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Mission Statement

A comprehensive regional university, Montana State University-Northern offers programs of professional preparation emphasizing discipline mastery, critical inquiry, and social responsibility in:

- Teacher preparation
- Mechanical and engineering technologies
- Business and computer information systems
- Nursing
- Arts and sciences

MSU-Northern applies emerging technologies in degree programs ranging from the certificate to master’s level. MSU-Northern prepares well-educated students who are capable of decisive action and application of new ideas. The university is committed to excellence in teaching, service to its region and the State, and applied research and scholarship.

MSU-Northern values individualized attention to its students, experientially based learning, and creating a culturally rich and intellectually stimulating environment. From its North Central Montana High Plains main campus, the University serves as a regional cultural center and maintains strong partnerships with communities, education, business and industry.
Chancellor’s Welcome

Welcome to MSU-Northern. I realize there are a lot of colleges to choose from and I am very pleased you have chosen to study at MSU-Northern. We are committed to making sure you receive the best education possible and that your time at Northern is positive.

Our new Applied Technology Center is complete and ready for classes this Fall. This facility will enhance the learning capabilities of our students to take their technical skills to the next level. The building provides a 110 seat tiered multi-media lecture hall, several large industrial labs, testing labs, chassis and engine dynamometer testing labs and research and prototype spaces which are all linked with a data command center. It will also allow more applied research opportunities for our faculty and students. This is just one example of Northern’s commitment to providing the best educational opportunities and resources possible for our students.

I believe the years you spend at MSU-Northern will prove to be some of the best in your life. I began my higher education at Northern and I quickly realized the vital role it would play in my personal education. I met friendly people who understood my educational needs and were committed to helping me succeed. I am confident Northern can provide the same opportunities for you.

Our programs go beyond the normal classroom experience. The many sports events, clubs, organizations and various on-campus activities will provide you with an array of choices that will help enhance your social and educational needs. Helping you, our student, is the number one goal at MSU-Northern.

I look forward to seeing you on campus. On behalf of everyone at Northern, please accept our warmest wishes toward a successful year.

Sincerely,

Alex Capdeville
Chancellor
2005-2006 UNIVERSITY CALENDAR

Fall Semester 2005 thru Summer Semester 2006

FALL SEMESTER 2005
August 27, Saturday ...................................................................................................... Residence Halls Open
August 29, Monday ..........................................................................................................................................
Orientation and Student Registration
August 30, Tuesday .......................................................................................................................... Classes Begin
September 5, Monday................................................................. Labor Day (No Classes-Offices Closed)
November 11, Friday........................................................................ Veteran's Day Holiday (No Classes-Offices Closed)
November 24-25, Thursday-Friday, (No Classes-Offices Closed)................................................................ Thanksgiving Day
December 12-16, Monday-Friday ...................................................................................... Final Examinations
December 16, Friday .................................................................................................................. Fall Semester Ends
December 21, Wednesday ........................................................................................................ Grades Due in Registrar’s Office

SPRING SEMESTER 2006
January 9, Monday ....................................................................................................................... Residence Halls Open
January 10, Tuesday .......................................................................................................................... Classes Begin
January 11, Wednesday .................................................................................................................. Classes Begin
January 16, Monday, (No Classes-Offices Closed)................................................................. Martin Luther King Day
February 20, Monday, (No Classes-Offices Closed))................................................................................... President's Day
March 13-17, Monday-Friday, (No Classes).................................................................................. Spring Break
April 14, Friday, (No Classes-Offices Open)........................................................................................................ University Day
May 1-5, Monday-Friday....................................................................................................................... Final Examinations
May 5, Friday ...................................................................................................................................... Spring Semester Ends
May 6, Saturday....................................................................................................................................... Commencement
May 10, Wednesday ................................................................................................................ Grades Due in Registrar’s Office

SUMMER SEMESTER 2006
Pre-Summer Session (May 8 – June 1)
May 29, Monday, (No Classes-Offices Closed)................................................................................ Memorial Day
June 1, Thursday......................................................................................................................... Pre-Session Ends

Regular Summer Session (June 5 – August 4)
July 4, Tuesday, (No Classes-Offices Closed)................................................................................ Independence Day
August 4, Friday .................................................................................................................................... Regular Session Ends
August 9, Wednesday ................................................................................................................ Grades Due in Registrar’s Office

Extended Summer Session (May 8 – August 18)
(Primarily BSN Nursing students)
August 23, Wednesday ................................................................................................................ Grades due in Registrar’s Office
# Degrees, Majors, and Minors

## Associate of Applied Science Degree (AAS)
- Agricultural Mechanics Technology
- Agricultural Technology
- Automotive Technology
- Automotive Technology (Auto Body)
- Computer Engineering Technology
- Computer Information Systems
- Design Drafting Technology
- Diesel Technology
- Engineering Technology: Civil Engineering Technology
- Engineering Technology: Electronic Engineering Technology
- Graphic Design
- Plumbing
- School Business Administration
- Water Quality Technology: Environmental Health

## Associate of Arts (AA)
- General Education

## Associate of Science Degree in Nursing (ASN)
- Nursing

## Associate of Science Degree (AS)
- Program of Study in Business

## Bachelor of Applied Science Degree (BAS)
- Communication*
- Community Service
- Graphic Design
- Liberal Studies

## Bachelor of Science Degree (BS)
- Agricultural Operation’s Technology
- Automotive Technology
- Biology
- Business Technology
- Civil Engineering Technology*
- Computer Engineering Technology
- Computer Information Systems
- Design Drafting Technology
- Diesel Technology
- Diesel Technology: Field Maintenance Option
- Health Promotion
- Industrial Technology (non-teaching)
- Nursing
- Water Quality Technology: Environmental Health*

## Bachelor of Science in Education Degree (BSED)
- Business Education (5-12)*
- Elementary Education (K-8)
- English (5-12)
- General Science (5-12)
- Health and Physical Education (K-12)
- Industrial Technology (teaching option)
- Social Science (5-12)

## Certificate
- Automotive Technology
- Welding Technology

## Departmental Certificates
- Agricultural Mechanics Technology
- Automotive Technology: Auto Body
- Land Survey Technology

## Master of Education Degree (MED)
- Counseling Education
- General Science*

## Master of Science Degree (MS)
- Learning Development

## Minors (non-teaching)
- Accounting
- Agricultural Mechanics Technology
- Applied Agriculture
- Automotive Technology
- Automotive Technology (Auto Body)*
- Biology
- Business Technology
- Civil Engineering Technology*
- Communication*
- Community Service
- Computer Information Systems
- Design Drafting Technology
- Diesel Technology
- Health Promotion
- Marketing: Technical Sales and Service
- Native American Studies
- Small Business Management

## Teaching Minors
- Art (K-12)
- Business Education (5-12)*
- Computer Information Systems (5-12)*
- English (5-12)
- Health and Physical Education (K-12)
- Reading Specialist (K-12)
- Traffic Education (K-12)

*Degree is in moratorium. Please see the Provost (Cowan Hall 204) for availability of this degree.
GRADUATION AND GENERAL EDUCATION REQUIREMENTS

Students are personally responsible for meeting all University graduation requirements and the requirements for their particular academic degree programs.

Candidates for graduation should obtain their graduation forms from the Registrar’s Office two semesters prior to their graduation date. All graduation applications, with pages one and two filled out and completed program sheets attached, are due in the Registrar’s Office no later than one semester prior to their graduation semester. The University Catalog provides the authoritative source of information for program and degree requirements.

