covers the basics of using Personal Computers (PC's) and the Microsoft Office Professional suite of programs, including Word, Excel and PowerPoint to create documents, spreadsheets and presentations. Students will also be introduced to the Internet, electrical industry applications and e-mail.

**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.

**ELEC1210 Analog/Digital Electronics Theory 2**  
This course covers the theory of semiconductors, power supplies, amplifiers, digital circuits, microprocessor applications, sensors, and signal coupling materials/devices.

**ELEC1220 Analog/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.

**ELEC1230 Construction Skills and Intro 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.

**ELEC1240 Construction Skills and Intro. 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. \*\*Articulated\*\*

**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.

**ELEC2120 Electrical Apparatus 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.

**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.

**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.

**ELEC2210 National Electrical Code II 3**  
This course covers continued requirements of the National Electrical Code.

**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.

**ELEC2230 Electrical/Electronic 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.

**ELEC2241 Industrial & Maintenance Wiring Theory & Lab 3**  
This course covers the use of materials and design of industrial wiring, industrial tools and equipment, service equipment, and maintenance technology.

**ELEC2251 Commercial & Maintenance Wiring Theory & Lab 3**  
This course covers the use of materials and design of commercial wiring, commercial tools and equipment, service equipment, and maintenance technology.

## ELECTRICAL LINEWORKER

**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.

**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.

**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.

**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.

**ELLW1141 Distribution IIB 4**  
This course covers more of the material that is in ELLW1140 Distribution IIA.

**ELLW1150 Construction Planning and Practices 2**  
This course covers the use of different drawings, maps, and construction materials used in the lineworker'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.

**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.

**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.

**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.

#### **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.

#### **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.

#### **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.

### **EMERGENCY CARE**

#### **EMRG1007 Emergency Medical Technician (EMT) 6**

This course provides basic training in emergency medical care. It is designed to teach and develop skills necessary to emergency care of the critically ill or injured. Emphasized in the course: The role of the EMT consists of safety concerns, patient assessment, airway management, trauma and medical emergencies. This course consists of lecture, skills, and clinical experience in a hospital setting. This course meets the approval of the Minnesota Emergency Medical Services Regulatory Board (EMS RB). Upon successful completion, students will be eligible to take the National Registry of EMT's written and practical examinations for National Certification.

#### **EMRG1008 EMT Refresher 2**

This course provides basic renewal training for the emergency medical technician. It is designed to teach and develop skills necessary for re-certification as an EMT as mandated by the MNEMS RB. Emphasized in the course: The role of the EMT consists of safety concerns, patient assessment, airway management, trauma and medical emergencies. This course consists of lecture and skills. This course meets the approval of the Minnesota Emergency Medical Services Regulatory Board (EMS RB). Upon successful completion, students will be eligible to take the National Registry of EMT's written and practical examinations for National Certification.

#### **EMRG1017 First Responder 3**

This course is design for individuals who are first on the scene of a medical or trauma emergency. It is designed to teach responsibility in emergency care of the seriously ill or injured, as well as develop the skills and knowledge necessary to manage patient care until the arrival of ambulance personnel. Upon successful completion of the First Responder course students will be certified through the Minnesota Emergency Medical Services Regulatory Board (EMS RB).

#### **EMRG1018 First Responder Refresher 2**

This course provides basic renewal training for individuals who are currently certified as First Responders. It is designed to teach and develop the most current skills and knowledge necessary to maintain certification through the Minnesota Emergency Medical Service Regulatory Board (EMS RB) as a First Responder.

### **ENGLISH**

#### **ENGL0114 College Reading I 3**

The course is designed to develop the effective reading and clear thinking skills that are required to be successful in college today.

#### **ENGL0118 Basic English and Writing Review 3**

This course is designed to prepare students for Basic Communications. Students will learn the parts of speech, word usage, grammar, capitalization, and punctuation. They will use these skills in short writing assignments.

#### **ENGL0123 Medical Reading and Study Skills 4**

This course is designed to help students who are in or planning to enter health care programs strengthen basic reading comprehension and vocabulary skills. Students will work on developing efficient study skills. Learning experiences will include use of excerpts from health care textbooks to practice skills.

#### **ENGL0130 English Essentials 3**

A basic writing course that introduces students to the principles of composition. It includes such areas as organizational development, expository, and persuasive paragraphs and short essays. All relevant modes of communication, essential in the workplace are addressed, including memos, letters, reports, faxes and Internet endeavors. The course fosters the development of important cognitive abilities such as analysis, synthesis, interpretation and evaluation.

#### **ENGL0215 College Reading II 3**

This course is designed to develop effective reading and clear thinking skills that are required to be successful in college today.

#### **ENGL1000 Applied Business Writing 3**

This course provides students with the skills needed to effectively communicate in writing in the technical work place. Students will be required to use critical analysis and logical reasoning skills in the preparation of course assignments. Applications focus on specific report formats. The course is for students in technical diploma programs.

#### **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.

#### **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. 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 1, 6.

#### **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

#### **ENGL1550 Introduction to Literature 3**

This course introduces the study of literature as a mode of discourse for defining, exploring, and expressing human experience. There is an emphasis on learning the skills of reading and writing about literature. This course will cover fiction, drama, and poetry, with attention also



paid to literary non-fiction. Thus the class will introduce students to such basic concepts as (for fiction) plot structure, point of view, characterization, imagery and symbolism, setting, tone, irony, and style; (for drama) protagonist/antagonist, plot dramatic structure, tragedy and comedy; (for poetry) persona, denotation/connotation, figurative language, metrics and major verse forms. Meets MnTC Goal 6.

### **ENGL1570 The Literature of Nature 3**

The Literature of Nature 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. We 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, 9.

### **ENGL1575 The Natural World in Literature 2**

The Literature of Nature 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. We will review the major texts in the literature of nature and look at the ethical and philosophical relationship between humans and nature in North America. Meets MnTC Goal 6, 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.

### **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.

### **ENGL1725 Selected Works in Literature 3**

This course emphasizes the review and analysis of selected works of literature. Student will become familiar with the conventions, terminology and expectations of a particular genre of literature. In addition, students will research the authors and the historical times in which they lived. There will be aq emphasis on reading literature actively, analyzing literature logically and writing about literature critically. Meets MnTC Goal 6.

### **ENGL1750 Fantasy and Science Fiction Literature 3**

This course emphasizes review, analysis and discussions of the genres of fantasy and science fiction. Evaluations and points of view for these genres are also considered. The works are viewed as reflections of real contemporary issues in environmental, technological, cultural, religious, economic and political spheres, and the role of the world citizen dealing with these issues is discussed. Meets MnTC Goal 6.

### **ENGL1800 Mystery and Detective Literature 3**

This course introduces the study of mystery and detective literature. There is an emphasis on exploring the relationship between contemporary mystery fiction and the stories of antiquity. Students will read a wide variety of literature and explore the texts through a variety of different literary approaches. The course will introduce students to such basic concepts as plot structure, point of view, characterization, imagery and symbolism, setting, tone, irony, and style. Meets MnTC Goal 6.

### **ENGL1900 Creative Writing Workshop in Fiction 3**

This course emphasizes the process of critical reading and writing fiction using effective writing skills and figurative language. Meets MnTC Goal 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. Meets MnTC Goal 1,6.

## **ENGLISH FOR SPEAKERS OF OTHER LANGUAGES**

### **ESOL0030 ESOL Listening and Speaking I 4**

In this intermediate level course, non-native speakers will work to understand the meaning of messages beyond day to day comprehension for survival. It is intended to help students increase proficiency in listening comprehension, pronunciation, and fluency. Students will also learn strategies that will lead to language acquisition.

### **ESOL0032 ESOL Reading I 4**

This course covers the basics of reading English for non-native speakers at the intermediate proficiency level.

### **ESOL0035 ESOL Writing and Grammar I 4**

This course is part one of a study and review of basic English grammar and writing for non-native students at the intermediate proficiency level.

### **ESOL0040 ESOL Listening and Speaking II 4**

In this intermediate level class, students will focus on listening comprehension and speaking. It is intended to help students increase proficiency in listening comprehension, pronunciation, and fluency.

### **ESOL0042 ESOL Reading II 4**

This course continues the study of the basics of reading English for non-native speakers at the high-intermediate to the low-advanced proficiency level.

### **ESOL0045 ESOL Writing and Grammar II 4**

This course is a study and review of English grammar and writing for non-native students at the intermediate to advanced proficiency level.

## **ENERGY TECHNICAL SPECIALIST**

### **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, 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.

**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 Powerplant 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.

## EXERCISE & SPORT SCIENCE

**EXER1000 Intro 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.

**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.

**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.

**EXER1027 Olympic and Explosive Weightlifting 2**

This intermediate-level course is intended to teach students elite strength training methodologies and techniques designed to develop athletes to a high level of performance. The course will give students a working knowledge on program design, nutrition, recovery, metabolic considerations, and the biomechanics involved in the sport of Weightlifting as well as elite athlete strength training. The course provides each candidate with a body of knowledge and expertise to enable a student to teach and train higher-level athletes in explosive free weight movements safely and effectively. At the end of the course, the USA Weightlifting Senior Coach exam will be given. Each student will have the opportunity of gaining a USA Weightlifting Senior Coach Certification after completing the strength-training course.

**EXER1045 Organization and Management of Sport 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.
- EXER1200 Team and Individual Games 2**  
Development and refinement of skills encountered through training, competing or organizing a number of team games such as flag/touch football, softball, soccer, speedball, volleyball and basketball. (subject to season/semester).
- EXER1225 Intro. to the Spa Industry, Services and Treatments 2**  
This course will introduce students to the history of the spa industry. Students will learn about popular spa treatments and services and explore which services are essential to running an effective and profitable spa business. Students will also examine spa services from different countries and cultures.
- EXER1230 Fundamentals of Exercise and Dietary Programming 3**  
This course will provide students with the knowledge, skills, and attitudes to design basic exercise programs. Programs will focus on the five health-related fitness components and will be structured for general healthy populations and for individuals with special needs. Students will also be introduced to concepts in dietary programming; including, nutritional analyses, nutrient function, total daily energy expenditure, and portion sizes.
- EXER1235 Holistic Health 3**  
This course will provide an introduction to the concepts and theoretical basis of complementary healing practices and focus on providing the student with an overview of methods to enhance overall wellness. This course will include an examination of physical, emotional, spiritual, and mental health and the challenges individuals face in these areas throughout the lifespan.
- EXER2020 Personal Training 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.
- EXER2030 Weight Management 2**  
This is an introductory weight management course for students interested in improving their lives through a weight management program and for students who are interested in working with clients on a consultant basis. Topics included during this course include: behavior modification, goal setting, nutrition, physical activity, diet fads, weight loss and weight gain, client interaction, and professional legal and ethical responsibilities.
- EXER2060 Personal Training 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.
- EXER2130 Foundations of Sport Science 3**  
An introductory study of anatomical, mechanical, maturational, psychological and physiological kinesiology as it applies to the practice of coaching. The major focus is to present the scientific principles that constitute the basis for sound athletic coaching practices.
- 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 Intro 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. \*\*Articulated\*\*
- EXER2240 Corporate Wellness/Health Promotion 3**  
This course provides the framework for implementing and facilitating effective corporate wellness programs. Topics include: health education techniques, motivation, sales and marketing strategies, working with the business professional, and assessment of corporation needs.
- 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.
- EXER2270 Recreation Sports 3**  
This course will focus on the development, marketing, and facilitation of sports for the recreational athlete. It will also include activities for the outdoor enthusiast. Possible areas of focus include: intramural sports, community education programs, camping and orienteering, and adult recreation leagues.
- 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.
- 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.

**EXER2990 Independent Study 3**  
This course will allow the student to work on an individual basis conducting research or participating in an additional internship. Other options will be considered at advisor discretion.

## GM AUTOMOTIVE SERVICE EDUCATIONAL PROGRAM (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. \*\*Articulated\*\*

**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.

**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 infrared operating and diagnosis.

**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.

**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.

**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.

**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.

**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.

**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.

**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.

**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 infrared analysis. Also, any new products or systems introduced on GM vehicles that have not been previously covered will be addressed.

**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.

**ASEP2110 Automatic Transmissions 3**  
This course covers the removal, disassembly, operation, reconditioning, assembly, installation and diagnosis of General Motors automatic transaxles and transmission.

**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.

**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.

**ASEP2303 Dealer Work Experience III 10**  
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.

## HEALTH

### 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.)

### 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 Heart Association. (Attendance is mandatory in this course. No excuses are accepted. No makeup is scheduled.) \*\*Articulated\*\*

### 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.

### 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.) \*\*Articulated\*\*

### HEAL1030 Emergency Care 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 can 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 situations. Basic skills performed in the management of basic life support are done according to standards set by the National Safety Council.

### 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 and real-world settings. 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.

### HEAL1070 Trained Medication Aide 2

This state-approved program provides an overview of the requirements concerning medications and their administration. Other topics include legal criteria, medical abbreviations, measurements, use of the Physician's Desk Reference (PDR), and overview of body systems and drug classifications. Administration of medications via oral, eye, ear, rectal, and topical routes will also be covered. Attendance of all classes is mandatory; any absence will result in repeating the course. Students must attain 90% on all examinations to continue in the class.

### 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. \*\*Articulated\*\*

### 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.

### HEAL1200 Phlebotomy 1

This course will cover the process of collecting patient blood specimens and processing them for testing. Four different methods of collection will be learned and practiced. Students will be expected to participate both as a phlebotomist and as a patient. Difficult draw, adverse reaction, and pediatric situations will also be discussed and simulated. The specimens collected will be handled and processed according to laboratory standards for accurate testing.

### 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. \*\*Articulated\*\*

### 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. THIS COURSE IS THE SAME AS OFFC1045.

**HEAL1702 Pharmacology Basics 1**  
This course will provide a framework of knowledge of medications in relation to body systems and disease conditions. The classifications, purposes, adverse effects and precautions of drugs will be described.

**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, lifeguard, police officers for emergency care of the injured or ill until advanced medical care can be obtained. 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.).

## HEAVY CONSTRUCTION EQUIPMENT MECHANIC

**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. \*\*Articulated\*\*

**HCEM1110 Welding and Flame Cutting 2**  
The application of several welding methods used in the Heavy Equipment Industry is covered in this course. Safety, theory, and practice will be taught in a lab setting. Cutting and heat bending are also included. \*\*Articulated\*\*

**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, lighting and ignition systems. This course prepares students for HCEM1234 through classroom instruction and lab practice.

**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, Cummins, and Onan. This course also includes basic fundamentals of gas and 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 gasoline engines used in the heavy equipment industry. Safety and troubleshooting are stressed.

**HCEM1160 Specialized Lab I 3**  
The student will work in a lab setting for the purpose of using this specialized lab to allow more time to complete goals. This may be remedial, foundation, or enhancement. This specialized lab is taken by both the diploma and the A.A.S. student.

**HCEM1161 Specialized Lab 2**  
The student will work in a lab setting for the purpose of using this specialized lab to allow more time to complete goals. This may be remedial, foundation, or enhancement. This specialized lab is taken by both the diploma and the A.A.S. student.

**HCEM1170 CAT Basic Training I 1**  
The student will gain an understanding of the Caterpillar engine and product line with basic fundamentals of the diesel engine.