GENERAL EDUCATION COURSE PLACEMENT

Comprehensive course placement procedures ensure that students are placed into general education courses that optimize their probability of completing general education core requirements as quickly as possible. A series of developmental courses that prepare students for higher education level courses is in place for those who will benefit from them. Credit for these courses is not applicable to degree requirements, but, in some cases, is an essential component in the progress toward a degree.

There are three means of determining general education course placement: 1) ACT Mathematics and English sub scores; 2) Evaluation of previous higher education courses completed, and 3) Placement examinations administered by MSU-Northern. The following policies govern the use of these placement procedures:

1. ACT sub scores will be used to place new-to-college students into the highest course appropriate to their declared major field of study.
2. Transfer students with mathematics courses to transfer will be placed by the Registrar, based on an evaluation of the transfer courses as prerequisites.
3. Any student may elect to take the placement exam and be placed. Students who elect to be placed on the basis of their ACT sub scores or transfer work.
4. Students who do not meet any of the above criteria prior to registration will be placed in the lowest level general education core courses appropriate to their declared major field of study. Students placed by this means may attempt to improve their placement at any time prior to the beginning of classes.

Details about placement testing are available from the Academic Advising Center in Room 213, Cowan Hall.

CATALOG OF RECORD

Students may elect to follow the catalog in effect when they began their freshman year at MSU-Northern, or any subsequent catalog within the seven-year catalog limitation if there has not been a break of more than one academic year in their attendance.

OBSOLETE COURSE CONTENT

In evaluating coursework from postsecondary institutions, Montana State University-Northern will:

1. guarantee that any postsecondary course work taken within five (5) years of being admitted or re-admitted to the campus will be included in the transfer analysis of specific required classes in a major, minor, option or certificate.
2. guarantee that any postsecondary course work taken within fifteen (15) years of being admitted or re-admitted to the campus will be included in the transfer analysis of general education core course work.
3. guarantee that any postsecondary course work taken within fifteen (15) years of being admitted or re-admitted to the campus will be included in the transfer analysis of elective course work.
4. guarantee periods may be included in the evaluation, at the discretion of the campus. Since it is a discretionary decision, it cannot be challenged by students.

DUAL PREFIX LISTED COURSES

Some courses at Montana State University-Northern have dual, or alternative, prefixes. An Example is ENGL 331/NAS 331 Literature By and About Native Americans. When students enroll in that course, they can choose to take it as an English class and would enroll in ENGL 331. If they decide that they want to take it as a NAS, Native American Studies class, they would enroll in NAS 331. Students must select a prefix at the time they register for a dual prefix course.

DEPARTMENTAL CERTIFICATES

Several academic Colleges award certification to students who complete specialized approved programs of study. With the exception of welding and automotive technology, these certifications are not academic degrees. Grades earned in specific courses will be entered on the student’s permanent transcript and may be applied toward academic degrees.

Students completing departmental certificate programs will receive a Certificate of Completion from the academic college but will not receive a diploma or participate in commencement ceremonies.

ASSOCIATE AND ASSOCIATE OF APPLIED SCIENCE DEGREE PROGRAMS

All associate and associate of applied science degrees require the following, plus course requirements under specific programs:

1. At least 15 of the total credits must be taken at Montana State University-Northern for an
associate or associate of applied science degree.
2. An Associate of Science/Arts degree has a maximum of 60 credits and requires a minimum 2.00 cumulative grade point average.
3. An Associate of Applied Science degree has a minimum of 60 credits and a maximum of 72 credits and requires a minimum cumulative grade point average of 2.00.
4. No more than 6 credits total of independent study courses (designated x99) may be applied towards an associate or associate of applied science degree.

**BACHELOR OF APPLIED SCIENCE DEGREE PROGRAM**

The Bachelor of Applied Science (B.A.S.) degree is designed for students who have already earned an Associate of Applied Science (AAS) degree from a regionally accredited institution, and would like to use that degree as a first step toward earning a baccalaureate degree. Using the A.A.S. degree as a base, the B.A.S. degree at Montana State University-Northern includes additional general education core coursework, a program of study in some selected area, and a minimum number of credits at the 300 – 400 level. The program of study typically builds on coursework, or any elective coursework completed for the A.A.S. degree.

The specific requirements for a Bachelor of Applied Science (B.A.S.) degree at MSU-Northern are as follows:

1. an Associate of Applied Science (A.A.S.) degree from a regionally accredited institution; that degree must have at least 60 semester credits;
2. at least 60 semester credits beyond the A.A.S. degree;
3. 30 of those credits described in 2 above from Montana State University-Northern;
4. successful completion of the general education core for a baccalaureate degree at MSU-Northern. The general education core for a Bachelor of Applied Science degree is the same as a general education core for all baccalaureate programs at MSU-Northern. Credits earned as part of the A.A.S. degree may be used to satisfy this requirement, but only if they would be accepted as appropriate coursework for any other baccalaureate general education core at MSU-Northern.

**PLEASE NOTE:** Although the policy (301.10) almost certainly would not apply to the coursework completed by a student for an A.A.S. degree, students should ask about the Montana University System General Education Transfer Policy to determine its applicability to their work on a B.A.S. degree at Montana State University-Northern;

5. at least 30 credits in some program of study; the specific credits to satisfy this requirement will be worked out with a faculty member in the program of study;
6. at least 39 of the credits earned after the A.A.S. degree at the 300 or 400 level; those upper division credits can be part of the program of study, the general education core coursework, or any elective credits that the student chooses to take;
7. a cumulative grade point average of 2.00 and a grade point average of 2.25 in the program of study;
8. no more than 9 credits of independent study courses (designated x99).

**BACHELOR DEGREE PROGRAMS**

All bachelor degrees require the following, plus course requirements under specific programs:

1. The general education core requirements must be completed;
2. At least 30 of the total credits must be taken at Montana State University-Northern.
3. Some programs may include additional requirements for graduation. If so, they will be noted in the recommended sequence for any individual program.
4. A Bachelor of Arts/Science degree has 120 credits with a cumulative GPA of 2.00 and a GPA in both the major and the minor of at least 2.25. Some programs may include additional credit requirements. Some programs may also have minimum grade requirements for graduation. **PLEASE NOTE:** Students graduating under the 1997-1999 catalogue and subsequent catalogues need 120 credits to earn a bachelor's degree, unless their degree specifies more credits. Students graduating under a catalogue prior to 1997-1999 will need a minimum of 128 credits to earn a bachelor's degree, unless the degree specifies more credits.

5. Students are required to have 39 upper division level credits (300 – 400 level courses) for graduation.
6. No more than 9 credits total of independent study courses (x99) may apply toward a bachelor's degree.

**MINORS**

A minor is a supporting or complementary field taken along with a major for a baccalaureate degree.

Minor Requirements:
1. They must consist of 18 to 30 semester hours of credit.
2. At least one-third of the credits must be at the upper division level.
3. Students must have at least a 2.25 GPA in their minor.

**COMMENCEMENT WITHOUT GRADUATION POLICY**

University policy allows students who have 6 or fewer credits remaining toward requirements for graduation at the end of the Spring Semester, or who can demonstrate that they will complete graduation requirement by the end of the Summer Semester, to participate in the commencement ceremony provided that they submit graduation clearance papers by the deadline.

**ARTICULATED COURSEWORK WITH GREAT FALLS COLLEGE OF TECHNOLOGY**

MSU-Northern will accept courses that were articulated from the Montana State University-Great Falls College of Technology and treat them as if they had been taken from Montana State University-Northern.

**GENERAL EDUCATION REQUIREMENTS**

General education core forms a significant part of every degree program. The general education core
develops areas of appreciation not necessarily provided for in the specialized areas of the major, and provides a sense of the interrelationship between the various disciplines. Above all, the general education core makes available to students the tools and awareness necessary for lifelong learning and for active, literate participation in today's technological society. The specific course requirements included in the general education core at Montana State University-Northern begin on page 9. Students must meet the program requirements as specified for either a baccalaureate, associate, or associate of applied science degree.

General Education Waivers

Only the Admissions and Standards Committee can waive a general education core requirement. Therefore, any request to waive a general education core requirement must be submitted on a petition form to the Admissions and Standards Committee for approval or disapproval. The only exceptions to this waiver policy are set out below.

The general education core requirements defined on page 9 are waived for students who already have an associate or bachelor's degree from Montana State University-Northern or another institution and they have come to Montana State University-Northern to work on another degree. If a student's previous degree was earned more than seven (7) years ago, s/he may be required to take additional general education courses to prepare him/her for the new degree. To qualify for the waiver, students must meet the following conditions:

- Their previous degree must be from an accredited institution.
- Their previous degree must be an associate of art, an associate of science, a bachelor of art, a bachelor of science, or a bachelor of applied science degree.
- Their previous degree was an associate degree, and they are working on another associate degree at Montana State University-Northern.
- Their previous degree was a bachelor's degree and they have come to Montana State University-Northern to work on an associate degree.

Students seeking another bachelor's degree at Montana State University-Northern will still be expected to complete the capstone component described in section II.

PLEASE NOTE: Students who transfer between units of the Montana University System may be governed by the general education transfer policy adopted by the Montana Board of Regents. That policy is set out on page 11 of this catalog. In reviewing that policy, students should pay particular attention to the IMPORTANT LIMITATION language. That limitation means that, even though a transfer student may already have satisfied the general education core requirements for an earlier degree, his/her new program of study may require additional and specialized courses that would ordinarily have served as general education core coursework at Montana State University-Northern. To earn the degree, transfer students will have to complete those specialized courses.

This waiver does not constitute a waiver of any other graduation requirements.
All students attending Montana State University-Northern for the first time Fall Semester 2005 and thereafter will need to meet the General Education Core below for graduation.

**Students planning to transfer to another institution before completing Northern’s General Education Core would be well advised to take courses from the MUS Transferable Core found on page 11 of this catalog.**

MONTANA STATE UNIVERSITY – NORTHERN GENERAL EDUCATION CORE
All students seeking an associate of arts, associate of science, or bachelor’s degree at Montana State University-Northern are required to fulfill course work within each of the nine General Education categories as listed below:

<table>
<thead>
<tr>
<th>Discipline Area</th>
<th>Minimum Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAT I: Communication</td>
<td>6 credits</td>
</tr>
<tr>
<td>CAT II: Mathematics</td>
<td>3 credits</td>
</tr>
<tr>
<td>CAT III: Natural Sciences (with lab)</td>
<td>6 credits</td>
</tr>
<tr>
<td>CAT IV: Social Sciences</td>
<td>3 credits</td>
</tr>
<tr>
<td>CAT V: History</td>
<td>3 credits</td>
</tr>
<tr>
<td>CAT VI: Cultural Diversity</td>
<td>3 credits</td>
</tr>
<tr>
<td>CAT VII: Fine Arts</td>
<td>3 credits</td>
</tr>
<tr>
<td>CAT VIII: Humanities</td>
<td>3 credits</td>
</tr>
<tr>
<td>CAT IX: Technology</td>
<td>3 credits</td>
</tr>
<tr>
<td>Total General Education Core Credits</td>
<td>33 credits</td>
</tr>
</tbody>
</table>

The following courses will satisfy the various categories of general education. If general education core classes are required in a program area, they can be counted towards fulfilling the general education core as well as the program requirement. (However, the number of the credits for the course only counts once toward the total credits of the degree). Students who transfer course work to MSU-Northern will have general education courses counted in the same category as the transferring institution, even if the course is not offered at MSU-Northern. **NOTE:** Different departments and academic units specify particular courses within a category to meet degree requirements. Students are urged to consult their academic advisor and the course requirements for their degree prior to selecting courses in General Education.

Category I (CAT I) - Communication (6 credits)
ENGL 112 and ENGL 111 or SPCH 141 or 142 or ENGL 366

Category II (CAT II) – Mathematics (3 credits)
MATH 110 or higher

Category III (CAT III) – Natural Sciences (6 credits)
Students must take one science course that includes a lab. See course descriptions to verify this requirement.
AG 204 or higher
BIOL 100 or higher
CHEM 100 or higher
ESCI 100 or higher
GSCI 100 or higher
NSCI 100 or higher

(continued on next page)
### Category IV (CAT IV) – Social Sciences (3 credits)
- CMSV 101
- POL 134
- PSYC 101
- SOC 101
- ECON 241
- POL 235
- PSYC 205
- SOC 240
- ECON 242
- POL 303
- PSYC 315
- SOSC 201
- ECON 346

### Category V (CAT V) – History (3 credits)
- HIST 131
- HIST 142
- HIST 132
- HIST 216
- HIST 141
- HIST 374

### Category VI (CAT VI) – Cultural Diversity (3 credits)
- NAS 105
- NAS 331
- SPAN 105
- NAS 220
- NAS 350
- NAS 310
- NAS 364
- NAS 330
- SOC 315

### Category VII (CAT VII) – Fine Arts (3 credits)
- ART 115
- ART 353
- GDSN 270
- ART 120
- ART 361
- MUS 110
- ART 150
- ART 362
- DRMA 109
- ART 204
- ENGL 311

### Category VIII (CAT VIII) – Humanities (3 credits)
- ART 100
- ENGL 310
- ENGL 114
- ENGL 330
- ENGL 201
- ENGL 385
- ENGL 202
- HUM 201
- ENGL 214
- MUS 101
- ENGL 221
- PHIL 200
- ENGL 222
- PHIL 210
- ENGL 309

### Category IX (CAT IX) – Technology (3 credits)
- AOT 301
- CIS 320
- CIS 110
- IT 100
MONTANA UNIVERSITY SYSTEM
General Education Transfer Policy

The Montana University System is committed to facilitating the ease of undergraduate student transfer to its campuses. Therefore, all campuses in the Montana University System will recognize the integrity of general education programs offered by units of the Montana University System and the three publicly supported community colleges in Montana, the seven tribal colleges and regionally accredited independent colleges in the State of Montana.

Block Transfer Policy
Undergraduate students who have completed an approved general education program of between 30 and 45 lower division credit hours at one of the institutions noted above and who transfer to another of those institutions will be deemed to have met the lower division general education requirements of the campus to which the students have transferred. The student may be required to take additional coursework at the upper division level that is part of an approved general education program at the new campus.

The Montana University System Core
Students that have completed less than 20 general education credits will be required to complete the approved general education program at the campus to which they transfer. All general education transfer credits that are part of the MUS Core will be reviewed for possible application in the approved general education program at the campus.

Students who have completed 20 or more MUS core credits, but do not satisfy the block transfer policy described in the preceding section may choose to complete either the MUS core or the approved general education program at the campus to which they transfer. The student should make that decision in consultation with a faculty advisor.