**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.

**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.

**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.

**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.

**HCEM1260 Specialized Lab II 3**  
The student will work in a lab setting for the purpose of using this specialized lab to allow more time to complete goals. This may be remedial, foundation, or enhancement.

**HCEM1261 Specialized Lab II - AAS 2**  
This course is only for students pursuing the AAS (Cat Track) degree. The student will work in a lab setting for the purpose of using this specialized lab to allow more time to complete goals. This may be remedial, foundation, or enhancement.

**HCEM1270 CAT Basic Training II 2**  
The student will gain an understanding of the Caterpillar electrical systems, Caterpillar ET, Caterpillar Fuel systems, Caterpillar Tier 3 engines, and basic hydraulic fundamentals.

**HCEM2115 Transmissions 4**  
This is a technical course designed to promote understanding of standard sliding gear, synchromesh, and powershift transmissions used in heavy equipment industry. Theory related to hydraulic-assisted transmissions and torque converters, along with basic fundamental principles of hydraulics, torque multiplication, gear ratios, disassembly, assembly, and adjustment procedures are covered.

**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.

#### **HCEM2145 Hydrostatic Systems 3**

Students study basic principles of operations, system components, testing procedures, repair techniques, adjustments, and preventive maintenance procedures.

#### **HCEM2175 Specialized Lab III 3**

Students gain additional shop experience for entry-level positions in industry. Students diagnose, record, and make repairs on customer equipment including crawlers, loaders, motor graders, backhoes, etc. Repairs are made on heavy equipment systems such as hydraulic, brake, electrical, chassis, and sheet metal. After repairs, students complete the work repair order.

#### **HCEM2176 Specialized Lab III - AAS 2**

Students gain additional shop experience for entry-level positions in industry. Students diagnose, record, and make repairs on customer equipment including crawlers, loaders, motor graders, backhoes, etc. Repairs are made on heavy equipment systems such as hydraulic, brake, electrical, chassis, and sheet metal. After repairs, students complete the work repair order.

#### **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.

#### **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. Students design complete hydraulic systems around available components and manufacture and assemble two types of high pressure hoses. A technical study provides students with operational knowledge of computer-controlled multiple hydraulic systems. Students troubleshoot and diagnose hydraulic system malfunctions.

#### **HCEM2255 Steering Systems 3**

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.

#### **HCEM2270 CAT Advanced Training III 2**

The student will study the operational principals of machine systems such as Air Conditioning, Hydraulics and Powershift Transmissions.

#### **HCEM2279 Specialized Lab IV Section II 2**

This course is to coincide with HCEM 2280 for Diploma requirements. Students gain additional shop experience for entry level positions in industry. Students diagnose, record, and make repairs on customer equipment including: crawlers, loaders, motor graders, backhoes, etc. Repairs are made on heavy equipment systems such as hydraulic, brake, electrical, chassis, and track drive systems. After repairs, students complete the work repair order.

#### **HCEM2280 Climate Control 4**

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.

## **HEAVY DUTY TRUCK TECHNOLOGY**

#### **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. \*\*Articulated\*\*

#### **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.

#### **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). \*\*Articulated\*\*

#### **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.

#### **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.

**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.

**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. \*\*Articulated\*\*

**HDTT1222 Truck A/C 2**  
This course covers identification, inspection, basic refrigeration, preventive maintenance, servicing, electrical, and refrigerant charging of tractor cab A/C units common to heavy trucks.

**HDTT1223 Truck A/C 3**  
This course covers identification, inspection, basic refrigeration, preventive maintenance, servicing, electrical, and refrigerant charging of tractor cab A/C units common to heavy trucks.

**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.

**HDTT2104 Drive Train II 4**  
This course covers the theory of operation, repair, removal, inspection, and installation of the clutch and drive shafts.

**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.

**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.

**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.

**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.

**HDTT2222 Diesel Engine Lab 5**  
This course covers the removal, inspection, cleaning, and overhaul of the diesel engine. The use of special overhaul tools and service and parts manuals is included.

**HDTT2228 D.O.T. Certification (Elective) 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.

**HDTT2230 Heavy 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.

**HDTT2970 Heavy Duty Truck Internship 5**  
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.

## HISTORY

**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 in America to 1877. 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 lens 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 agrarian, and into the modern era. Meets MnTC Goal 5, 8.

**HIST1400 American Environmental History 3**  
This course examines the interaction between humans and the natural world in the United States from the late nineteenth century to the present. In addition, heavy emphasis is placed on recent Minnesota Environmental history. The course considers such diverse topics as the impact of industrialization and urban growth on the environment, the emergence of ecology and green politics, and the creation of the idea of Nature in American culture. Students will be expected to develop an historical understanding of the major themes of modern American environmental history; relationships between human activity and pollution in cities, emergence of reform movements and environmental regulation, relationships between increasing urban growth and increasing environmental concern, and the rise of environmental politics in both local and national settings. Meets MnTC Goal 5, 10.

**HIST1450 History of Minnesota 3**  
This three-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 three textbooks, internet sites and field trip visits to historical sites students can gain an appreciation of the contributions made by those who came before us in the state we now call Minnesota. 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. Student 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.". 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 texts, pictures, and ideas. Meets MnTC Goal 6.

**HUMA1125 The Humanities in Modern Minnesota 3**  
This course emphasizes eight disciplines that make-up the humanities (literature, art, architecture, philosophy, music, science, religion, and technology) and looks at how Minnesotans are defining and influencing our local and national culture. The course will include analysis of written texts, art, architecture, music, science, performances, and ideas. Meets MnTC Goal 6.

## INDIVIDUALIZED STUDIES

**INDS1000 Individualized 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 and will result in a comprehensive plan for degree completion at the college.

## INTERIOR DESIGN

**IDES1010 Intro to Photoshop 2**  
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.

**IDES1040 Basic Drawing 3**  
This course is designed to provide the artistic student the basics of drawing. General methods, mediums and styles will be explored. The elements and principles of art and design will be applied to various drawing projects. Uses of drawing in design are included in the focus. Students will study presentation and preservation of original artwork.

**IDES1050 Scale & Perspective Drawing 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.

**IDES1060 Creative Problem Solving 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.

**IDES1100 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 format. Color will be dealt with in detail to include color basics, theory, and psychology, and how color affects us and/or a space. We will approach the solution of design problems using the creative problem solving techniques. \*\*Articulated\*\*

**IDES1110 Drafting for Interiors 4**  
This course covers the basic skills necessary to complete the drafting process of any given space. Students will learn proper use of drafting equipment, proper line quality, appropriate use of architectural symbols and lettering, dimensioning, electrical symbols and application, elevations, sections, detail, and isometric drawings. The skills learned will be used in the majority of all future design courses.

**IDES1112 Introduction to SketchUp Modeling Software 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>.

**IDES1120 Critical Thinking and Programming 4**  
This course covers a straightforward and systemic approach to space planning interior spaces. Students will learn the preliminary phases of the interior design process - programming (gathering, analyzing, and compiling project information) and schematic design (developing and conveying the design concept). Anthropometrics, furniture clearances, circulation requirements, and ergonomics will be introduced. Students will use critical thinking skills and develop bubble and block diagrams as tools to lay out spaces in both residential and contract (commercial) spaces.

**IDES1135 Visual and Verbal Presentation 3**  
This course covers the process of making visual and verbal presentations. These presentations will be focused on the appropriate industry needs. Students will incorporate the basic steps in making a verbal presentation, including the basics of the sales process, and study the various ways of making a visual presentation, including sketching techniques that can be implemented in a creation. One-point and two-point perspectives will also be included.

**IDES1206 Residential Studio I 3**  
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). Students will investigate residential furnishing, lighting, and finish sources and will be introduced to specifying these products. Residential building systems (electrical, plumbing, and HVAC) will be introduced. Students will apply their programming design fundamentals, as well as verbal and visual communication skills, in progressively complex residential interior design projects. Visual tools will include manually-drafted floor plans, presentation elevations, and presentation boards.

- IDES1217 Commercial Studio I 3**  
This course covers the basic skills necessary to design interior spaces in commercial settings. The interior design process will be applied, with an emphasis on the design development phase (redefining the design concept and focusing on design details). Students will investigate contract furnishings, lighting and finish sources and will be introduced to specifying these products. Students will apply their programming, design fundamentals and verbal/visual communication skills in a variety of plans, presentation elevations, and presentation boards.
- IDES1225 Computer Aided Drafting 3**  
This course introduces the student to two-dimensional drafting skills using CAD (computer-aided design). The software used in this course is AutoCAD for Windows; the release will be determined by what is currently being used in the interior design profession. AutoCAD tools used to draw, edit, and display 2-D drawings will be studied and utilized, using hands-on training. Students will learn how to set up and plot drawings using a variety of paper sizes and architectural scales. Other AutoCAD features that will be covered include layering, wblocks, text, and dimensioning. These skills will be used in the Interior Design kitchen/bath and commercial courses. Students enrolling in this course are expected to have a working knowledge of Windows operating system.
- IDES1230 History of Art, Architecture and Interiors 4**  
This course covers the history of art, architecture, and interiors, from ancient times through the 21st century, with which an interior designer must be familiar for use in industry applications.
- IDES1235 Advanced Visual Presentation Techniques 2**  
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 fully rendered presentation drawings. Application of scanned materials and incorporation of environmental graphics will also be examined. Three dimensional computer modeling processes will be explored, utilizing a number of different software applications. Integration of computer generated models into photos of existing spaces, mapping of true textures to the models, simulated lighting effects and preliminary animation techniques will also be covered.
- IDES1240 Advanced Visual Presentation Techniques 3**  
This course covers computer based design visualization practices. These practices will be focused on the appropriate industry needs. Students will utilize computer based graphics and color application techniques to create fully rendered presentation drawings and layouts. Three-dimensional computer-modeling processes will be explored. Application of scanned materials and incorporation of environmental graphics will also be examined. Integration of computer-generated models into images, simulated lighting effects and preliminary animation techniques will also be covered.
- IDES2100 Interior Design Career Directions 1**  
This course prepares the student with the tools and information necessary to obtain an internship position upon the completion of the interior design coursework. Individual skills needed in different design positions will be researched and identified. Internship and career goals will be established. A portfolio of assignments and projects will be developed that best match the desired career directions of the student.
- IDES2106 Color and Light 3**  
The student will continue to study the hue, value and intensity of color. They will investigate the dynamics of color and light in interior space while developing the knowledge of what color is, why it happens, and how it is controlled.
- IDES2110 Materials, Estimating and Specifications 3**  
This course provides students with information that will allow them to establish a systematic approach for selecting materials in interiors. Students will also create the content of specifications documents for interiors, 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.
- IDES2136 Commercial Studio II 4**  
This course covers the interior design of public spaces. The interior design process will be applied, with emphasis on the design development phase (space plan and design details and presentation elevations) as well as contract documentation appropriate to this class (product specifications, installation plans, and schedules, working elevations and reflected ceiling plans). Commercial building support systems will be introduced. Strategic facilities planning will be explored.
- IDES2146 Residential Studio II (Kitchen and Bath) 4**  
This course covers the basics of residential construction and their application with kitchen and bathroom interior spaces. The course uses the guidelines published by National Kitchen and Bath Association (NKBA) and the principles of universal design. Spatial analysis and the selection and product specification of appropriate materials, cabinetry, and appliances will be introduced. The interior design process phase contract documentation appropriate to this class will be emphasized, which will include an installation plan and schedule, an electrical and lighting plan, and working elevations as well as sections and details for custom millwork.
- IDES2200 Professional Business Practices and Sales 3**  
This course will emphasize the business practices specific to the interior design industry, including organizational methods and procedures. Sales and marketing techniques, building a clientele, qualifying clients, determining fees, and proposals will be presented. Establishing a business, understanding a business plan, and identifying those issues pertinent to all successful designers are included.
- IDES2210 Senior Studio 5**  
This course 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. Students' projects will utilize the total design process, which includes programming/strategic planning, schematic design, design development, and contract documentation. The outcome must qualify for portfolio inclusion and will be juried by professionals in the industry.
- IDES2300 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.
- IDES2310 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.

#### **IDES2320 Professional Sales 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.

#### **IDES2970 Internship 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 externship faculty representative is recorded. Each participant is to complete 224 hours of internship work.

### **INTERDISCIPLINARY STUDIES**

#### **INTS1001 Student Leadership Academy 1**

This course is designed to assist students to improve their leadership skills as part of their personal growth. The topics in this workshop include personal assessment, team building, time management, effective recruitment strategies, parliamentary procedure, and conflict resolution. The topics will be presented by a variety of experts from the college and the community. This is an 18-hour, 1-credit course with P/NC grading.

#### **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.

#### **INTS2955 Community Dev. through Service Learning 2**

The Community Development through Service Learning course is designed to promote experiential learning to familiarize students with citizenship and community service. Students are required to demonstrate their knowledge of and approach to community service through participation in an approved community service project. Students will be asked to reflect upon their experience then analyze the experience based on relevant course concepts.

### **INFORMATION SYSTEMS TECHNOLOGY**

#### **ISTC1000 Intro. 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.

#### **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.

#### **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.

#### **ISTC1020 Introduction to Computer Applications 3**

This online-enhanced course covers the basics of using Personal Computers (PC's) and the Microsoft Office Professional suite of programs, including Word, Excel, Access and PowerPoint to create documents, spreadsheets, databases and presentations. Students will also be introduced to the Internet, e-mail and the history of computers.

#### **ISTC1025 Computer Basics 1**

This course covers basic information on operating system software, word processing software and presentation software, students will be introduced to the Internet, including ethics and security, information literacy and navigating an online platform.

#### **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.

#### **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, Performance Tuning; Working with the Registry; Booting Process; Fault Tolerance; Troubleshooting.

#### **ISTC1040 Network Systems I 3**

This course presents an introduction to OSI 7-layer Reference Model used in data communication and computer networks with emphasis on network infrastructure design, configuration, implementation and subnetting. This course is the first in a four-course sequence designed to prepare students to take the Cisco Certified Network Associate (CCNA) 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.

#### **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.

#### **ISTC1100 Business Communications 3**

This course focuses on the foundations of business communication in the Information Systems Industry. The topics will include developing your business writing skills, topics on the social and ethical implications of Information Systems.