The Montana Transferable Core Curriculum represents an agreement among community, tribal, and publicly funded colleges and universities in the State of Montana. It assures the transfer of up to 30 semester credits for those students enrolled in courses prescribed within each of eight discipline areas at a participating host institution. The eight discipline areas are:

- Natural Sciences (with labs) 6 semester credits maximum
- Social Sciences 6 semester credits maximum
- Mathematics 3 semester credits maximum
- English Composition 3 semester credits maximum
- Humanities 3 semester credits maximum
- Fine Arts 3 semester credits maximum
- History 3 semester credits maximum
- Cultural Diversity 3 semester credits maximum
- Total Semester credits maximum 30

Satisfactory completion of the courses listed in the Transferable Core Curriculum will permit the student to receive credit equivalent to the lower-division degree requirements of the receiving college or university. When transferred as a core of 30 semester credits, nearly half of the receiving institution’s general education core requirements may be satisfied.

PLEASE NOTE THIS IMPORTANT LIMITATION:
Depending upon the major program into which the student transfers, additional lower division requirements may still be necessary for the transfer student to complete as part of the published programmatic prerequisites. This limitation means that, even though a transfer student may satisfy the basic requirements of the Montana University System general education transfer policy, his/her specific program of study may require additional and specialized courses in one or some of the eight (8) disciplines listed above. To earn the degree, transfer students will have to complete those specialized courses.

The following Montana State University-Northern courses will satisfy the Montana University System Statewide Core Curriculum. Consequently, in selecting general education coursework for transfer, a student may wish to use the following guide:

Natural Sciences-with labs (maximum of 6 semester credits)
- BIOL 140, Cell Biology (4)
- BIOL 141, Cell Biology Lab (1)
- BIOL 151, Essentials of Biology (4)
- BIOL 204, Essentials of Anatomy and Physiology (4)
- BIOL 217, Microbiology (4*)
- BIOL 221, Botany I (3)
- BIOL 222, Botany I Lab (2)
- BIOL 241, Anatomy and Physiology I (4*)
- BIOL 242, Anatomy and Physiology II (4*)
- BIOL 250 Undergraduate Research (3)
- BIOL 314, General Ecology (4*)
- BIOL 322, Botany II
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 324</td>
<td>Entomology</td>
<td>(3)</td>
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<tr>
<td>BIOL 334</td>
<td>Ornithology</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL 348</td>
<td>Zoology</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL 350</td>
<td>Zoology Laboratory</td>
<td>(2)</td>
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<tr>
<td>BIOL 406</td>
<td>Molecular Biology Techniques</td>
<td>(3)</td>
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<tr>
<td>BIOL 407</td>
<td>Freshwater Biology</td>
<td>(4)</td>
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<tr>
<td>BIOL 408</td>
<td>Flowering Plants of the Plains and Mountains</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL 415</td>
<td>Ecological Methods</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL 460</td>
<td>Advanced Microbiology</td>
<td>(3*)</td>
</tr>
<tr>
<td>BIOL 468</td>
<td>Molecular Biology and Genetics</td>
<td>(4*)</td>
</tr>
<tr>
<td>CHEM 111</td>
<td>General Chemistry</td>
<td>(3)</td>
</tr>
<tr>
<td>CHEM 112</td>
<td>Physiological Chemistry</td>
<td>(3*)</td>
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<tr>
<td>CHEM 121</td>
<td>General Inorganic Chemistry I</td>
<td>(3)</td>
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<tr>
<td>CHEM 122</td>
<td>General Inorganic Chemistry II</td>
<td>(3*)</td>
</tr>
<tr>
<td>CHEM 123</td>
<td>General Inorganic Chemistry I Lab</td>
<td>(2)</td>
</tr>
<tr>
<td>CHEM 124</td>
<td>General Inorganic Chemistry II Lab</td>
<td>(2*)</td>
</tr>
<tr>
<td>CHEM 311</td>
<td>Quantitative Analysis</td>
<td>(4*)</td>
</tr>
<tr>
<td>CHEM 312</td>
<td>Quantitative and Instrumental Analysis</td>
<td>(4*)</td>
</tr>
<tr>
<td>CHEM 341</td>
<td>Organic Chemistry I</td>
<td>(3*)</td>
</tr>
<tr>
<td>CHEM 342</td>
<td>Organic Chemistry II</td>
<td>(3*)</td>
</tr>
<tr>
<td>CHEM 343</td>
<td>Organic Chemistry I Lab</td>
<td>(2*)</td>
</tr>
<tr>
<td>CHEM 344</td>
<td>Organic Chemistry II Lab</td>
<td>(2*)</td>
</tr>
<tr>
<td>CHEM 351</td>
<td>Instrumental Analysis</td>
<td>(3*)</td>
</tr>
<tr>
<td>CHEM 356</td>
<td>Physical Chemistry</td>
<td>(3*)</td>
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<tr>
<td>ESCI 115</td>
<td>Foundations of Earth Science</td>
<td>(4*)</td>
</tr>
<tr>
<td>ESCI 204</td>
<td>Physical Geology</td>
<td>(4*)</td>
</tr>
<tr>
<td>ESCI 206</td>
<td>Historical Geology</td>
<td>(4*)</td>
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<tr>
<td>ESCI 208</td>
<td>Environmental Geology</td>
<td>(4*)</td>
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<tr>
<td>ESCI 307</td>
<td>Astronomy</td>
<td>(4*)</td>
</tr>
<tr>
<td>ESCI 310</td>
<td>Introduction to Paleontology</td>
<td>(3)</td>
</tr>
<tr>
<td>ESCI 405</td>
<td>Earth Science Investigations for Teachers</td>
<td>(3)</td>
</tr>
<tr>
<td>PHYS 114</td>
<td>Foundations of Physical Science</td>
<td>(3)</td>
</tr>
<tr>
<td>PHYS 231</td>
<td>Fundamentals of Physics I</td>
<td>(3)</td>
</tr>
<tr>
<td>PHYS 232</td>
<td>Fundamentals of Physics II</td>
<td>(3*)</td>
</tr>
<tr>
<td>PHYS 234</td>
<td>Fundamentals of Physics I Lab</td>
<td>(1 or 2)</td>
</tr>
<tr>
<td>PHYS 235</td>
<td>Fundamentals of Physics II Lab</td>
<td>(1 or 2)</td>
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Social Sciences (maximum of 6 semester credits)

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>CMSV 101</td>
<td>Introduction to Community Service</td>
<td>(3)</td>
</tr>
<tr>
<td>ECON 241</td>
<td>Microeconomic Principles</td>
<td>(3)</td>
</tr>
<tr>
<td>ECON 242</td>
<td>Macroeconomic Principles</td>
<td>(3*)</td>
</tr>
<tr>
<td>ECON 346</td>
<td>Business and Economic History of the United States</td>
<td>(3)</td>
</tr>
<tr>
<td>POL 134</td>
<td>American Government</td>
<td>(3)</td>
</tr>
<tr>
<td>POL 235</td>
<td>Political Ideologies</td>
<td>(3)</td>
</tr>
<tr>
<td>POL 303</td>
<td>American Constitution</td>
<td>(3)</td>
</tr>
<tr>
<td>PSYC 101</td>
<td>Introduction to Psychology</td>
<td>(3)</td>
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<tr>
<td>PSYC 205</td>
<td>Human Growth and Development</td>
<td>(3)</td>
</tr>
<tr>
<td>PSYC 315</td>
<td>Psychology of Development and Adjustment</td>
<td>(3)</td>
</tr>
<tr>
<td>SOC 101</td>
<td>Introduction to Sociology</td>
<td>(3)</td>
</tr>
<tr>
<td>SOC 240</td>
<td>Social Psychology</td>
<td>(3)</td>
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<tr>
<td>SOSE 201</td>
<td>Introduction to the Social Sciences</td>
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Mathematics (maximum of 3 semester credits)

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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>MATH 110</td>
<td>Mathematics for Liberal Arts</td>
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</tr>
<tr>
<td>MATH 112</td>
<td>College Algebra</td>
<td>(3)</td>
</tr>
<tr>
<td>MATH 116</td>
<td>Applied Statistics</td>
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</tr>
<tr>
<td>MATH 120</td>
<td>Mathematics for Elementary Teachers I</td>
<td>(3)</td>
</tr>
<tr>
<td>MATH 121</td>
<td>Mathematics for Elementary Teachers II</td>
<td>(3)</td>
</tr>
<tr>
<td>MATH 125</td>
<td>Trigonometry</td>
<td>(2*)</td>
</tr>
<tr>
<td>MATH 130</td>
<td>Pre-Calculus</td>
<td>(5)</td>
</tr>
<tr>
<td>MATH 133</td>
<td>Introduction to Calculus</td>
<td>(3*)</td>
</tr>
<tr>
<td>MATH 137</td>
<td>Calculus for Technology I</td>
<td>(3*)</td>
</tr>
<tr>
<td>MATH 138</td>
<td>Calculus for Technology II</td>
<td>(3*)</td>
</tr>
</tbody>
</table>
MATH 140, Probability and Statistics (4*)
MATH 220, Calculus and Analytic Geometry (5*)
MATH 221, Calculus and Analytic Geometry (5*)
MATH 310, Linear Algebra (3*)
MATH 323, Calculus and Analytic Geometry III (3*)
MATH 326, Differential Equations (3*)
MATH 330, Abstract Algebra (3*)
MATH 335, Elementary Number Theory (3*)
MATH 410, Numerical Analysis (3*)

English Composition (maximum of 3 semester credits)
ENGL 112, Written Communication II (3)**
ENGL 111, Written Communication I (3)**
ENGL 366, Technical Writing and Editing (3*)

Humanities (maximum of 3 semester credits)
ART 100, Introduction to Art (3)
ENGL 114, Introduction to Literature (3)
ENGL 201, American Literature I (3)
ENGL 202, American Literature II (3)
ENGL 214, Introduction to World Literature (3)
ENGL 221, English Literature I (3)
ENGL 222, English Literature II (3)
ENGL 309, Popular Genres (3)
ENGL 310, Literature for Children and Adolescents (3)
ENGL 330, Modern Literature (3)
ENGL 385, Shakespeare (3)
HUM 201, Introduction to the Humanities (3)
MUS 101, Introduction to Music History (3)
PHIL 200, Introduction to Philosophy (3)
PHIL 210, Ethics (3)

Fine Arts (maximum of 3 semester credits)
ART 115, Ceramics (3)
ART 120, Drawing I (3)
ART 150, Two-Dimensional Design I (3)
ART 151, Two-Dimensional Design II (3)
ART 204, Printmaking (3)
ART 353, Metal Sculpture (3)
ART 361, Art History of Western Civilization I (3)
ART 362, Art History of Western Civilization II (3)
DRMA 109, Drama Participation (3)
ENGL 311, Creative Writing (3)
GDSN 270, Introduction to Photography (3)
MUS 110, Introduction to Music Theory (3)

History (maximum of 3 semester credits)
HIST 131, American History I (3)
HIST 132, American History II (3)
HIST 141, History of Civilization I (3)
HIST 142, History of Civilization II (3)
HIST 216, Montana History (3)
HIST 374, Intellectual History of Western Civilization (3)

Cultural Diversity (maximum of 3 semester credits)
NAS 105, Introduction to Native American Language (3)
NAS 220, Introduction to Ethnic Indian Studies (3)
NAS 310, Native Cultures of North America (3)
NAS 330, American Indian Oral Tradition (3)
NAS 331, Literature By and About Native Americans (3)
NAS 350, Indian Law (3)
NAS 364, History of American Indians (3)
SOC 315, Race, Gender and Ethnic Relations (3)
SPAN 105, Elementary Spanish I (4)

*Course carries a college-level pre-requisite, and/or requires permission of the instructor.
TIME-TO-DEGREE ASSURANCE POLICY

The course requirements for each degree program offered by Montana State University-Northern are set out in this catalog.

The University makes reasonable efforts to accommodate the reasonable scheduling needs of its students. However, it is unlikely that the University will be able to schedule classes for the personal convenience of students, and it is under no obligation to do so. Students who wish to graduate within the two- and four-year time frames contemplated by this assurance are expected to devise a written plan of study with their advisor. This written plan of study must be on file in the advisor’s and the Registrar’s Office.

Both the student and the University must meet certain obligations in order to assure completion of degree programs within the specified time frame. The student must meet the prerequisites for all required courses and register for these courses within the prescribed time frame. If the student is unable to register for a prescribed course within the prescribed time frame due to failure of the University to schedule the course at the specified time, or due to a scheduling conflict between required courses at the specified time, it is the student's responsibility to bring this problem to the attention of the Registrar or Dean of the academic college which administers the student's major. It is the University's responsibility in these cases to create an accommodation that enables the student to meet the specified requirement at the specified time.

Any deviation of the student from the course requirements or sequences specified for his/her initially declared course of study will nullify the University's responsibility to ensure the student's graduation within the two- or four-year time frame. Failure of the student to notify the University of a course-scheduling problem prior to the beginning of the course deprives the University of the opportunity to accommodate the student, and nullifies the University's responsibility under this assurance.

Montana State University-Northern extends this time-to-degree assurance to transfer students within the Montana University System as follows: Students who are admitted to another unit of the system with the ultimate objective of transferring to Montana State University-Northern and receiving a degree from this unit may be jointly admitted to Northern when starting at the other unit.

In addition, certain two-year associate degree programs within the Montana University System are fully articulated with corresponding four-year baccalaureate degree programs at Northern. Jointly admitted students who are in such programs at two-year degree-granting institutions will receive information and faculty advising from Northern concurrent with their enrollment at the originating institutions. Jointly admitted students who follow the program specified by the articulation agreement for their Northern program will receive a full two years of credit toward their graduation program at Northern. When they begin their study at Northern, they can take advantage of the time-to-degree assurances set out above for students who begin their study at Northern, and they have the same responsibilities. Further information about joint admissions agreements is available from the Office of Admissions.
# OVERVIEW OF PROGRAMS AND SPECIAL PROGRAM REQUIREMENTS

## PROGRAMS IN ARTS AND SCIENCES

<table>
<thead>
<tr>
<th>Bachelor of Arts degrees</th>
<th>Bachelor of Science degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communications*</td>
<td>Biology</td>
</tr>
<tr>
<td>Community Service</td>
<td>Water Quality*</td>
</tr>
<tr>
<td>Graphic Design</td>
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<tr>
<td>Liberal Studies</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Associate of Applied Science degrees</th>
<th>Associate of Arts degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphic Design</td>
<td></td>
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<tr>
<td>Water Quality Technology:</td>
<td></td>
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<tr>
<td>Environmental Health</td>
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</tbody>
</table>

**Minors**

<table>
<thead>
<tr>
<th>Biology</th>
<th>Communications*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Service</td>
<td></td>
</tr>
<tr>
<td>Native American Studies</td>
<td></td>
</tr>
</tbody>
</table>

**Office:** Cowan Hall Room 105

The programs of Arts and Sciences prepare students to think, read, and write critically and to understand language and literature, philosophy, music, art, communication, drama, English, economics, geography, history, math, Native American studies, political science, the sciences, and sociology. The liberal arts curricula of this department present the historical and creative foundation of cultural heritage.