<b>ISTC1205</b>	<b>Web Client Programming</b>	<b>3</b>	This course covers technologies used to create Internet client applications. Students will create numerous web applications using scripting tools/languages. The course includes the topics of cascading style sheets, tables, frames, forms and multimedia integration. Emphasis will be placed on the design, development, deployment and maintenance of the interactive web sites.
<b>ISTC1210</b>	<b>Web Server Programming</b>	<b>3</b>	This course covers server-side components used to create dynamic web sites. Several technologies such as middleware, scripts and servlets will be explored. Methods and tools for integrating data will be emphasized including those provided as open source.
<b>ISTC1230</b>	<b>Systems Analysis and Design</b>	<b>3</b>	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.
<b>ISTC1300</b>	<b>Introduction to Programming</b>	<b>3</b>	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.
<b>ISTC1400</b>	<b>Wireless Systems</b>	<b>3</b>	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.
<b>ISTC2005</b>	<b>Network Systems II</b>	<b>3</b>	This course is the second course in a four-course sequence designed to introduce students to local area network hardware router installation and configuration. The course is designed around OSI 7-layer Reference model and is the second course in the sequence to help students prepare to take the CCNA certification exam.
<b>ISTC2010</b>	<b>Network Systems III</b>	<b>3</b>	This course is an introduction to layer-2 switching, IPX, VLANs, Access Control Lists, and IGRP. This is the third course in a four-course sequence designed to prepare individual students for the CCNA certification exam.
<b>ISTC2015</b>	<b>Network Systems IV</b>	<b>3</b>	This course focuses on WANs and Broadband infrastructure design, configuration and implementation as it relates to the 7 layer OSI model used in data communications and computer networks. WAN technology and terminology, Cable modems, Port Address Translation, Network Address Translation, DHCP, xDSL, and PPP. This is the final course preparing the student to take the CCNA exam.
<b>ISTC2035</b>	<b>Operating Systems III</b>	<b>3</b>	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.		
<b>ISTC2040</b>	<b>Database Management</b>	<b>3</b>	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.
<b>ISTC2050</b>	<b>Data Structures</b>	<b>3</b>	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.
<b>ISTC2065</b>	<b>Security II: Firewalls</b>	<b>3</b>	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.
<b>ISTC2070</b>	<b>Security III: Forensics</b>	<b>3</b>	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.
<b>ISTC2100</b>	<b>Project Management</b>	<b>3</b>	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.
<b>ISTC2120</b>	<b>Financial Accounting for Information Systems</b>	<b>3</b>	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.
<b>ISTC2140</b>	<b>Digital Convergence</b>	<b>3</b>	This course will provide hands-on experience to voice over IP technology. The student will explore the difference between analog and digital signals, public switched telephone, circuit switched, and packet switched networking.
<b>ISTC2310</b>	<b>Java I</b>	<b>3</b>	This course covers the JAVA language and how to use it to create a variety of applications. The course will cover object-oriented topics such as classes, methods, constructors, inheritance and polymorphism as well as primitive data types and control structures. The course will include creating applications that utilize the JAVA Swing Classes. Object-oriented design using the unified Modeling Language will also be introduced. Although this is an introductory Java course, students are expected to have an existing knowledge of programming concepts.
<b>ISTC2315</b>	<b>Java II</b>	<b>3</b>	This course builds on JAVA 1 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.

#### **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, 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.

#### **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.

## **LANDSCAPE HORTICULTURE**

#### **LAHT1000 Plant Science 2**

This course covers the study of biology of higher plants, including morphology, physiology, and taxonomy. Emphasis is placed on knowledge relevant to landscape horticulture.

#### **LAHT1010 Soil Science 3**

This course covers the study of the fundamentals of soil and their use in horticulture. The course is an overview of the physical, chemical, and biological properties of soils, their classification and management, and soil fertility.

#### **LAHT1100 Woody Plant Materials I 2**

This course covers the identification and use of woody plants, including trees, shrubs, and evergreens, in Minnesota landscapes.

#### **LAHT1110 Woody Plant Materials II 2**

This course covers the identification and use of woody plants, including trees, shrubs, and evergreens, in Minnesota landscapes.

#### **LAHT1200 Plant Pests 3**

This course is an overview of the biology, identification, and control of weeds, insects, and infectious and non-infectious diseases common to landscapes of Minnesota.

#### **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.

#### **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.

#### **LAHT1320 Turf Management 3**

This course is an introduction to establishing and maintaining turf, including turf species identification, seeding, sodding, fertilization, aeration, and other cultural practices.

#### **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.

#### **LAHT1510 Landscape Mathematics 1**

This course covers solving mathematical problems common to the landscape horticulture trade, including calculating areas, fertilizer rates, pesticide rates, and others.

#### **LAHT1600 Landscape Design I 3**

This course is an introduction to design theory and drafting techniques. Basic design elements, site characteristics, and history of landscape design are discussed. Students are taught basic drafting skills and are prepared to create and read simple landscape plans.

#### **LAHT2000 Herbaceous Plant Materials 2**

This course is an introduction to annuals, perennials, groundcovers, ornamental grasses, and other herbaceous plants grown in Minnesota. Students identify and name assigned plants as well as supply information about the use and culture of each.

#### **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.

#### **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.

#### **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.

#### **LAHT2135 Site Grading and Drainage for Stormwater Mgmt. 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 stormwater 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.

#### **LAHT2202 Landscape Design II 4**

This course is an advanced study of design theory and presentation graphics. Includes plan, detail and elevation drawing techniques using



various media. In depth discussion and application of design principles, design process and professional practice.

**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.

**LAHT2230 Landscape Computer Aided Design I 2**

This course is an introduction to the use of computers in the design process. This is an elective class suggested for design majors.

**LAHT2232 Landscape Computer Aided Design II 2**

This course is a continuation of LAHT2230 and expands on the use of computers in the design process. This is an elective class suggested for design majors enrolled in LAHT2210.

**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 App. Licensing for Landscape Profe 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.

**LAHT2500 Landscape Business Management 4**

This course is an overview of the requirements needed for successful management in a landscape business. Subjects include personnel management, sales and marketing, government issues and basic concepts of consumerism, pricing and distribution.

**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 landvape 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 generatins 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 reduce-reuse-recycle this course will introduce students to topics

including 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.

**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.

**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 water plants, selection and care of fish for a garden, chemicals needed, and maintenance, upkeep and over wintering of water gardens.

**LAHT2970 Internship I, II, III, IV 1-4**

Practical experience working for a landscape horticulture organization or related employment with instructor oversight.

## MARKETING & 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.

**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. \*\*Articulated\*\*

**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.

**MKTC1200 Professional Sales 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.

**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 marketing's relationship to other promotional

elements of selling, sales promotion and publicity, and the functions and operation of an advertising agency.

### **MKTC2010 Advertising Campaign Management 3**

This course emphasizes overall advertising campaign management. It focuses on strategy development, advertising, and promotional relationship, media strategy, budget management and control, and measuring results. Students study and analyze case histories and current campaigns covered in advertising trade publications. Students study advertising management's role in the marketing process, and sharpen their abilities to think strategically, analyze, conceptualize and make sound decisions. Students prepare and present a full advertising campaign.

### **MKTC2060 Proposal Writing 1**

This course is an introduction to the proposal-writing process and its role in the marketing cycle. It covers the skills needed and information required to write a compelling proposal. It also covers the components of a good proposal and factors that can result in a rejected proposal.

### **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.

### **MKTC2220 Promotional Marketing 2**

This course explains the importance of promotions in marketing. It defines the steps in promotion planning and the strategies used in both trade and consumer promotions. Techniques in promotional strategies, such as motivational and support programs, event sponsorship, premiums, contests and sweepstakes, tie-in programs, sampling, discounts, and couponing, will be discussed.

### **MKTC2310 Public Relations 3**

This course explains the nature and use 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.

### **MKTC2410 Marketing Visual Communications 1**

The understanding of print and electronic visual communications is an integral part of marketing communications. In this course, students will be introduced to the fundamentals of the role visual communications plays in the marketing process. The course includes study how to select pictures to use in e-marketing, public relations and print including the importance of a photograph's content. Students will familiar with the role visual communication specialists play in the marketing process.

### **MKTC2505 E-Marketing 3**

Course provides an overview of electronic commerce by examining and evaluating tactics of businesses utilizing the internet and other electronic media as part of their marketing mix. A review is made of Web technology trends and e-commerce strategies.

### **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; market-entry strategies; pricing and distribution; sales and communications practices; counter trade; and other current international marketing issues.

### **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.

### **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.

### **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.

## **MATHEMATICS**

### **MATSO200 Basic Mathematics 3**

This course is designed to develop and increase the student's ability to perform basic math operations and to solve mathematical problems relevant to technical education. Topics covered include whole numbers, fractions, decimals, ratio and proportion, percents, and problem solving. Signed numbers and simple algebraic equations are introduced near the end of the course.

### **MATSO305 Introduction to Algebra 4**

This course introduces students to concepts of basic algebra. Topics include operations with real numbers, variable expressions, geometric computations, solution of linear equations with applications, translating linear equations to and from graphs, manipulating polynomial expressions and factoring.

### **MATSO600 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.

### **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 MATSO305.

### **MATS1251 Statistics 4**

Fundamental principles of inferential statistics are presented in lecture and supplemented with computer labs using Minitab

software. Specific topics include descriptive and graphical statistics, fundamentals of counting and probability, probability distributions, sampling distributions, confidence intervals, hypothesis testing, linear regression, chi-square tests, ANOVA, and nonparametrics. 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 precalculus). Topics include tests for symmetry, finding intercepts and asymptotes, constructing piecewise-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.

## **MEDICAL ASSISTANT**

#### **MDAS1123 Laboratory Skills I 5**

This course starts with an introduction to the clinical lab setting, lab safety, glassware, health care math, weights, measurements, quality control and quality assurance. It continues with basic testing techniques in chemistry, immunology, microbiology and simple hematology. The students will also learn to maintain the instruments and records for instruments used in this testing and create patient reports for this testing.

#### **MDAS1124 Laboratory Skills I 4**

This course starts with an introduction to the clinical lab setting, lab safety, glassware, health care math, weights, measurement, quality control and quality assurance. It continues with basic testing techniques in chemistry, immunology, microbiology and simple hematology. The students will also learn to maintain the instruments and records for instruments used in this testing and create patient reports for this testing.

#### **MDAS1130 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 the 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. Students are expected to take a First Aid and CPR course prior to externship.

#### **MDAS1140 Phlebotomy 1**

This course will cover the process of collection of patient blood specimens and processing them for testing. Four different methods of collection will be learned and practiced. Students will be expected to participate both as a phlebotomist and as a patient. Difficult draw, adverse reaction and pediatric situations will also be discussed and simulated. The specimens collected will be handled and processed according to laboratory standards for accurate testing.

#### **MDAS1211 Disease/Medical Treatment, Including 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.

#### **MDAS1222 Laboratory Skills II 4**

This course builds on Laboratory Skills I using all the skills learned in that course and adding complete urinalysis, advanced hematology, and ECG theory and performance. A large part of this course will focus on microscopic analysis of urine and blood. The end of the course will simulate the operation of a POL from specimen collection to result reporting of all testing learned in Laboratory Skills I and II. Following this course the student will be prepared to function in a clinic laboratory.

#### **MDAS1223 Laboratory Skills II 4**

This course builds on Laboratory Skills I using all the skills learned in that course and adding complete urinalysis and more advanced hematology. A large part of this course will focus on microscopic analysis of urine and blood. The end of the course will simulate the operation of a POL from specimen collection to result reporting of all testing learned in Laboratory Skills I and II.

#### **MDAS1230 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.

#### **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 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, and the importance of good, safe working habits. 4. Acquaint the students with the common radiographic procedures.

#### **MDAS1260 Medical Assistant Certification Review 1**

This course is design to help the student prepare for the National Certification test in order to use the CMA credential.

#### **MDAS1270 Administrative Procedures 3**

This course is an overview of administrative duties that are performed by a medical assistant. Emphasis will be on clerical functions, bookkeeping procedures, insurance claims, professional communications, legal concepts, patient instruction, operational functions, written and electronic medical records. Other topics included in this course will be office and human resource manager responsibilities.

#### **MDAS1701 Pharmacology and Math for Medical Assistants 4**

This course introduces the study of medications and their uses in the ambulatory care setting. Medical Assistant students will learn the techniques needed for administration of medications. Mathematics will be introduced with the goal of completing dosage calculations.

**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 for a total of eight weeks, five days a week, eight hours per day, or the equivalent. The student will work under the supervision of medical office personnel doing tasks pertinent to the student's program. Prerequisites: Completion of the program coursework.

**NANOTECHNOLOGY****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.

**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 nonoscience 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.

**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.

**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.

**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.

**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.

<b>NANO2970</b>	<b>Industry Internship and Observation</b>	<b>3</b>
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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.

## OFFICE CAREERS

OFFC1000	Basic Keyboarding	1
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This course is an introduction to basic keyboarding with emphasis on developing touch typing skills.

<b>OFFC1005</b>	<b>Keyboarding/Formatting</b>	<b>3</b>
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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. **\*\*Articulated\*\***

<b>OFFC1007</b>	<b>Keyboarding for Advancement</b>	<b>2</b>
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The Skill Building Lab course is designed to allow students to upgrade keyboarding skills they already possess by working on additional warm-up, skill building exercises and timings until they reach their desired keyboarding speed. This course does not include any of the formatting in the lessons. Students can enroll in this course, work in the Flextime Lab or on their home computer using the keyboarding CD-ROM.

<b>OFFC1010</b>	<b>Business English Skills</b>	<b>2</b>
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This course is an extensive, comprehensive study of English grammar, spelling, word usage, punctuation, number usage, capitalization and abbreviation rules, and proofreading.

## OFFC1017 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. Students will also learn the basics of creating, formatting and managing a Web site along with scheduling/organizational software.

## OFFC1018 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.

<b>OFFC1019</b>	<b>Receptionist Skills</b>	<b>2</b>
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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, customer service.

<b>OFFC1020</b>	<b>Office Procedures</b>	<b>4</b>
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This course helps the student develop those skills needed to work in the twenty-first century office. Topics include using computer hardware and software, setting up meetings and conferences, making travel arrangements, understanding telecommuting and virtual office structures, and developing career advancement techniques along with leadership and team building skills.

## OFFC1023 Leadership for Administrative Professionals 1

Today's workplace is changing and so is the role of the administrative professional. No longer subordinate to management, "admins" of the 21st century are business partners in meeting corporate goals and objectives. Learn what it takes to become an accomplished administrative professional and a recognized leader in your workplace.

## OFFC1024 Mtg. Planning for the Administrative Profession 2

Administrative professionals plan the majority of meetings under 100 people without formal meeting planning education or experience. This course provides fundamental knowledge and techniques to ensure success of planning small meetings.

<b>OFFC1030</b>	<b>Word Processing</b>	<b>3</b>
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This course covers hands-on training for intermediate and advanced concepts of word processing using Microsoft Word 2003. **\*\*Articulated\*\***

<b>OFFC1040</b>	<b>Integrated Office Skills</b>	<b>3</b>
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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 interpersonal relationships in the office. The use of electronic tools and the integration of documents created in various Microsoft Office Suite programs is the primary focus of this course.

## OFFC1045 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. \*\*Articulated\*\*

## OFFC1051 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.

## OFFC1052 Medical Transcription I 2

This course covers how to properly transcribe dictated medical material into a variety of usable medical documents by using word processing skills. Emphasis will be on authentic forms, using S.O.A.P. format, understanding medical language narrative, building speed and accuracy, proofreading and editing of material. An introduction to various laboratory tests and diagnostic procedures will also be covered in the course.

<b>OFFC1053</b>	<b>Medical Transcription II</b>	<b>2</b>
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This advanced course covers producing a variety of medical documents by using medical terminology knowledge, word processing and transcription skills. Emphasis is placed on producing authentic forms, building speed and accuracy, proofreading and editing skills, and understanding and building on additional medical terms used in specialty areas.

## OFFC1054 Speech Recognition Transcription 2

This course is a continuation of medical transcription using speech recognition software. Emphasis will be on editing medical documents that are generated by speech recognition software. Students will experience working with documents that are typically generated at a clinic or hospital site, such as: history and physical exams, consultation reports, surgery reports, pathology reports, laboratory reports and discharge reports. Reports will address the various specialty areas.

## OFFC1056 Introduction to Healthcare Documentation 3

This course provides an orientation to the health care delivery system, health records, and the health information profession. A



study of the basic concepts of medical record science needed to function effectively as a medical records clerk in a hospital, nursing home, clinic, or physician's office. Teaches the various forms which comprise a medical record, assembly of records, record analysis, medical record anatomy, and terminology and explores other job classifications available in medical records.

#### **OFFC1057 Medical Office Procedures 4**

This course is an overview of duties that are performed by a medical administrative assistant. Emphasis will be on using computer hardware and software. Topics include medical correspondence and documents, setting up meetings and conferences, making travel arrangements, telecommuting and virtual office structures. Students will also develop career advancement techniques, leadership and team building skills.

#### **OFFC1071 ICD-9-CM Coding 3**

This course introduces the student to ICD-9-CM diagnostic coding -- International Classifications of Disease. ICD codes are used by government health care programs, professional standards review organizations, medical researchers, hospitals, physicians, and other health care providers. Coded data is used as a basis for financial reimbursement.

#### **OFFC1073 Coding and Reimbursement 3**

This course introduces the student to classifying procedures using the Center for Medicare and Medicaid Services Coding Systems with the main focus of current procedural terminology (CPT). The student will apply CPT guidelines and principles. Issues relating to reimbursement will also be addressed.

#### **OFFC1074 Advanced Coding and Reimbursement 2**

Hands-on applications of ICD-9-CM and HCPCS/CPT coding are emphasized in this course. Other topics of study include reimbursement as well as billing systems and automated encoders/groups.

#### **OFFC1130 MS Word I 2**

This online-enhanced course covers the basics of using Microsoft Word software to create documents using a Personal Computer (PC). Topics include creating, editing and printing documents, using proofing tools, applying character formatting, using tabs stops, formatting paragraphs, creating envelopes and labels, working with columns, pictures, diagrams and charts, creating basic tables, using templates and wizards, comparing and merging documents and integrating Word with other Office applications. \*\*Articulated\*\*

#### **OFFC1135 MS Excel I 2**

This online-enhanced course covers the basics of using Microsoft Excel spreadsheet software to analyze financial data using a Personal Computer (PC). Topics include spreadsheet creation, maintenance and formatting, creating basic formulas, creating charts, and printing worksheets in various formats.

#### **OFFC1140 MS Access I 2**

This online-enhanced course covers the basics of using Microsoft Access software to create and maintain databases using a Personal Computer (PC). Topics include planning and creating a new database, creating and maintaining tables, establishing relationships between tables, creating and modifying basic queries, forms and reports, and importing and exporting data.

#### **OFFC1145 MS PowerPoint 2**

This online-enhanced course covers the basics and advanced methods of using Microsoft PowerPoint software to create and maintain presentations using a Personal Computer (PC). Topics include creating and editing slides, adding Clip Art, pictures and Word Art, using drawing tools, adding tables, charts and diagrams, rearranging slide order, adding animations and sound effects to slides, running a presentation, printing presentation documents and integrating Word

and Excel with PowerPoint. \*\*Articulated\*\*

#### **OFFC1150 MS Word II 2**

This online-enhanced course covers advanced methods of using Microsoft Word software to create documents using a Personal Computer (PC). Topics include customizing tables, working with multipage documents, creating custom styles, controlling pagination, using the mail merge wizard and other merge features, sorting text and tables, creating and modifying document references, working with drawing objects and graphics, working with large documents, using online forms and advanced features of using macros and integrating Word with the Internet.

#### **OFFC1155 MS Excel II 2**

This online-enhanced course covers advanced methods of using Microsoft Excel spreadsheet software to analyze financial data using a Personal Computer (PC). Topics include linking worksheets and workbooks, sorting and filtering, creating and using macros, using problem-solving, analysis and auditing tools, creating pivot tables and pivot charts, creating advanced charts, importing and exporting data, sharing workbooks and integrating Excel with the Internet or an Intranet.

#### **OFFC1190 Calculators 1**

This course covers development of the touch system on the numeric keyboard calculators and microcomputer keyboards. Students will develop speed and accuracy using the touch system for the four basic arithmetic operations and solving business problems.

#### **OFFC1200 MS Access II 2**

This course covers continued development of Access databases and tables. It is an advanced-level course where learners will design multiple queries, use Wizards, and automate applications using macros.

#### **OFFC1204 Data Entry 2**

This course introduces the basic principles and techniques of data entry using personal computers. The student will develop a basic skill level of performance measured by speed and accuracy.

#### **OFFC1225 Help Desk Support 2**

This course will aim to prepare students to hold an entry-level position in the help desk industry or a company. Companies now want to attract individuals who have balance of business, technical, and people skills to help make the help desk successful.

#### **OFFC1230 MS Publisher 2**

This course covers the basics of Microsoft Publisher for Windows software using IBM networked computers. The student will learn to create, edit, save, delete, and print professional looking applications including business cards, flyers, brochures, and newsletters. The spell checker, auto features and Wizards will be introduced.

#### **OFFC1240 QuickBooks I 2**

This online-enhanced course covers the basics of using Intuit's QuickBooks Pro software on a Personal Computer (PC) to manage a company's financial data. Topics include how to set up customers and vendors, how to enter checkbook, sales and invoice transactions, how to receive payments and make deposits, how to enter and pay bills, how to run and manage lists and reports and how to set up a new company in QuickBooks.

#### **OFFC1255 MS Project 2**

This course covers the use of MS Project software. The student will learn how to plan and create a project, create tasks, schedule assign resources, update status and use Project tools for communicating and sharing information across applications and the Web. The goals of this course track to the standards for the Microsoft Office User Specialist exam for Microsoft Project.

**OFFC1260 Certification Basics - Word 3**  
This course covers training in the preparation for students to take the Microsoft Office Specialist Exam for Word.

**OFFC1265 Certification Basics - Excel 3**  
This course covers training in the preparation for students to take the Microsoft Office Specialist Exam for Excel.

**OFFC1270 Certification Basics - Access 3**  
This course covers training in the preparation for students to take the Microsoft Office Specialist Exam for Access.

**OFFC1275 Certification Basics - PowerPoint 3**  
This course covers training in the preparation for students to take the Microsoft Office Specialist Exam for PowerPoint.

**OFFC1280 Certification Basics - Outlook 3**  
This course covers training in the preparation for students to take the Microsoft Office Specialist Exam for Outlook.

**OFFC1285 Oral Business Comm. and Job Seeking Skill 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. \*\*Articulated\*\*

**OFFC1290 Written Business Communication 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.

**OFFC1340 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.

## PHILOSOPHY

**PHIL1100 Ethics 3**  
This course is an introduction to the study of ethics. 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. Meets MnTC Goal 9.

**PHIL1200 Critical Thinking 3**  
This course focuses on informal logic. Students will develop skills in critical thinking and will practice applying these skills to problems found in the workplace and other everyday environments. Topics will include the nature of argumentation, fallacies, deductive and inductive reasoning, and argument evaluation and construction. Meets MnTC Goal 2.

**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. Meets MnTC Goal 6,9.

**PHIL1350 Medical Ethics 3**  
This course introduces students to basic issues in medical ethics. Emphasis will be placed on the process of considering ethical theory, ethical principles, laws, and professional codes of conduct in the analysis of specific cases from the field. This course will be of special interest to students in nursing and dental programs though students in any program will find the study of medical ethics worthwhile. Meets MnTC Goal 6,9.

**PHIL1400 World Religions 3**  
This class is about learning the central beliefs of the world's major religions. Through writing, reflection, and presentation, students will explore the basic tenets of the world's major religions, who founded the religions, their main writings or scriptures, and their philosophical underpinnings concerning such issues as definition of religion, the existence of God/gods, faith, reason, ceremonial practices, and their relationships with the world. Meets MnTC Goal 6,8.

## 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.

**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.

## POLITICAL SCIENCE

**POLS1000 Introduction to Political Science 3**  
Introduction to Political Science will present a broad introduction to the basic concepts, approaches, and areas of study of political science. Discussion and active debate of key political ideologies; liberalism, conservatism, socialism, communism, fascism, nationalism, feminism, and environmentalism will be central to the course. The class will also delve into the specific political systems and institutions of key members of the international community as well as consider contemporary American political issues. Meets MnTC Goal 5.

## PRACTICAL NURSING

**PNSG1000 Foundations of Nursing Practice I 2**  
This course introduces the LPN role in the nursing process and beginning nursing skills to meet the basic human needs of clients. Supervised laboratory learning is included.

**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.

**PNSG1100 Foundations of Nursing Practice II 2**  
Students are expected to demonstrate progression in nursing knowledge and skill development. Procedures are practiced in the laboratory setting. Documentation procedures will be discussed and practiced.

**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.

**PNSG1350 Pharmacology 2**  
This course introduces the study of medications and their uses. Students will learn the science and theory needed for administration of medications. Students will master the mathematical skills necessary to accurately calculate drug dosages including the metric and apothecary systems.

**PNSG1400 Adult Health Nursing I 4**  
This course addresses diseases of the endocrine, respiratory, cardiovascular, and musculoskeletal systems. It includes pathology, medical treatment, nursing implications, nutritional aspects, and pharmacodynamics. The management of surgical clients, clients with pain, and care of the terminally ill is also discussed.

**PNSG1500 Adult Health Nursing II 3**  
This course includes the study of conditions that affect the renal, neurological, reproductive, integumentary, sensory, and digestive systems. This includes the pathophysiology, symptoms, treatment, and nursing management for a select group of acute and chronic conditions. The nutritional aspects and pharmacodynamics are discussed. Course content will integrate critical thinking, math, and attitudinal aspects of nursing care.

**PNSG1530 Beginning Clinical 3**  
This course introduces students to beginning nursing practice. Students will provide basic nursing care for selected clients in clinical settings with instructor supervision. Students will collect data, perform basic nursing skills, and administer delegated medical treatments.

**PNSG1540 Clinical I 2**  
This course will offer the student the opportunity to perform nursing care for selected clients in an acute or subacute setting with instructor supervision. Students will administer medications and perform delegated medical treatments. Students will be expected to demonstrate progression in the performance of nursing skills. Critical thinking skills will be emphasized.

**PNSG1560 Clinical Practice II 3**  
This course provides opportunities for students to perform nursing skills for selected acutely ill clients in clinical settings with minimal instructor guidance. Students will continue to implement the LPN role in the nursing process, and perform nursing care and treatments as learned in prior theory and laboratory courses. Independent functioning

is encouraged along with medication administration proficiency.

**PNSG1570 Clinical Practice III 2**  
This course provides opportunities for students to perform nursing skills to select postpartum women and newborn infants in clinical settings with instructor guidance. Students may also assist in caring for children. Students will continue to implement the PN role in the nursing process and perform nursing care and treatments as learned in prior theory and laboratory courses.

**PNSG1580 Clinical IV 3**  
This course provides students with the opportunity to function more independently in the 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 clinical setting. An instructor will be available to provide minimal guidance and support. Students will maintain contact with the instructor to discuss clinical practice issues. This course is the capstone clinical course in the Practical Nursing Program.

**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.

**PNSG1700 Mental Health Nursing 2**  
This course explores mental health and mental illness. Maladaptive disorders, treatment, and nursing care are discussed. Transcultural nursing issues will be addressed.

**PNSG1750 Mental Health Nursing 2**  
This course explores mental health and mental illness. Maladaptive disorders, treatment, and nursing care are discussed. Transcultural and life span nursing issues 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.

## PROPERTY MANAGEMENT

**PMGT1200 Introduction to Property Management 1**  
This course is an introduction to the profession of property management. The fundamental techniques used for preserving and increasing the value and integrity of investment real estate will be covered. Special emphasis will be placed on determining and developing strategies to meet the owners' goals and objectives.

**PMGT1213 Managing Residential Property 1**  
This course covers all the basics of managing residential income property. The student will identify the various types of properties, compare the pros and cons of each, and develop good check lists for developing a very complete system for managing property.

**PMGT1214 Life and Safety Issues 1**  
This course covers issues necessary to protect the health, safety, and well being of occupants and property management employees of real estate investment properties. Topics covered are preventive maintenance inspections, proper disclosures, and procedures to follow when mishaps occur.

**PMGT1215 Maintenance Management 1**  
This course covers the reasons for and the techniques of how to

properly develop and manage a maintenance program that will protect the value of the asset being managed. We discuss the roles of property managers, resident managers, maintenance staff and outside service providers. Also discussed are methods of identifying risks and deciding which options might be available to deal with that risk.

**PMGT1216 Managing Commercial/ Industrial Properties 1**

This course covers the management and marketing of office buildings, industrial properties, and retail facilities. The student will compare the similarities and differences between these types of properties and residential investment properties.

**PMGT1217 Risk Management and Environmental Issues 1**

This course covers the reasons for and the techniques of how to properly develop and manage the various types of risk associated with managing residential property. We discuss the roles of property managers, resident managers, maintenance staff and outside service providers. Also discussed are methods of identifying risks and deciding which options might be available to deal with that risks.

**PMGT1219 Leases and Tenant Relations 1**

This course covers rental contracts beginning with the legal definitions of the various forms of leasehold estates and the rights and obligations the landlords and the tenants each have. The students will learn what steps to take to determine the qualifications of a prospective tenant and how to negotiate and create an acceptable residential lease agreement.

**PMGT1224 Income Capitalization Analysis 1**

This course compares the various methods of estimating the market value of income-producing properties. It includes the pros and cons of gross rent multipliers, cap rates, cash on cash returns on investment, and analysis of the impact financing may have on the value of a property to a particular investor.

**PMGT1225 MN Landlord/Tenant Law 1**

This covers the rights and obligations that landlords and the tenants have.

**PMGT1228 Community Association Management 1**

This course covers one of the fastest-growing areas of real estate and property management, community association management. Recent statistics indicate that 50% of new residential properties being constructed are in some way a part of an owner's association. This course is a real hands-on, practical course on what you need as a homeowner involved in an association, or a real estate salesperson involved in buying or selling townhomes or condominiums, or a property management professional.

**PMGT1229 Subsidized Housing 1**

This course covers Section 8 and other forms of subsidized housing.

**PMGT1230 Income Property Marketing 1**

This course covers all phases of income property marketing from defining goals and objectives to evaluating the results of that plan. Emphasis will be given to the importance of paying attention to the details of a good marketing plan, and the power of feedback and adjustments.

**PMGT1232 Cash Flow Analysis 1**

This course covers one of the most powerful tools a real estate investor/appraiser can use. The student will learn how to estimate future performance of income-producing property, and how to evaluate those future cash flows by using present day values. The course will cover capital gains, and the king of all tax shelters, the 1031 tax deferred exchange.

**PMGT1302 Planning and Operating a Small Business 1**

This course is an introduction to the designing, developing, and operating of a small business and/or an independent contractor practice. This is a

must course for individuals beginning their careers in Real Estate, Appraisal, Financing, Insurance or Property Management. We start with how to develop a business plan, implement that plan, and conclude with how to make adjustments to keep up to changes in the business environment.