**Advising Information**

Students are encouraged to meet with their advisors at the beginning of each semester to confirm their plan of study and make any necessary adjustments. Meeting with an advisor before registering for classes each semester allows you (the student) to plan schedules that will meet their needs and assist them in completing requirements in an efficient manner.

*These programs are in moratorium. Please see the Provost (Cowan Hall 204) for availability of these degrees.
PROGRAMS IN NURSING

Bachelor of Science degree  
Nursing

Associate of Science degree  
Nursing

Office:  Cowan Hall Room 315

Montana State University-Northern offers multiple-entry/multiple exit nursing programs that include an Associate of Science degree in Nursing (ASN) and a Bachelor of Science degree in Nursing (BSN). LPN’s may apply for advanced standing in ASN nursing courses which will shorten their program of study by approximately 12 semester credits.

Montana State University-Northern’s bachelor and associate nursing programs are accredited by the National League for Nursing Accrediting Commission, (NLNAC), 61 Broadway, 33rd Floor, New York, New York 10006, 1-800-669-1656, extension 153 and are approved by the Northwest Association of Schools and Colleges. The Associate degree program is fully approved by the Montana State Board of Nursing.

Advising Information

You (the student) are encouraged to meet with your advisor at the beginning of each semester to confirm your plan of study and make any necessary adjustments. Meeting with an advisor before registering for classes each semester will allow you to plan a schedule that will meet your needs and assist you in completing requirements in an efficient manner.

The program prepares men and women for entry-level Registered Nurse positions in hospitals and other health care agencies. The ASN qualifies the graduate to write to the National Council Licensure Examination (NCLEX) to become a registered nurse. The ASN degree program is an intense, demanding, accelerated education option for students desiring the opportunity to become RN’s and enter the workforce sooner than the four-year degree. Both a three-year and a two-year program are offered.

The first year of the ASN program is offered in both Havre and Lewistown with clinical experiences at various sites in both communities. Students who begin the program in Havre can complete their second year in Havre or at the MSU-Northern Great Falls campus. Placement is determined by grade point average. Placement is limited at each site. Students who begin the program in Lewistown will complete the program at that site.

All students in the MSU-Northern Associate of Science program are required to take the Assessment Technologies Institute (ATI) proficiency examinations each semester. These examinations provide the student, faculty and program with information concerning student comprehension, application of nursing content and academic growth. Nursing students are required to pay fees of $62.00 to $85.00 for these examinations. These fees will be paid each semester and are not refundable.

The BSN provides the opportunity for registered nurses to continue their education in the profession. The BSN program follows the Rules and Statutes of the Montana State Board of Nursing and is fully accredited by the NLNAC. The major builds on previous nursing education and is directed toward an expanded educational base in the areas of nursing leadership and management, community health, and advanced clinical practice. The BSN graduate is prepared as a generalist to practice in varied settings and has the foundation for graduate education.

The BSN classes are scheduled innovatively to meet the needs of adult, non-traditional learners via the Internet. Most BSN students maintain their jobs and residences and are able to attend classes without moving to the university setting. It is usually possible to attain BSN clinical experiences in the student’s geographic area of residence.

Further information and program requirements may be obtained by calling the Department of Nursing office at 265-4196 or the University toll-free number, 1-800-662-6132, or by visiting the Department of Nursing Web page at http://www.msun.edu/academics/nursing. Interested BSN students can contact Renae Munson for questions concerning admission into the program. The faculty BSN advisor is Lisa Scheresky O’Neil, 406-265-3749.
Prerequisites for entering the Nursing Program:

**Associate of Science Degree**

The following is the policy for admission to the Associate of Science Degree in Nursing (ASN) program:

To be considered for admission the student must

1. Be admitted to Montana State University-Northern (a separate application to the University is required).
2. Submit official copies of all university transcripts to Montana State University-Northern. Please send the official copies to the Department of Nursing for initial processing. Submit all high school transcripts only if you are using a high school credit to meet a prerequisite. Transcripts will be evaluated to determine credit allotment and articulation. No course requirement, including basic skills courses, will be waived simply on the basis that the applicant has a prior college degree.
3. Have at least a 2.75 cumulative GPA and completed the following courses with a “C” or better: high school algebra, biology, and chemistry, or university-level equivalencies.
4. Applications are considered for the Fall semester until placements are filled. If there are more applicants than space, students with the highest cumulative GPA will be admitted first.
5. Licensed Practical Nurses may receive advanced standing into Level II nursing courses. Ask for an application and advanced standing procedure from the Department of Nursing.
6. Students who desire to transfer into the Associate Degree Program from another school of nursing may apply by submitting a petition to the Director of Nursing. Placement in the program is determined on an individual basis through transcript and/or course evaluations. Applicants may be asked to take a standardized or teacher-constructed test, and demonstrate specific skills in the University nursing laboratory or in a clinical setting. A grade of “C” or better in each required nursing and support course is necessary for admission to the nursing curriculum. Once placement is determined, admission is granted on a space-available basis.
7. The application for admission including all transcripts must be received by the Department of Nursing by no later than January 15 for the Fall Semester. LPN’s must have application and transcripts submitted to the Nursing Office by January 15 for admission to NURS 220, NURS 212, and Level II.
8. Applicants not admitted into the Nursing Program by their expected date of admission must reapply for future consideration.
9. The following required courses may be taken at MSU-Northern or at other accredited institutions. None of these courses are waived simply on the basis of a prior college degree. An advisor from the Department of Nursing will evaluate the transcripts from other institutions and will recommend the credit (if any) to be allowed.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Semester</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BIOL 217</td>
<td>Microbiology w/Lab</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>BIOL 241</td>
<td>Anatomy &amp; Physiology I</td>
<td>4</td>
<td></td>
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<tr>
<td>BIOL 242</td>
<td>Anatomy &amp; Physiology II w/Lab</td>
<td>4</td>
<td></td>
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<tr>
<td>**CHEM 112</td>
<td>Physiological Chemistry</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>*CIS 110</td>
<td>Introduction to Computers</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>*ENGL 111</td>
<td>Written Communication I</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>*MATH 110 or 112</td>
<td>Math for Liberal Arts OR College Algebra OR higher</td>
<td>4 3</td>
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</tr>
<tr>
<td>PSYC 101</td>
<td>Introduction to Psychology</td>
<td>3</td>
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<tr>
<td>*SPCH 141</td>
<td>Fundamentals of Speech</td>
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</table>

** Prerequisite required: CHEM 111 or high school chemistry

10. Prior to starting NURS 128 (and annually thereafter) the student must meet the following requirements:

a. The student must provide proof that s/he:
   1. had a physical examination verifying good health.
   2. had immunizations that are current for, or has documented proof of immunity to, the diseases of measles, mumps, and rubella (applied to students born after 1956).
   3. is current for tetanus and diphtheria vaccination (Td) according to the Center for Disease Control guidelines.
   4. had the hepatitis B vaccination series, including titer, or has a valid waiver on file.
   5. is free of tuberculosis.
   6. has professional liability insurance.
   7. has health insurance.
   8. has current class C CPR certification (CPR for Healthcare Providers).

b. Health standards must be met as required by participating clinical facilities. Additional tests must be taken as required by these facilities and the Department of Nursing faculty to document that such standards are met.

**Students Note:** You can not participate in clinical experiences if you fail to keep current your proof of requirements. Failure in clinical experience also results in failure in the nursing course(s).