**PMGT1304 Marketing Strategies for Small Business 1**

This course covers one of the most important areas of operating a small business or independent contractor practices. The student will learn how to maximize results from a minimal amount of dollars by using proven marketing strategies. A must course for those entering the field of Real Estate, Property Management, Appraisal, Financing or Insurance.

**PMGT1401 Real Estate Math and Calculator Basics 1**

This course covers the basic operation of the Hewlett-Packard HP12C financial calculator. All of the most common applications used by real estate professions, appraisers, property managers and loan officers are covered in this course. This is definitely one of the most powerful tools available for the true professional.

**PMGT2020 Negotiating for Agreement 1**

This course covers the importance of developing negotiating skills and the basic techniques used in negotiating. We will look at everyday situations and discuss how these strategies can help us in the business world and in some personal situations.

## PSYCHOLOGY

**PSYC1100 General Psychology 3**

This general psychology course is an introduction and overview of the scientific study of behavior and experience. It includes topics like perception, learning, human development, intelligence, motivation, psychological disorders, social perception and group behavior. Meets MnTC Goal 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. Meets MnTC Goal 5.

**PSYC1400 Adult and Geriatric Psychology 2**

This Adult psychology course is an introduction to adult and geriatric psychology from a lifespan perspective. This course examines topics from a developmental perspective, including sensation and perception, memory, intelligence and social cognition through adulthood. Meets MnTC Goal 5.

**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.



**PSYC1600 Human Sexuality 2**

This psychology course provides a comprehensive, up-to-date survey of the research findings and theories pertaining to human sexuality, and it helps the student apply this information to their personal lives. Meets MnTC Goal 5.

**RAILROAD CONDUCTOR TECHNOLOGY****RRCC1110 Orientation 1**

This is an opportunity for students to determine if a career as a conductor is right for them. Students will shadow conductors in a working rail yard and experience for themselves the physical and scheduling demands of the job. Upon successful completion of this course, the student should be able to describe railroad organization and general operations, policies and practices to ensure railroad safety, and the basic responsibilities of conductors. 5 hrs. lecture, demonstration/wk. Selective admission program - see a counselor about special requirements.

**RRCC1120 Introduction to Conductor Service 4**

This is an introductory course for the conductor service option within the railroad operations program. Upon successful completion of this course, the student should be able to describe railroad organization and general operations, policies and practices to ensure railroad safety, and the basic responsibilities of conductors. 5 hrs. lecture, demonstration/wk. Selective admission program - see a counselor about special requirements.

**RRCC1130 General Code of Operating Rules 4**

This is the fourth course in the conductor option for the railroad operations degree program. Conductors must maintain a thorough understanding of the General Code of Operating Rules (GCOR). This course provides an in-depth study of the GCOR. Upon completion of this course, the student should be able to demonstrate abilities to apply the General Code of Operating Rules to safe and efficient train movement and operations. 5 hrs. lecture/wk. Selective admission program - see a counselor about special requirements.

**RRCC1140 Mechanical Operations 2**

This course covers mechanical operations that relate to conductor service. This is the second course in the conductor option of the railroad operations degree program. Upon successful completion of this course, the student should be able to describe the importance and application of freight care mechanical policies and practices to ensure safe railroad operations. 2.5 hrs. lecture/wk. Selective admission program - see a counselor about special requirements.

**RRCC1150 Conductor Duties 2**

Upon successful completion of this course, the student should be able to describe and apply railroad organization and general operations, policies and practices to ensure railroad safety, and basic responsibilities of conductor. This course includes safety and the general rules with which conductors must comply and teaches the techniques and administrative procedures conductors use on the job to perform safely and effectively. 2.5 hrs. lecture/wk. Selective admission program - see a counselor about special requirements.

**RRCC1160 Utilization of RR Equipment and Safety Stand 2**

This course is designed for persons interested in pursuing a career as a Railroad Conductor. The student will study and demonstrate the accepted standards of railroad equipment utilization. They will also demonstrate knowledge and application of railroad safety rules and techniques for moving box cars.

**RRCC2970 Internship 3**

Upon successful completion of this course, the student will have

observed actual operations and be able to apply skills learned in classroom-based instruction to those operations. The student will observe and perform operations under the supervision of experienced conductor mentors in actual field locations. 1 hr. lecture, minimum 40 hrs of on-the-job training/wk.

**SUPERVISORY MANAGEMENT****SMGT1000 Principles of Supervision 3**

Ease the transition to supervisor or bring yourself up to date with today's supervisory/management practices. Study the role and responsibilities of supervisors including planning, organization, staffing, directing and controlling. Develop new skills in communication, correcting or rewarding performance and overall management of resources.

**SMGT1022 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 workgroup performance. Incorporate ethics, corporate mission, vision and culture into a powerful leadership strategy. Enhance your ability to motivate and positively influence others in an increasingly diverse workforce.

**SMGT1028 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 wastes and stressors. Explore strategies to improve time utilization in workgroups.

**SMGT1033 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 how they affect business.

**SMGT1160 Fundamentals of Mtg., Conference & Event Mgmt. 2**

Learn strategies to develop meaningful, well-organized conferences, meeting and special events, perfect for meeting planners experienced with logistics who want to develop the principles and techniques that form the foundation of meeting and event programs. Individuals interested in a meeting planning career or just starting in the field will want to build their career on the fundamentals included in this curriculum.

**SMGT1161 Adv. Meeting, Conference, and Event Mgmt. 3**

Whether you are interested in the field of meeting planning or already an experienced meeting planner, this is the hands-on, dynamic course you have been looking for to hone your skills and learn new techniques. This course delivers tricks of the trade and new twists while refreshing time-tested practices. Students will learn how to apply the Convention Industry Council meeting profile and request for proposal accepted practices.

**SMGT1162 Special Event Coordination and Management 3**

Learn strategies to effectively procure, organize, implement and monitor the products and services that bring an event to life. This course focuses on event design basics, room set-up, event flow, entertainment, food and beverage options, and communication. Students will research and shop for a case study special event venue and design a boardroom presentation to present venue and theme recommendations to a boss or client; learn vendor selection techniques, and event specifications will be created and vendor/venue work orders reviewed. Get acquainted with music licensing, host liquor liability, the Americans with Disabilities Act (ADA), and



preparation for a pre-convention briefing. Students will explore planner resources such as convention and visitor bureaus and destination management companies.

### **SMGT1163 Event Promotion 3**

Promote your meetings, events, festivals, tradeshow and conventions with the skill of an experienced event marketer. This course combines marketing and public relations expertise to make your event a success! Curriculum includes a business simulation and integrates key business skills such as critical thinking, team dynamics and communication.

### **SMGT1165 Introduction to Hospitality Management 2**

If travel, hospitality and tourism are exciting and you have always fantasized about a career serving those away from home, this course is the introduction you have been looking for. Learn about management and operations of lodging and foodservices, within diverse organizational models such as private clubs, cruise lines, casinos and amusement parks. Students are also introduced to meeting, trade show and event management. Expectations and resources for careers in these service industries are integral to the course curriculum.

### **SMGT1166 Event Design 3**

Meeting and event planners who want to increase production value of their events will find this course essential to achieving well-designed and orchestrated events. This course provides a thorough knowledge of event design principles, processes and practices. Students will learn about the various decorative elements used in special events and how production factors integrate to produce a winning event. Students will learn the basis of good design through study of design principles and practices. Through case studies students will learn techniques and resources to apply event design.

### **SMGT1167 Meeting & Event Sponsorship 3**

Sponsorship dollars can mean the difference between financial success or ruin for an event. Sponsor visibility and benefit to the sponsoring organization can make or break their business. Establishing ROI for the event as well as the sponsoring organization is important to the symbiotic relationship between these entities. For the event planner, the value of sponsorships to the event and its attendees, as well as how to integrate the sponsorship into the event are key elements of success. Fundraisers, who frequently double as the event planner, need to know how to place value on sponsorships, maximize the sponsor experience and where to find more sponsors. Event planners and fundraisers will learn state-of-the-art methods for finding, securing and retaining sponsors in this class.

### **SMGT1168 Trade Show Management 3**

Students new to exhibit management or experienced professionals who want to brush up on their skills will find this course essential to their career. Through the extensive case studies, students will learn how to manage exhibit operations from start to finish and become acquainted with marketing the trade show to exhibitors and attendees. Information and resources to manage essential trade show components such as site selection, floor plan layout, program planning, housing, registration and transportation will be explored.

### **SMGT1171 Strategies for Sales and Closing Success 3**

Vendor-Client relationships built on collaboration and mutual reward are the secret success strategy of today's hospitality market. The consumptive sales techniques of yesterday have no traction today. Today's customer is more trained, and technology has maximized their ability to both research and communicate. Litigation has increased. New APEX/ASTM Green Standards will soon require another layer of relationship accompanied by transparent documentation. Effective Vendor-Client relationships begin at first contact, continue through "close", and evolve into the post-sale relationship that multiplies sales. New or experienced sales professionals

will benefit from hands-on case studies and simulations that address sales and closing strategies from both Vendor and Client perspectives. The exploration of both perspectives is especially appropriate in today's fluid marketplace in which most professionals will be both Vendor and Client during their career.

### **SMGT1172 Project Management for Meetings and Events 3**

Experienced meeting planners know that project management is one of their most important skills. Traditional project managers pale at the multiplicity of projects that must be managed concurrently for even the smallest of meetings and events. It can seem like magic when the individual projects such as marketing, purchasing, registration, production, sales, housing, etc. operate independently and ultimately come together in the fusion that is a successful meeting or event. That magic is a skill which makes meeting planning a professional celebrated globally and employed by virtually every business model. This course concentrates on the intricacies of the individual projects and their synthesis into the final product - a successful meeting or event. Success doesn't just happen. And, it is not magic. It is the skill of the professional meeting planner. Students in this course practice their skills interactively using case studies and real-life scenarios.

### **SMGT1173 Life Celebrations 3**

Life celebrations take many forms and embrace all cultures; marking birth, coming of age, marriage, death and everything in between. Traditions borne in our native cultures form the fabric that makes us unique and weaves a special mark in our celebrations. Meeting and event planners who specialize in life celebrations such as weddings, bat/bar mitzvahs, naming ceremonies, and other multi-cultural events, as well as managers of cultural fairs, festivals, and parades will benefit from this course. Increase your skill set of cultural norms and traditions and gain insight into resources that will help you research details unique to the host's sect, geographic area, and more.

### **SMGT1174 Hospitality Law 3**

At the core of hospitality law is the need to safeguard guests and internal stakeholders such as owners and employees, while minimizing liability. In an interactive environment, students will explore real-life situations and the application of hospitality law. Students will investigate preventive measures and effective decision making to limit exposure and reduce litigious activity. Study is founded in an ethical, legal, and preventative philosophy, recognizing that today's hospitality manager is the individual who most influences the legal position of the organization through effective decision making. Regulatory and business structure impacts are incorporated into the study of hospitality issues including conferences, employees guests, crime, risks, and more.

### **SMGT1200 Quality Improvement 2**

Learn principles and tools for quality and continuous process improvement. Assess supervisor's roles and responsibilities related to quality including identifying and meeting customer's needs, applying tools and techniques for improving systems and processes, developing a quality training plan for work group members, and enhancing work group commitment to quality.

### **SMGT1205 Total Quality Management 4**

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's needs, applying tools and techniques for improving systems and processes, developing a quality training plan for work group members and enhancing work group commitment to continuous quality improvement.

### **SMGT1210 Problem Solving 2**

Learn a systematic approach to solving work place problems. Become proficient at using tools for gathering, analyzing, and evaluating data.

Master techniques for accessing creativity and group participation. Learn strategies for gaining approval and support and for facilitating successful implementation.

**SMGT1220 Work Teams 1**  
Develop the skills and knowledge to cultivate productive work teams. Identify the types and benefits of teams and work groups and the stages of team development. Learn to develop team mission, purpose, and goals. Apply techniques for team decision making and conflict resolution.

**SMGT1231 Planning and Project Management 2**  
Learn how to plan and control projects from start to finish including: determining scope/objectives, scheduling/sequencing, budget, action steps, assigning personnel, authority/responsibility, standards, contingency planning and methods for monitoring and evaluation of the projects success. Use tools such as Gantt Charts, flow charts and others. Plan a work or personal project applying the skills and knowledge learned in class.

**SMGT1232 Problem Solving and Decision Making 3**  
Tapping into your creative energy can make you more effective in solving problems and developing innovative solutions. Learn a systematic approach to solving work place problems. Become proficient at using tools for gathering, analyzing and evaluating data. Master techniques for accessing creativity and group participation. Learn strategies for gaining approval and support for facilitating successful implementation of decisions.

**SMGT1240 Meeting Management 1**  
Learn to prepare for and conduct effective meetings. Develop purpose, desired results, agenda, ground rules and action plans. Identify appropriate facilities, equipment, and room arrangements for various types of meetings. Learn to use tools to facilitate group participation, decision making, and consensus building including how to handle disruptive behavior. Facilitate a meeting using the strategies and tools learned in class.

**SMGT1242 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 and apply skills in any situation to achieve win-win negotiations.

**SMGT1245 Introduction to Resort Operations 2**  
Resorts provide an environment of restoration to their guests. As in other hospitality facilities, the emphasis is always on the guest; however, successful resorts maintain far higher guest service standards than their hotel counterparts. In addition, resorts offer the most fascinating element of all to their guests - escape. Interpretation and delivery of "escape" is both dynamic and evolving. Students in this course will study the components and operation of resorts from a management perspective.

**SMGT1250 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.

**SMGT1260 Managing Teams 3**  
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. Master conflict resolution and negotiation

strategies essential for supervisors and others in leadership positions in fostering self managed work teams.

**SMGT1270 Creativity and Innovation 1**  
Tapping into your creative energy can make you more valuable to the company you work for and more effective in solving problems and innovating improvements and can be really fun. Discover a variety of tools to increase your creativity. Develop strategies for encouraging and supporting others' creative efforts. Understand the relationship between creativity and risk taking. Learn to develop an environment which fosters creativity.

**SMGT1400 Performance Management 2**  
Performance management is the core of the supervisor's job. Learn to 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. Discover 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.

**SMGT1405 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.

**SMGT1410 Coaching 1**  
Coach work group members toward improved performance. Identify guidelines and steps for coaching. Practice giving new feedback. Develop individual improvement plans.

**SMGT1441 Introduction to Human Resource Management 3**  
This course focuses on providing supervisors and managers an overview of the principles and practices of Human Resources Management functions in today's organization, Compensation and Benefits, and Managing Employee Relations.

**SMGT1601 Financial Management 2**  
This course provides the non-financial manager/supervisor an understanding of business accounting terms, 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.

**SMGT1605 Graduation Project 0**  
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 scope of project. Up to five technical electives required in the program may be applied to the Graduation Project.

**SMGT1621 Team Development for Small Business and Non-Profits 2**  
Develop the skills and knowledge to build a successful work team in a small business, non-profit organization or direct selling operation. Learn how to recruit team members, foster engagement, and develop a shared vision. This course is designed to address work teams that are not made up of a manager-employee relationship including but not limited to partners, sales associates, independent contractors, and volunteers.

**SMGT1630 Presentation Skills 2**  
Develop a tool kit of presentation techniques that will serve you

well in making both formal and informal presentations. Learn to analyze your audience. Develop an effective introduction, body, and conclusion. Become adept with using audio visuals. Discover the confidence of expressing your ideas to others with conviction, with control, and without fear.

**SMGT1660 Introduction to Hospitality and Tourism 2**

This course introduces students to the largest industry in the world ñ tourism and hospitality. Learn about management and operations of tourism and travel organizations such as visitor and convention bureaus, travel agencies, hotels/motels/resorts, airlines, cruise lines, tour operators, car rental companies, casinos, amusement parks and more.

**SMGT1666 Lodging Operations and Coordination 2**

A lodging operation is comprised of many departments that must work together with precision to fulfill guest expectations. Course curriculum addresses the complete range of lodging operational considerations from the front lobby guest experience to the shipping and receiving dock.

**SMGT1670 Lodging Systems and Technology 2**

Technology is integral to success in today's lodging environment. Students will be introduced to the many systems that ensure success, including monitoring room inventory, communication, staffing, yield management and data mining to predict consumer habits.

**SMGT1675 Hotel Front Office Management 3**

This course provides a hands-on tour of the front office in a lodging establishment. Curriculum includes a computerized simulation of the front office processes from guest check-in thru night audit. This is on-the-job training in the classroom.

**SMGT1680 Hospitality Space and Logistics Management 3**

This course provides a hands-on tour of the front office in a lodging establishment. Curriculum includes a computerized simulation of the front office processes from guest check-in thru night audit. This is on-the-job training in the classroom.

**SMGT1690 Successful Sales and Closing Strategies 3**

This course provides in-depth sales, proposal and presentation training. Customer satisfaction starts at the beginning of the sales process and continues through post-sale planning. The post-sale relationship is important to the sales cycle in order to retain the customer's business. Curriculum includes hands-on hospitality and tourism case studies and simulations that address the sales cycle from first visit to retention planning and action.

**SMGT1695 Hospitality Risk Management 2**

Learn to recognize potential risks in the hospitality environment and to prioritize those risks for action. Application of practical strategies to management risks of people, property and goodwill are key elements of success. Learn risk management techniques using case studies and real-life scenarios.

**SMGT1776 Organizational Behavior 3**

Review, discuss, and analyze what makes an organization of any size and purpose, successful. Examine the ways that systems and values help to make up the dynamics of an organization's culture. Discuss the ways individuals work inside an organization and ways they influence those around them. Consider in detail what this all means in the context of today's call for constant change.

**SMGT1825 Interpersonal Effectiveness 2**

Introduce managers, supervisors and employees to a variety of interpersonal communication techniques that will strengthen respect and relationships. Practice skills in active listening, giving and receiving feedback, assertive communication, handling emotional behavior, dealing with multi culturalism and valuing differences and

interpret non verbal communication. Learn to identify and remove communication barriers. Identify potential conflict situations and formulate strategies to resolve them.

**SMGT1875 Training and Developing Employees (Acc) 3**

Consider employee training and development needs from orientation through progressive job training. Learn how to determine training objectives, plan, prepare, conduct, and measure benefits of work group training. 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. Learn to coach work group members toward improved performance. Identify guidelines and steps for coaching. Develop individual improvement plans.

**SMGT1950 Mentoring 1**

Learn how to develop a corporate Mentoring program. Analyze corporate cultures to determine what level of support is needed for developing an internal or external Mentoring program. Recognize the differences between mentoring, coaching, managing, and supervising. Learn how to identify, select, train, and match mentees, mentors and coordinators. Develop an action plan that ensures corporate buy-in. Develop a plan for launching your program with support materials and components in place. Develop a system of feedback which incorporates confidentiality. Review and evaluate mentoring programs.

**SMGT2001 Management Skills I, Foundations in Management 3**

This course is part I of three parts of the process of obtaining certification as a Certified Manager, from the Institute of Certified Professional Managers.

**SMGT2002 Management Skills II, Planning & Organizing 3**

This course is part 2 of three parts of the process of obtaining certification as a Certified Manager, from the Institute of Certified Professional Managers. Gain knowledge planning and organizing, and apply skills related to planning and strategy, operations management, project management, decision making, team management, organizational structure and human resources management.

**SMGT2003 Management Skills III, Leading & Controlling 3**

This course is part 3 of three parts of the process of obtaining certification as a Certified Manager, from the Institute of Certified Professional Managers. Gain knowledge leading & controlling, and apply skills related to leadership principles, empowerment and delegation, managing change, conflict and culture, operations control, quality management and financial management.

**SMGT2015 Accelerate Your Learning Potential 2**

Effectively apply your learning power to its greatest capacity. Learn a variety of principles, tools and techniques for learning more in less time and deeply retaining it. Learn study tools for note taking, and test taking. Manage your emotions to keep stress low and motivation high. Apply learning styles, multiple intelligences, mind mapping and other tools to help you learn the way to learn best and accomplish your goals. Access how accelerated learning principles can be applied into your work and personal life.

**SMGT2046 Fundamentals of Management & Diversity 4**

This course will provide students with the background and theories of supervision and management, and the key skills required to be a successful supervisor, manager and entrepreneur. Learn to effectively manage a ever increasingly diverse workforce.

**SMGT2105 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, 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.

### **SMGT2110 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.

### **SMGT2115 Multicultural Mentoring 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.

### **SMGT2116 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.

### **SMGT2120 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 negotiating skills across cultures, building multicultural communicational skills, developing mediation techniques, understanding the conflict management continuum resolving multicultural conflict, and comprehending the Alternative Dispute Resolution progression.

### **SMGT2125 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.

### **SMGT2950 Prior Experiential Learning Portfolio Development 1**

This course will guide students through the creation of an individual degree plan for the Supervisory Management AAS degree program or other participating programs at the college. Students will assess their previous education, prior learning from work and life experiences 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.

## **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.

### **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. It will focus on class, gender, race/ethnicity, and sexuality from a historical and sociological side of human relationships. We will examine and explore both the theoretical and social approach to minorities and minority relations. Topics include historical perspectives, identity, social trends, oppression/exploitation of minority groups in the U.S., future trends in minority relations. The focus of the course is to expose students to the cultural diversity of the U.S. from every classification of minority. To give students a fundamental understanding of the sociological perspective on this topic and apply a theoretical/historical perspective. Global perspectives will be addressed. Meets MnTC Goal 5, 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, 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.

### **SOCY1300 Introduction to Anthropology 3**

Anthropology is the scientific and humanistic study of humankind in all its varieties and of human nature in its universal sense. This course introduces students to the four subfields of anthropology: archaeology, cultural anthropology, languages and culture, and physical anthropology. Students will learn to identify and apply anthropological methods of study through a sociological and anthropological approach to humanity. Meets MnTC Goal 5, 10.



## 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. 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. 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 focuses on the practical and theoretical concepts of human communications and the styles used in personal, social and professional environments. Students will also acquire skills in critical thinking, perception, listening, verbal and non-verbal expressions and conflict resolution. Meets MnTC Goal 7.

### SPEE1030 Intercultural Communications 3

This course studies the cultural differences and how it affects communication. Topics include definitions of communication; definitions of culture and diversity of cultural patterns; cultural variables influencing communication such as language, non-verbal behavior, perception, values, and beliefs; facts that facilitate or inhibit intercultural communication; and examination of American culture in comparison to other cultures. Meets MnTC Goal 7,8.

### 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

This course includes facial expressions, tones of voice, gestures, eye contact, spatial arrangements, 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 than what people say. Meets MnTC Goal 1.

## VISUAL COMMUNICATIONS

### VCOM1001 Intro Visual Communications 2

This is an introductory course that prepares all students for entry into the Visual Communications field. General overviews will be given of the visual arts, photography and graphic design fields. Students will learn basic computer operation, how to use the local network, and learn general operational methods used in the Visual Communications Department. Additionally, students will learn to prepare, mount and display artwork. All these skills are a prerequisite for other courses in the Vis Com Department.

### VCOM1006 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 their knowledge. 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.

### VCOM1010 Intro Photoshop 2

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. \*\*Articulated\*\*

### VCOM1015 Layout I 2

This course covers development of page layout and basic graphic design processes. It provides an overview of the graphic design profession and a historical framework for modern graphic design/page layout practices. The student will overcome visual design problems by employing design elements and principles used as the foundation of any design work. It includes the "how to's" of creating effective page layout for print and screen. Practical applications of typography and use of visual concepts will be explored. This course will utilize hand layout tools exclusively.

### VCOM1021 Intro Photography 3

In this course the student will learn how to use all the manual 35mm camera controls to create good black and white photographs. We will practice using the motion and depth-of-field controls in different kinds of outdoor and natural lighting conditions. The student will combine the knowledge of different films and exposure techniques with the study of artistic composition to produce-pleasing images. Discussion of basic accessories and special techniques will round out the camera knowledge.

### VCOM1025 Law and Ethics for Visual Communications 1

In a world of digital information, new opportunities and markets are opening daily. Now, more than ever, visual communicators must understand the need to understand their legal and ethical responsibilities, both as business people and artists. This course will explore the rights and responsibilities of individuals involved in collecting, producing, and selling images.

### VCOM1030 Visual Design Fundamentals 3

This course will take the principles of design along with art fundamentals and apply them to the development of graphic design projects. Students will be introduced to basic drawing techniques to illustrate their ideas. The elements of design and color will be studied. Presentation skills and professional attitude will be practiced. Specific emphasis will be made in developing creativity and overcoming creative blocks. The student will be able to apply these design fundamentals to all aspects of the visual communications field. \*\*Articulated\*\*



**VCOM1032 Interactive Design Fundamentals 2**

This course will explore the fundamentals of design, development and delivery of computer-based multimedia. Students will be introduced to basic HTML, image preparation and web page tools/software. The elements and principles of design along with general presentation skills and professionalism will be practiced. Special emphasis will be placed on uses of multimedia in the visual communications industry and the structure of the Internet. Students will be able to create a simple website with HTML and upload it to a server at the end of the course.

**VCOM1040 Basic Drawing 3**

This course is designed to provide the artistic student the basics of drawing. General methods, mediums and styles will be explored. The elements and principles of art and design will be applied to various drawing projects. Uses of drawing in design are included in the focus. Students will study presentation and preservation of original artwork. \*\*Articulated\*\*

**VCOM1051 Scale and Perspective Drawing 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 perspective drawing is explained. Drawing style, composition and use of color are also explained.

**VCOM1060 Creative Problem Solving 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.

**VCOM1080 Photo Styling 2**

Photo styling involves the art of composing, arranging, and preparing a photographic set for the photographer. Many fundamentals of Photo Styling concepts come by way of historical movements in art history. Successful photo stylists also rely upon and refer to artistic conventions such as scale and perspective, color theory, composition, proportion, and form. Additionally, stylists will have a working knowledge of photography, lighting, and post-production methods. In this course students will learn about the role of photographers, stylists, and art directors. Students will apply art theory and technical concepts to practical styling projects such as food photography, "table-top" product photography, and interior architectural photography.

**VCOM1095 Illustration Fundamentals 3**

This course covers the basic concepts in illustration techniques. Projects will be assigned to develop illustration skills and uses of various media. The history of illustration and general design styles will be examined. Visual concept development and communication through illustration will be explored through research and application.

**VCOM1300 Intro to 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.

**VCOM1310 Printing Lab I 2**

This course serves as the first half of the VCOM 1540 - Intro Custom Printing. The emphasis will be on the operation of the black & white enlarger and covers the use of polycontrast filters and other print enhancement techniques to produce high quality enlargements.

Various projects will help the student develop a keen eye for density and contrast judgments. The second half and sequential course to this one is VCOM 1320-Printing Lab II which continues into color enlarging.

**VCOM1320 Printing Lab II 2**

This photography course serves as the second half of the Introduction to Custom Printing (VCOM 1310) and picks up where Printing Lab I leaves off. After reviewing and practicing the necessary skills, techniques and equipment needed to produce good b/w enlargements a thorough discussion of color theory will be covered. Projects in color correction and judgments will constitute the main areas of study in this course.

**VCOM1330 Color Printing Lab I 2**

This photography course serves as the equivalent to the first half of VCOM 1560- Custom Color Printing. The student will be introduced to custom color enlarging techniques on different color papers to become more proficient at color and print quality judgment. Techniques on dodging, burning and vignetting will be covered as well as other techniques.

**VCOM1340 Color Printing Lab II 2**

This photography course serves as the equivalent to the second half of VCOM 1560- Custom Color Printing. A custom printing technician needs to be able to produce large, professional quality color enlargements ready for selling and displaying. This course prepares the student for such a task by covering large format custom enlarging techniques on different color papers as large as 30 x 40 inches. Techniques on enhancing, mounting, matting, texturizing and displaying large prints will be covered.

**VCOM1360 Photography Workshop 1**

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.

**VCOM1370 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. "Repeatable for up to three credits".

**VCOM1380 Basic Photography 1**

Using the 35mm camera and most of its controls will be the basis for this on-line photography course. The student will learn how to create good exposures through the use of f-stop and shutter speed controls in natural lighting conditions. In this course we will concentrate on using the depth-of-field controls in emphasizing creative image control. The student will combine the knowledge of different films and exposure techniques with the study of basic artistic composition to produce pleasing images.

**VCOM1410 Intro Illustrator 2**

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 transforming tools,

<b>VCOM1415</b>	<b>Typography Fundamentals</b>	<b>2</b>
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Students will learn the basics of typography. Measurement, type fitting, design with type and an appreciation of type in the design process will be stressed.

## VCOM1422 Print Process I 2

Students are introduced to the history of print and explore a variety of print processes (flexo, letterpress, lithography, digital, etc.) A general overview of print process will include: basic paper characteristics and selection, imposition and folding, color keys, and job work flow.

VCOM1430	Intro InDesign	2
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Students will become familiar with Adobe InDesign as an electronic publishing program. Emphasis will be placed on software operation. Use of text, graphics, tabs, style sheets, and master pages will be incorporated into projects.

## VCOM1435 Proofreading Fundamentals 1

Students will learn basic proofreading techniques. Proofing marks will be learned and used to mark text. Proofing techniques will be used to identify proofing errors.

VCOM1440	Vinyl Signage	1
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Students will become familiar with the vinyl sign maker using FlexiSignPro software. Basic signage will be discussed. Projects will include single and multi-color vinyl. Transfer, weeding and registration will be covered.

<b>VCOM1515</b>	<b>Photo Lighting Techniques</b>	<b>2</b>
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The essence of good photography is the ability to recognize and expose for different lighting conditions. This course covers the use of all types of light meters under all different lighting conditions from indoor flash to outdoor and difficult light. This will be a study of the properties of light ranging from color temperature to direction and quality of both natural and artificial lights. Other related areas include how different film, filters, and lenses react to these lighting conditions.

<b>VCOM1520</b>	<b>Basic Processing &amp; Monitoring</b>	<b>3</b>
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In this course the student will be introduced to the fundamentals of black/white and color film and paper processing. With the emphasis on quality, we will cover how processing, both by manual sinklines and by automatic machines, affects the quality and consequently the salability of the final print. Four different b/w processes and three color developers will be covered. The plotting and monitoring of all these processes will be the heart of this course.