**Bachelor of Science Degree**

The following is the policy for admission to the Bachelor of Science Degree in Nursing (BSN) program:

1. Be a graduate of an approved associate degree or diploma program of nursing. Graduates from a diploma program may be required to take additional general education coursework, depending on the transferability of completed work. Diploma graduates will receive 30 credits of advanced placement upon completion of general education requirements and 15 upper division nursing credits. The diploma graduate must document 2000 hours of nursing experience as a registered nurse.
2. Be licensed as a RN or eligible to sit for the NCLEX (Licensure required for clinical practicum courses).
3. Submit official copies of all university transcripts to Montana State University-Northern. Please send the official copies to the Department of Nursing office for initial processing. Submit all high school transcripts only if you are using a high school credit to meet a prerequisite.

Transcripts will be evaluated to determine credit allotment and articulation. No course requirement, including basic skills courses, will be waived simply on the basis that the applicant has a prior college degree.

4. Have at least a 2.25 cumulative GPA
5. Applications are considered on an ongoing basis. The first courses of the major sequence are offered each summer and fall semester. Students may take up to nine (9) credits prior to admission. However, students must be fully admitted into the nursing program PRIOR to enrolling in any practicum course.
6. Students who desire to transfer into the Bachelor of Science Program from another RN-to-BSN program may apply by submitting a petition to the Director of Nursing. Placement in the program is determined on an individual basis through transcript and/or course evaluations. Applicants may be asked to take a standardized or teacher-constructed test, and demonstrate specific skills in the university nursing laboratory or in a clinical setting. A grade of “C” or better in each required nursing and support course is necessary for admission to the nursing curriculum.

7. The following required general education courses may be taken at MSU-Northern or at other accredited institutions. None of these courses is waived simply on the basis of a prior college degree except as provided by the Montana Board of Regents policy. An advisor from the Department of Nursing will evaluate the transcripts from other institutions and will recommend the credit, if any, to be allowed.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>*CIS 110</td>
<td>Introduction to Computers</td>
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<td>*ENGL 111</td>
<td>Written Communication I</td>
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</tr>
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<td>*ENGL 112</td>
<td>Written Communication II</td>
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<td>Math for Liberal Arts OR College Algebra OR higher</td>
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</tr>
<tr>
<td>MATH 116 or 140</td>
<td>Statistics</td>
<td>3</td>
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<tr>
<td>BUS 250</td>
<td>Cultural Diversity elective</td>
<td>3</td>
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<td></td>
<td>Fine Arts elective</td>
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<td></td>
<td>History electives</td>
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<td></td>
<td>Humanities electives</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Social Science electives</td>
<td>3</td>
</tr>
</tbody>
</table>

8. Prior to starting the clinical practicum courses (and annually thereafter) the student must meet the following requirements:
   - The student must provide proof that s/he
     1. had a physical examination verifying good health
     2. had immunizations that are current for, or has documented proof of immunity to, the diseases of measles, mumps, and rubella (applies to students born after 1956)
     3. is current for tetanus and diphtheria vaccination (Td) according to the Center for Disease Control guidelines
     4. had the hepatitis B vaccination series, including titer, or has a valid waiver on file
     5. is free of tuberculosis
     6. has professional liability insurance
     7. has health insurance
     8. has current Class C CPR certification (CPR for Healthcare Providers)
     9. has current RN licensure in the state where the clinical practicum will be conducted
   - Health standards must be met as required by participating clinical facilities. Additional tests must be taken as required by these facilities and the Department of Nursing faculty to document that such standards are met.

Additional Requirements for Admission to, and Continuation in Nursing Programs at MSU-Northern:
1. A University entrance physical exam.
2. Yearly proof of freedom from tuberculosis.
3. Immunizations or documented proof of immunity to the diseases of measles, mumps, rubella, diphtheria, tetanus, and Hepatitis B immunization series started (titre required six months after completion of series).
4. Any additional laboratory tests or health standards required by participating clinical facilities or Department of Nursing faculty to document health status and practices.
5. Evidence of Professional Liability Insurance, yearly.
6. Evidence of health insurance, yearly.
General Requirements for Progression and Graduation:

**Associate of Science Degree**

To assure progression through the program, the student must meet the academic and clinical requirements. Satisfactory classroom academic performance within a nursing course does not by itself assure progression through the program. When assigned to clinical situations, the student must meet the criteria that assure patient/client safety and welfare. Graduation is dependent upon nursing students meeting the professional standards and criteria for safe and effective nursing care as prescribed by the curriculum.

**Grades and How They Apply to Placement and Continuation in the Program:**

1. To continue in the program without interruption the student must maintain
   a. An overall grade point average (GPA) of 2.25 or better on a 4.00 scale
   b. A grade of “C” or better in each required course
2. Students progressing in uninterrupted sequence through the major and maintaining a 2.25 cumulative GPA or above have clinical space priority.
3. If there are more students than places available at the extended campuses, students with the highest cumulative grade point averages will be selected first for placements.
4. Students who receive a grade lower than “C” in any required course may repeat the course one time. Level II nursing students who receive a grade less than a “C” in any nursing course will be required to become a part-time student. If a student receives a grade lower than a “C” in the same course twice, that student will be dropped from the nursing major.
   a. A required nursing course may be repeated only once on a space available basis by permission of the faculty.
   b. A student who has less than a “C” in any required non-nursing course is required to retake the course and pass with a “C” or better before progressing. Any such course may be repeated only once.

**Reinstatement after Withdrawal from the Nursing Major:**

Reinstatement to the nursing major is not automatic. A former student must submit a petition to the Director of the Department of Nursing before the beginning of the semester. The petition must state the reason the student was unsuccessful and what has been done to increase the chances for success if readmitted. Students petitioning for reinstatement may be required to pass a written test and a practical performance exam for placement into the nursing program. Students who have left the program for non-academic reasons, and have been out for one year or less, may be reinstated without testing on a space available basis.

Additional information regarding student policies and guidelines may be found in the Nursing Student Handbook, which is updated annually.

**Faculty Academic Advisors:**

1. Faculty advisors are assigned to each student at the beginning of NURS 128. As students progress to Level II, new advisors may be assigned. New advisors may also be assigned as students progress to the BSN program.
2. A student is expected to meet with his/her advisor a minimum of twice per semester to discuss grades, academic plans or problems, course changes, etc. The student or the advisor has the right to initiate a change in the advising assignment. Students are encouraged to confer with advisors as academic problems, conflicts, or concerns arise.

**Transportation:**

Students must provide their own transportation to and from the classroom and the clinical areas.

**Program fee:**

All students admitted into the ASN program pay a $175 program fee per semester.

**Summary:**

If the above criteria are not met, or if there is any circumstance that may constitute an unreasonable risk to the safety and well being of the patient/client, a student may be removed from the program. The final decision regarding removal will be based on the judgment of the Nursing faculty and Director.
Bachelor of Science Degree

NOTE: RN licensure, or eligibility to sit for RN licensure, is required for admission to the Bachelor of Science program.

To assure progression through the program, the student must meet the total academic and clinical requirements. Satisfactory classroom academic performance within a nursing course does not by itself assure progression through the program. When assigned to clinical situations, the student must meet the criteria that assure patient/client safety and welfare. Graduation is dependent upon nursing students meeting the professional standards and criteria for safe and effective nursing care as prescribed by the curriculum.

Grades and How They Apply to Placement and Continuation in the Program:

1. To continue in the program without interruption the student must maintain:
   a. An overall grade point average (GPA of 2.00 or better on a 4.00 scale)
   b. A GPA of 2.25 or better in both the major and the minor
   c. A grade of “C” or better in each required course

2. Students progressing in uninterrupted sequence through the major and maintaining a 2.25 cumulative GPA or above have clinical space priority.