**VCOM1524    Black-and-White Darkroom    3**

Creating black-and-white prints in a traditional darkroom requires an understanding of the relationship between light, chemicals and silver-based materials (photographic film and paper). After learning the basics of film exposure, film development and printing, the class will refine its techniques. Through testing and trial-and-error, the class will learn to make properly-exposed and developed negatives as a cornerstone of black-and-white printing. Film techniques such as “pushing” and “pulling” will be explored. In the printing darkroom, students will work with resin-coated paper, learning to control contrast and density, and exploring techniques such as dodging, burning and solarization. Safe, responsible darkroom habits are a critical part of the course curriculum. By semester end, each student will have produced a portfolio of black-and-white prints.

<b>VCOM1525</b>	<b>Basic Darkroom Techniques</b>	<b>4</b>
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In this course the student will be introduced to the fundamentals

of black/white film and paper printing and processing. With the emphasis on quality, we will cover how film processing, by both manual sinklines and automatic machines, will affect the overall quality and salability of the finished b/w print. The science behind the proper developing and use of photo materials will be discussed, touching on EPA and OSHA concerns, creative use of different papers and enhancement techniques to explore niche markets, and techniques will be explored to complete the skills needed to be a successful and creative darkroom artist.

**VCOM1530 Copy and Restoration 1**

Old photo restoration, retouching, toning and reproduction are the main emphasis of this course. The student will experience the gratification of copying old black/white and color photographs by using copy camera and retouching techniques to repair minor aging and damage. Hand coloring and defect correction through the use of oils and pencils will be covered.

**VCOM1541 Introduction to Custom Printing 3**

Beginning with the basic operation of black and white enlarger, this course will cover all the skills necessary to create prize-winning enlargements. Projects include variable contrast printing, print enhancement techniques, different papers and textures, and various negative to print size formats. An introduction to color printing will include a thorough discussion of color theory and then the practical application of color adjustment in the making of contact sheets and high quality enlargements.

**VCOM1550    Machine Printing Systems                      3**

This course covers the aspects of using semi-automatic machines for printing high quality proofs and enlargements. The emphasis will be on the techniques and concepts of equipment operation, set-up, and color balancing. Projects will include the handling of difficult negatives, color copy negatives, package printing and color correction techniques on at least four different types of printers. A good understanding of color theory and the ability to recognize and correct color problems will be at the heart of all the projects and discussions.

<b>VCOM1561</b>	<b>Custom Color Printing</b>	<b>3</b>
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The ultimate test of a custom printing technician is producing large, professional quality color enlargements ready for selling and displaying. This course prepares the student for such a task by covering large format custom enlarging techniques on different color papers as large as 30x40 inches. Techniques on enhancing, mounting, matting, texturizing and displaying large prints will be covered.

**VCOM1565**    **Color Printing Systems**    **4**

This course builds on the printing skills from the Basic Darkroom Techniques course by providing the theory and practice of traditional color printing by both automatic and custom printing equipment. At the heart of this course is a thorough understanding of color theory, color application, color recognition and color adjustments and management as it relates to the production of high-quality color photographs in all facets of the industry. The student will use numerous custom and semi-automatic color printing devices to produce color photographs ranging from wallets to 3-foot enlargements. The ultimate test of skills in this area is for a photographer or photo technician to be able to recognize and create a high-quality photograph in order to stay competitive in the industry.

**VCOM1570    Portrait Photography                      2**

This course covers the use of studio lighting and cameras to produce professional looking portraits. Emphasis will be on the use of medium (120) format camera and film to capture images of people. A critical skill in this area is the ability to use the correct lighting to enhance the character and features of the customer. Projects will also include the use of gray cards, light meters, and posing techniques.

<b>VCOM1580 Intro Digital Imaging</b>	<b>2</b>	<b>VCOM2400 Advanced Photoshop</b>	<b>3</b>
This course introduces the student to the technology needed to capture a digital image, manipulate it and then output the image back to a hardcopy. As the technology changes we will incorporate it into this course. Discussions of concepts, philosophy and industry impact of this technology will be held in each class session to help the student to understand how this technology will impact the student's careers and the industry as a whole. Projects will include the operation and discussion of digital cameras, photo CDs, flatbed and slide scanners, Macintosh computers, b/w and color printers and film recorders. At least three different imaging software will be used and evaluated during the course. **Articulated**		This course builds on the tools and techniques learned in VCOM 1010 (Intro PhotoShop). The student will use and become more proficient with all the tools used to modify photographs. Some of the special effects power of these software will be introduced during this class. Emphasis will be placed on using this software to produce commercially acceptable photographs and advertisements, as well as hard copy outputs.	
<b>VCOM1710 Reporting</b>	<b>2</b>	<b>VCOM2415 Advanced Electronic Publishing</b>	<b>3</b>
Reporting is a course on the basics of writing and reporting for newspapers and magazines. Students will learn how to gather and organize the elements of a story using the inverted pyramid and Associated Press style. Grammar, caption writing, editing, layout, law and ethics will also be covered.		Students will create electronic publishing projects using InDesign or QuarkXPress. Emphasis will be on advanced publishing techniques, use of color, color separations, and design of portfolio quality projects.	
<b>VCOM1720 Photojournalism</b>	<b>2</b>	<b>VCOM2420 Advanced Computer Illustration</b>	<b>3</b>
Photojournalism involves telling stories to a mass audience with the use of images. In this course students will be introduced to studio and location photography skills and related skills such as previsualization, use of traditional and digital cameras, outline writing, layout, visual storytelling, Associated Press style, and business skills.		This course is a project driven course. Students will use Intro Illustrator to create a variety of portfolio quality drawings.	
<b>VCOM1730 Advanced Photo Lighting Techniques</b>	<b>2</b>	<b>VCOM2422 Print Processes II</b>	<b>3</b>
This course builds on the skills learned in Photo Lighting Techniques to increase the student's knowledge of on-location lighting techniques, advanced studio lighting, and use of multiple lighting sources. Students will use a hands-on approach to apply ambient and artificial lighting techniques to real-life situations in portraiture; still-life subjects; and architectural subjects. Portrait and still-life lighting techniques will cover lighting as it relates to composition with an emphasis in using lighting to bring emotion and a flattering rendition of the photographic image.		Print Process II is a continuation of Print Process I (VCOM1422). Students will develop an understanding of the print process including: negative striping and proofing, color keys, job preflight, an overview of bindery and finishing operations (binding, folding, die cutting, foil stamping, etc.) and PDF workflow.	
<b>VCOM1740 Macro Photography</b>	<b>2</b>	<b>VCOM2423 Print Management</b>	<b>2</b>
Macro or close-up photography can be a difficult skill to master, even though it is used in many different areas of the photographic industry. Nature photography, medical and forensic photography, the copy and restoration industry, industrial and commercial photography are just some of the career clusters that benefit from good macro photography skills. Real-life projects in this course will include the use of special macro lenses, ring flashes, and special lighting techniques to capture high-quality close-up images.		Students learn the customer service and sales side of the print industry. Topics include: job costing, estimating, customer service, print buying, print distribution(including postal regulations).	
<b>VCOM2035 Layout II</b>	<b>3</b>	<b>VCOM2424 Photography for Non-Profits</b>	<b>2</b>
This course covers development of advanced page layout skills. It includes creating effective marketing pieces through the practical application of typography and composition. The use of visual concepts will be explored. Development and completion of a variety of assignments will place emphasis on visual communication methods including the use of hand tools and the computer as page layout implements.		This service-learning class offers the training and experience needed to provide professional location and studio photography to are nonprofits with restricted budgets. The class will provide a variety of organizations (i.e., arts, health, human services, etc.) with pictures for use in web sites, brochures, posters or other publicity materials. Each student will devote a minimum of 30 hours to classroom projects and shooting sessions.	
<b>VCOM2085 Drawing for Illustration</b>	<b>2</b>	<b>VCOM2510 Commercial Photography</b>	<b>2</b>
In this course the students will study and apply methods in commercial illustration. Advanced drawing skills and techniques for illustration will be developed and various media uses will be explored. Students work to develop individual styles through advanced assignments.		In this course the student will learn how to use all the features of a large format, 4x5 view camera to produce commercial style images. By using special image distortion correction and depth of field controls, the student will setup and shoot many different types of images, such as still life, product, advertisement, and others. The use of studio lighting will be discussed and used during these projects as well as the use of natural lighting when photographing outdoor commercial projects.	
<b>VCOM2095 Painting for Illustration</b>	<b>2</b>	<b>VCOM2520 Digital Photography</b>	<b>2</b>
In this course the students will study and apply advanced methods in commercial illustration. Painting skills and techniques for illustration will be developed and various media uses will be explored. Students work to develop individual styles through advanced assignments.		In this course the student will apply the fundamentals of photography, lighting, and digital imaging in order to produce professional quality digital photographs. Students will apply the principals of digital photographic "workflow" to projects which will include studio portraits, still life, and outdoor architectural projects. Students will apply techniques of working with layouts, file management, and color management to produce images both for print and web production.	
		<b>VCOM2530 Advanced Photojournalism</b>	<b>2</b>
		Photography has been used in print publication for decades and will continue to be an integral part of print communication. In this course students will be introduced to advanced photojournalistic techniques and concepts linked with studio and location photography skills, editing skills, and related concepts dealing with pre-visualization, use of traditional and digital 35mm cameras, cut-line writing, layout, visual storytelling, copyright, libel, privacy, Associated Press Style, and business skills.	

**VCOM2540 The Business of Photography 2**

Professional photographers who use the craft to pay their bills will tell you that the vast majority of their duties do not revolve around photography itself, but the many and varied activities that support the business of photography. This course, therefore, does not teach students photography per se. This course will teach students about the skills, tools, and resources necessary to succeed in business.

**VCOM2551 Digital Studio Workflow 1 2**

Digital photography is rapidly becoming the media of choice. Photographers are faced with a variety of image management issues as they explore new techniques and photographic opportunities. Students in this course will use a full digital studio to capture, manipulate, output and manage images via a standardized digital workflow process. In this course an emphasis is placed on color management. Students will explore both the technical issues involved in using digital equipment, and investigate the creative options available to the professional digital photographer.

**VCOM2552 Digital Studio Workflow 2 2**

This course enhances the skills and knowledge from VCOM2551 and takes workflow beyond capture, image management and output stages into the correction of difficult images and unusual situations. Advanced skills in Adobe Photoshop will be covered as the photographer learns how to solve technical issues and create unique products to help them succeed in the competitive workplace.

**VCOM2555 Alternative Light Sources 2**

This technical and creative course will allow students to explore the use of alternative light sources used in scientific, artistic, and commercial photography. Background about color theory and spectral analysis will give a foundation for understanding the range of possibilities open to the photographer. Projects and assignments will range from color balance and color temperature to use of infrared and ultra violet light sources. Discussion will include the use of lasers, spectral microscopy, and infrared sensors used in photographic equipment today.

**VCOM2560 Photography on the Internet 1**

This course will help the student understand the connection between photography and the Internet (World Wide Web). As photography changes with the proliferation of digital imaging, new marketing display methods introduced, different clients-bases are formed, and unique product delivery methods are being established. In this course, initially the student will explore and research the new photographic concepts born of the internet. Then the student will build an image based web site for display and marketing as well explore other options of getting their images to the client.

**VCOM2565 Crime Scene/Forensic Photography 2**

This course will teach student to apply the basics of 35mm camera operation to the process and procedures of various crime scene and forensic photography investigations including, but not limited to: arson cases, auto accidents and auto-related death, break-ins, domestic abuse, personal injuries, homicides.

**VCOM2575 Medical Photography 2**

Medical Photography focuses on traditional and digital photographic methods to accomplish a range of services for Medical Schools, Health Science departments, hospitals, clinics, and government agencies. Medical photographers are specifically trained to provide high quality medical products and services. This course will teach the student to apply photographic and lighting techniques to the needs of the health care profession.

**VCOM2581 Photo Portfolio 2**

This hands-on course will guide the student through the creation of

a photography-based portfolio. Concepts in assemble techniques, display options and presentation methods will be at the heart of this course. Upon completion the student will have an industry-ready photographic portfolio in preparation for career exploration.

**VCOM2582 Portfolio Dev. (Photographic Entrepreneur) 2**

This class will concentrate on preparing the student to enter the photography job market. Students will be required to create a finished professional portfolio demonstrating their photographic skills. The portfolio will include examples of film and digital photography. Images for inclusion in the portfolio will be created using a variety of photographic formats, and techniques, and will emphasize the marketing and business plan developed for a start-up business. As a part of this course, students are required to participate in a formal portfolio showing near the end of their final semester of school.

**VCOM2584 Portfolio Development (Art Communications) 2**

This course will concentrate on preparing the student to enter the photography job market. Students will be required to create a finished professional portfolio demonstrating their photographic skills. The portfolio will include examples of film and digital photography. Images for inclusion in the portfolio will be created using a variety of photographic formats, and techniques, but will emphasize photojournalism, and artistically styled images. As a part of this course, students are required to participate in a formal portfolio showing near the end of their final semester of school.

**VCOM2586 Portfolio Development (Scientific Imaging) 2**

This course will concentrate on preparing the student to enter the photography job market. Students will be required to create a finished professional portfolio demonstrating their photographic skills. The portfolio will include examples of film and digital photography. Images for inclusion in the portfolio will be created using a variety of photographic formats, and techniques, but will emphasize scientific imaging. As a part of this course, students are required to participate in a formal portfolio showing near the end of their final semester of school.

**VCOM2605 Audio/Video for Presentations 3**

This course introduces the student to the planning, designing and production of photo/video based presentations and audio. Students will learn how to develop timelines, narrative scripts and story boards. Students will become familiar with techniques of audio, video and still images creation, compression and formatting appropriate for use in interactive multimedia and linear presentation. Delivery and packaging of a variety of digital media will also be covered.

**VCOM2650 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. Teamwork and group participation in project development will be stressed.

**VCOM2655 Intro Director 3**

This is an introductory course in the use of 3D modeling and animation software. Basic modeling techniques, use of animation software, basic animation and understanding the 3D process will be stressed. Students will create models that will be animated. Emphasis will be placed on movement, application of textures, lighting, camera movement, and project continuity. Projects will be exported in video format for use in multimedia and web page projects.

**VCOM2660 3D Modeling and Animation 3**

This course is designed to give the skills needed to make basic computer generated 3D models and animations for use in multimedia and web projects. Software will be used to create, animate and render 3-D models.



Textures, color and lighting will be applied to wire frame models. Emphasis is placed on tool and menu use to create models and animations.

#### **VCOM2665 Intro to Adobe Acrobat 2**

Using the Adobe Acrobat software, the student will create any type of document in the PDF format, preserving the exact look and content of the original, complete with fonts and graphics. They will also work with multimedia components smoothly. The student will unify documents, spreadsheets, presentations, email, multimedia and video in a single cohesive document. They will learn how to manipulate files in PDF Portfolio without affecting the original file. They will learn how to distribute PDF documents reliably and securely. The student will also learn how to create interactive forms in Acrobat.

#### **VCOM2670 Introduction to Authorware 2**

This course is designed to give the student introductory experiences in Authorware Professional, Macromedia's computer based training software. Students will concentrate on basic tool and menu operation, flow charting, storyboard development, and basic multimedia construction.

#### **VCOM2680 Introduction to Flash 2**

Students will use Macromedia object based 2D animation program to create animated segments for use in web pages. Timing, storyboarding, design and software tools will be emphasized. \*\*Articulated\*\*

#### **VCOM2685 Web Page Construction I 2**

This class will familiarize students with the concepts of web page design and construction. Emphasis will be on good design for both graphic elements and logical web page information flow. \*\*Articulated\*\*

#### **VCOM2690 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, video, multimedia interaction) will be discussed.

#### **VCOM2694 Advanced Multimedia Production 2**

This course is project intensive. Students will use skills learned in Intro to Flash to create portfolio quality multimedia production. Emphasis will be placed on use of user interface design, scripting language, logical information flow, story boarding, and quality graphic design.

#### **VCOM2700 Advanced Flash Animation 3**

This course is designed to give students additional instruction and experience in Macromedia's Flash Animation software. This is a project driven course and students will work on a variety of presentations for delivery on the web. Emphasis will be placed on design and the use of scripting language to control Flash animations.

#### **VCOM2721 Portfolio for Graphic Design 2**

This class will concentrate on preparing the student to enter the multimedia, print industry and illustration job market. Students will be required to create a finished graphics portfolio in the area of their degree. Students will use skills learned in other software applications to refine and develop projects for use in their portfolio. Projects will be created using multimedia and web authoring programs. Projects for inclusion in the portfolio will be created in pixel based, object based, layout, web authoring and multimedia programs.

#### **VCOM2722 Portfolio for Multimedia and Web Development 2**

This class will concentrate on preparing the student to enter the multimedia, print industry and illustration job market. Students will be required to create a finished graphics portfolio in the area of their degree. Students will use skills learned in other software applications to refine and develop projects for use in their portfolio. Projects will

be created using multimedia and web authoring programs. Projects for inclusion in the portfolio will be created in pixel based, object based, layout, web authoring and multimedia programs.

#### **VCOM2724 Portfolio for Applied Visual Arts 2**

This class will concentrate on preparing the student to enter the applied arts fields which may include multimedia, print industry and illustration job market. Students will use skills learned in art mediums and software applications to refine and develop projects for use in their portfolio. Projects for inclusion in the portfolio will include art mediums as well as in pixel based, object based, and layout applications.

#### **VCOM2730 Career Research Skills 1**

This class will concentrate on preparing the student to enter the Visual Communication's job market. Students will be required to create a cover letter, resume and finished mini-portfolio. Students will practice job interviewing skills and prepare to present their portfolios. This course should be taken the last semester of study and should be taken in conjunction with VCOM2724, Portfolio Development (Applied Visual Arts) or VCOM2721 Portfolio Development (Graphic Design) or VCOM2722 Portfolio Development (Multimedia/Web).

#### **VCOM2800 Advanced 3D Modeling and Animation 4**

This is an advanced course in 3D modeling and animation. Students will create animations for use on the web and in multimedia productions. Emphasis will be placed on modeling and animating objects and test. Students will create animations from storyboards and will animate to prepared audio tracks. This course will focus on creating portfolio quality animations.

#### **VCOM2810 3D Modeling and Animation Capstone 5**

Students will work on complex animation projects for multimedia and web display. Students will be expected to produce industrial quality animations using advanced modeling and animation techniques.

#### **VCOM2820 Advanced Typography 2**

Advanced Typography is a continuation of VCOM1415 Typography Fundamentals. Students will develop a greater understanding of type as a key element of design. The course will concentrate 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 will include type and copyright requirements, computer type faces and type on the web.

#### **VCOM2970 VisCom Internship 0**

Internship is a supervised work experience to apply classroom and simulated knowledge in a real on-the-job setting. This learning alternative will give students the opportunity to develop speed and skills and gain experiential 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 needs prior approval from the supervising instructor. 1-16 credits. \*\*Articulated\*\*

#### **VCOM2980 Special Topics 0**

This is a Special Topics course and is presented as a different topic for every section number.

### **WELDING TECHNOLOGY**

#### **WELD1100 Welding Safety and Theory 2**

This course covers the technical process of the welding trade. Included in the course studies are oxy-fuel welding and cutting processes, shielded metal arc welding, machine components, electrode classifications,



polarities and functions. Also included will be safety regulations, habits and requirements of the welding trade.

**WELD1102 Shielded Metal Arc Welding I 4**  
This course covers basic Shielded Metal Arc Welding (stick) using various electrodes and currents (polarities) in the flat position. Also emphasized are shop safety and shop ethics. \*\*Articulated\*\*

**WELD1104 Semi Automatic Arc Welding I 3**  
This course will teach the student to wire feed carbon steel in flat positions, using dual-shield FC (flux cored) wire with CO<sub>2</sub> shielding gases and self-shielded FC wire and submerged arc welding.

**WELD1106 Gas Tungsten Arc Welding I 3**  
This course is designed for hands on skills training using the Gas Tungsten Arc Welding (tig) process on a variety of metals including mild steel. Also included in the course are machine set-up and safety. \*\*Articulated\*\*

**WELD1108 Blueprint Reading 3**  
In this course the student will learn how to interpret weldment fabrication drawings and other types of engineering prints such as assembly, detail, machining and tooling prints.

**WELD1110 Layout 3**  
This course is designed to introduce the student to the layout processes of transferring information from blueprints to a working layout.

**WELD1112 Welding Fabrication/Qualification 3**  
This course covers student fabrication experience on a working project. Also covered in this course is the weld certification under the AWS D1.1 code. The passing of this code test is required for a diploma.

**WELD1114 Shielded Metal Arc Welding II 4**  
This course covers shielded metal arc welding out of position. Also presented will be welding qualification certification practices.

**WELD1116 Semi Automatic Arc Welding II 2**  
This course covers the gas metal arc welding processes on mild steel, aluminum, and stainless steel. Also covered are the mig spray processes on aluminum, mild steel and stainless steel.

**WELD1118 Gas Tungsten Arc Welding II 2**  
Using the oxy-acetylene GTAW processes, the student will learn to fusion weld various metals in the flat and vertical positions. Stainless steel and aluminum metals included.

**WELD2960 Skill Development 2**  
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 advanced their skills and welding experiences. This course is for all skill levels.

## WOOD FINISHING TECHNOLOGY

**WOOD1004 Woodworking 3**  
This course covers the safety and operation of woodshop handtools and power tools. Students will identify and create joinery used in furniture construction. An emphasis will be placed on the duplication of furniture parts and the repairing of existing furniture parts.

**WOOD1007 Methods of Fastening 3**  
This course covers the procedures and materials used in the disassembly and reassembly of furniture, cabinets, and other similar wooden objects. The study and application of metal fasteners, adhesives, and clamping procedures will be covered. Students will be required to work on several pieces of furniture. An introduction to the identification of period furniture and their components will be covered. Emphasis will be placed on the regluing of broken

components of these same pieces.

**WOOD1010 Wood and Finishing Technology 5**  
Understanding and application of the coloring agents and coatings for wood. This course also studies wood identification and wood as a material learning how it relates to abrasives, environmental fluctuation, coloring agents and coatings. This course is important to those who want to be able to problem solve wood and finishing defects.

**WOOD1012 Color Theory 3**  
This course covers the application of stains and dyes necessary for creating and duplicating colors on wood. Students will be required to match several color samples on wood. The study of color and its relationship to light will also be covered.

**WOOD1015 Spot Repair I 3**  
This course covers the basic techniques used for furniture spot repair. Students learn basic color theory and the repairing of small nicks, dents, and scratches in wood.

**WOOD1019 Advanced Spot Repair 5**  
This course covers advanced techniques used for spot repair. Larger and more difficult repairs will be worked on as performed in WOOD1015. Polyester fills, leather repair, vinyl repair, toners, blockouts, and other types of materials will be used to make cosmetic repairs.

**WOOD1021 Wood Refinishing 6**  
This class covers the total removal and replacement of the existing coating and color on wooden furniture. Surface preparation, including hand stripping, emersion systems, and bleaches, will be covered. Students in this class will be required to refinish several pieces of furniture. Emphasis will be placed on the safety and terminology of finishing procedures and finishing schedules used. Also emphasized is the understanding of how to give a customer a bid for these services.

**WOOD1024 Advanced Finishing/ Refinishing 5**  
This course covers advanced wood finishing techniques on new wood products and advanced wood restoration techniques. New wood product techniques involve spraying dyes, mixing color into the finish, production spray systems, using industrial coatings, including transparent and opaque coatings, using power sanders throughout the finishing schedule, and evaluating coating performance. Restoration techniques include hand caning, machine caning, rushing, advanced color matching techniques, and advanced restoration techniques, with an emphasis on problem solving finishing defects.

**WOOD1026 Advanced Finishing Techniques 5**  
This course covers advanced wood finishing techniques on new wood products and advanced wood restoration techniques. New wood product techniques involve spraying dyes, mixing color into the finish, production spray systems, using industrial coatings including transparent and opaque coatings, using power sanders throughout the finishing schedule and evaluating coating performance. Restoration techniques include hand caning, rushing, advanced color matching techniques, advanced restoration techniques, with an emphasis on problem solving finishing defects.

**WOOD1032 Antique Furniture Conservation 3**  
This course covers conservation techniques used on fine wooden antiques and their attachments in order to maintain their value. Preserving the existing finish, solvent cleaning, french polishing, consolidating techniques and plastic mold duplicating will be covered.

**WOOD1500 Color Matching 2**  
This is a three day "hands on" class to help you advance your knowledge of color matching and creating custom colors. Using the Prang Coloring system you will learn how to use primary and secondary colors to make the color you are looking for. Shading, tinting and extending will also be covered. You will learn how to add primary and secondary colors to pre-

made cans of stain to “tweak” them in the correct direction. This color knowledge will be applied with dyes and stains being applied directly to the wood as well as glazing and toning techniques with any type of coating.

#### **WOOD1505 Advanced Finishing 2**

This is a five day “hands on” workshop focusing on existing excellent finishing formulas for excellent looking wood. Starting with raw wood samples you will proceed with step by step processes, keeping a written record of each step. Finishing techniques used include water base dyes, stain on dye, bleaching, clear and opaque coatings. Special effects such as crackle lacquer, full-filled pore, satin rub outs and high gloss polishing will also be covered. Each student will keep all of the samples they make.

#### **WOOD1510 Shellac 2**

Shellac has long been one of the standard traditional finishes in the woodworking and furniture restoration trades. Don Williams, finisher, conservator and author will personally conduct a three day session on the understanding and application of shellac. The program will be part classroom lecture, part participant-driven symposium, but mostly work shop demonstrations and practices.

#### **WOOD1515 Achieving a Closed Pore Piano Finish 2**

This class is designed to achieve a professional closed pore high gloss piano finish every time. It will be a “hands on” class from start to finish. Panels with cured lacquer coatings will be made available for students to achieve the final high gloss rubout by hand and with power equipment.

#### **WOOD1520 Spraying Equipment and Techniques 1**

Upon completion of this class the student will understand the dynamics of hand held spraying equipment. Turbine, compressed air, conventional, HVLP, LVLP, gravity feed, pressure pot and air assisted airless systems will be discussed and used. The curriculum consists of understanding the importance of wet mill thickness, calculating dry mill thickness, equipment maintenance, problem solving, finishing defects and spraying techniques such as making and spraying toners.

#### **WOOD1525 Spot Repair 1**

This is a “hands on” class that will teach a variety of ways to repair nicks, dents and scratches. Techniques for repairing ranging from “burn ins” to polyester repair, padding, graining, glazing and toning will be taught. Color matching will be emphasized.

#### **WOOD1530 Finishing New Wood 2**

This is a five day “hands on” wood finishing class. Sessions include: the proper preparation of wood, methods of using stains, dyes, glazes and toners to color wood. Understanding why and how to apply oils, shellac, lacquer, varnish, polyurethane and water base coatings using rags, brushes and spraying equipment. How to create the desired sheen and maintain that sheen will also be covered. Problem solving and repairing finishing defects such as blotching, orange peel and fish eye will be explained. Students will keep all of the panels they make.

#### **WOOD2010 Spraying, Color Matching and Pore Filling 2**

This is a comprehensive class to help you understand why and how to color match and create custom colors, create closed pore finishes and advance your knowledge of spraying equipment. Students will keep the panels they create. Both the theory and application of how to use primary and secondary colors to make the color you are looking for. Shading, tinting and extending will also be covered. You will learn how to add primary and secondary colors to pre-made cans of stain to “tweak” them in the correct direction. This color knowledge will be applied with dyes and stains being applied directly to the wood as well as glazing and toning techniques with any type of coating. You will also learn how to achieve a professional closed pore high gloss piano finish every time. Panels with cured lacquer coatings will be made available for students to achieve the final high gloss rubout by hand and with power equipment. These panels will stay at DCTC. Upon completion of this class the student will understand the dynamics

of hand held spraying equipment. Turbine, compressed air, conventional, HVLP, LVLP, gravity feed, pressure pot and air assisted airless systems will be discussed and used. Emphasis will be on understanding the importance of wet mill thickness, calculating dry mill thickness, equipment use and maintenance, problem solving finishing defects.

#### **WOOD2040 Restoration, Chemistry & Tech. of Transparent 2**

This intensive course will introduce the history, technology, chemistry, properties, deterioration, and treatment of transparent coating materials and colorants, along with color theory, finishing techniques, and treatment and manipulation of existing coatings.

#### **WOOD2050 Finishing New Wood 2**

This is a five-day comprehensive wood finishing class that will educate you to know how and why you finish wood. Students will keep all of the panels they create. Sessions include: The proper preparation of wood, methods of using dyes, stain, glazes and toners to color wood. Understanding why and how to apply oils, shellac, lacquer, varnish, urethane and water base coatings using rags, brushes and spraying equipment. How to create the desired sheen and maintain that sheen will also be covered. Problem solving and repairing finishing defects such as blotching, orange peel and fish eye will be explained.

#### **WOOD2060 Lacquer and Special Effect Coatings 2**

This five-day workshop will focus on excellent looking nitrocellulose lacquer, two part coatings and special effect coatings. Each student will keep their projects and the formulas that go with them. You will learn how and why each step of the process is used to make stunning colors and coatings. Starting with raw wood samples you will proceed with step by step processes, keeping a written record of each step. Finishing techniques used include water base dyes, stain on dye, bleaching, clear and opaque coatings. Special effects such as crackle lacquer, satin rub outs and high gloss polishing will also be covered.

#### **WOOD2070 Restoration of Veneers and Their Finishes 1**

This intensely hands-on workshop will focus on the nature and technology of veneer-work and restoring damaged veneered surfaces, including a range of applications from the laying of new veneers to re-integrating aged and damaged veneers, and replicating veneer and marquetry surfaces. Special emphasis will be on the selection and making of veneers, and in finishing them in a manner most compatible with the existing surrounding surfaces. This course also integrates adhesive technology as a critical component in the problem solving process.

## Notes

## Notes

## This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



**DAKOTA COUNTY**  

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**TECHNICAL COLLEGE**

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