3. Students who receive a grade lower than “C” in any required course will be required to repeat the course and continue on a part-time basis. Students must petition for re-instatement (See Nursing Student Handbook for Procedure).
   a. A required nursing course may be repeated only once on a space available basis by permission of the faculty. Students accumulating two grades below “C” in required nursing courses will be dropped from the program and may not be readmitted. The faculty reserves the right to review each case on an individual basis.
   b. A student who has less than a “C” in any required non-nursing course is required to retake the course and pass with a “C” or better before progressing. Any such course may be repeated only once.

4. Students must complete the BSN degree within five (5) years of beginning the program.

Reinstatement after Withdrawal from the Nursing Major:
Reinstatement to the nursing major is not automatic. A former student must direct a petition to the Director of the Department of Nursing before the beginning of the semester. The petition must state the reasons the student was unsuccessful and what has been done to increase the chances for success if readmitted. Students petitioning for reinstatement may be required to pass a written test and a practical performance exam for placement into the nursing program. Students who have left the program for non-academic reasons, and have been out for one year or less, may be reinstated without testing on a space available basis.

Additional information regarding student policies and guidelines may be found in the Nursing Student Handbook, which is updated annually.

Courses to be Taken and Where They Are Offered:
This information is provided in sample curriculum plans for the BSN degree. These are available as separate documents and should be included in the packet of application materials.

Faculty Academic Advisors:
Faculty advisors are assigned to each student upon admission to the program. A student is expected to meet with his/her advisor a minimum of twice per semester to discuss grades, academic plans or problems, course changes, etc. The meeting may be face-to-face, by email, or by telephone. The student or the advisor has the right to initiate a change in the advising assignment. Students are encouraged to confer with advisors as academic problems, conflicts, or concerns arise.

Transportation:
Students must provide their own transportation to and from the classroom and the clinical areas.

Requirements Prior to Starting Clinical Courses (NURS 349, NURS 441, NURS 447):
The student must meet the following requirements prior to starting any clinical practicum and maintain currency throughout the nursing program. Students cannot participate in the clinical experiences if they fail to keep the proof of requirements current. This will result in failing the nursing course(s).

1. The student must provide proof that s/he:
   a. had a physical examination verifying good health.
   b. had immunizations that are current for (or has documented proof of immunity to the diseases of measles, mumps, and rubella). This requirement applies to students born after 1956.
c. carry out patient/client care assignments with the required knowledge and skill as determined in classroom theory and laboratory demonstrations.

d. is current for tetanus and diphtheria vaccine (Td) according to the Center for Disease Control guidelines

e. had the hepatitis B vaccination series including titer or has a valid waiver on file.

f. is free of tuberculosis.

g. has professional liability insurance.

h. has health insurance.

i. has current Class C CPR certification (Basic Life Support for Health Professionals).

2. Students are expected to participate in clinical experiences in hospitals, nursing homes, and other community agencies at varied time schedules. Students who are employed must arrange with employers to allow for flexibility in meeting their academic and clinical schedules. The clinical schedule may involve day, evenings, and weekend assignments.

3. Participation in the clinical area is dependent upon space availability. Those students having the highest academic achievement will be selected first, if the space is limited.

4. Faculty members have an obligation to the patient/client to ensure that nursing students who care for them are competent to do so. In the interest of safeguarding the patient/client’s welfare, students must meet the criteria detailed in the Nursing Student Handbook. To be allowed to participate in clinical assignments the student must:

a. demonstrate good health status and practices and be free from any condition that could jeopardize patient/client safety and comfort.

b. demonstrate emotional stability.

c. demonstrate sensitivity to patient/client safety and comfort.

d. practice within legal standards and demonstrate regard for professional ethics.

e. comply with agency requirements pertinent to student participation.

f. carry out patient/client care assignments with the required knowledge and skill as determined in classroom theory and laboratory demonstrations.

If the above criteria are not met, or if there is any circumstance that may constitute an unreasonable risk to the safety and well being of the patient/client, a student may be removed from the program. The final decision regarding removal will be based on the judgment of the Nursing faculty and Director.
PROGRAMS IN TEACHER EDUCATION

Bachelor of Science in Education degrees
- Business Education (5-12)*
- Elementary Education (K-8)
- English (5-12)
- General Science (5-12)
- Health and Physical Ed (K-12)
- Social Science-Broadfield (5-12)

Teaching Minors
- Art (K-12)
- Business Education (5-12)*
- English (5-12)
- Health and Physical Ed (K-12)
- Reading Specialist (K-12)
- Traffic Education (K-12)

Bachelor of Science degrees
- Industrial Technology (with a 5-12 teaching option)
- Health Promotion (non-teaching)

Non-Teaching Minor
- Health Promotion

Office: Cowan Hall Room 105

Montana State University-Northern’s education programs are accredited by the Montana Board of Public Education and the National Council of Accreditation for Teacher Education (NCATE).

Advising Information
Students are encouraged to meet with their advisor at the beginning of each semester to confirm their plan of study and make any necessary adjustments. Due to course scheduling changes, staff assignments, and other conflicts, it may not be possible to follow the suggested plans exactly. Meeting with an advisor before registering for classes each semester will allow students to plan a schedule that will meet their needs and assist them in completing requirements in an efficient manner.

Undergraduate Teacher Education
The undergraduate Teacher Education Program contains four broad areas of emphasis:
1. Providing a comprehensive general education background;
2. Developing an in-depth background in one or more academic areas commonly taught in the public schools;
3. Completing professional preparation focusing on pedagogy, consisting of courses and K-12 school practicums that lead to a recommendation for educator licensure.
4. Participating in community and campus wide extra-curricular experiences and/or elective courses that will enhance the prospective teacher's personal development.

Teacher Recommendation for Licensure
Teacher Education graduates who complete an approved program of study and meet high academic standards (cumulative GPA of 2.5) are eligible to apply for an educator’s license. Students must make application for licensure through Montana State University-Northern's Teacher Certification Officer to the Office of Public Instruction. Because of current review of licensure by the Office of Public Instruction, eligibility requirements from the college may change. All applications for licensure will be reviewed on the basis of the rules under which the license is issued.

Students completing Montana State University-Northern's Elementary Teacher Education Program will be recommended for a Standard Class II Educator License which qualifies holders to teach kindergarten through grade eight (K-8). Students completing one of Montana State University-Northern's Secondary Teacher Education Programs will be recommended for a Standard Class II Secondary Educator License, which qualifies holders to teach their subject area in grades 5-12 or K-12, depending on the program completed.

In addition to their general professional education requirements, secondary education majors will complete an academic major with no minor or a combination of a regular major with a minor. Individuals obtaining a Montana Class II Educator License will be licensed in their major and minor areas. Students who complete majors with no minor (40-60 credits) will be licensed to teach subjects within the area encompassed by that discipline. Students who complete a regular major (30-39 credits) and a minor (20-29 credits) will be licensed to teach in the two areas. Areas of Concentration, an option that is available in some programs, do not lead to licensure or endorsement in that area of concentration.

*These programs are in moratorium. Please see the Provost (Cowan Hall 204) for availability of these degrees.
Elementary Education
The University-wide General Education Requirements and Teacher Education Program pre-requisites provide Elementary Education majors with 64 hours of broadly based subject matter background. In addition, Elementary Education majors must select either one K-12 licensure minor with a minimum of 20 credits, or two non-licensure areas of concentration with a minimum of 14 credits each. K-12 licensure minors are available in art, health and physical education, traffic education and reading. There are 12 possible subjects in which areas of concentration can be developed. These areas of concentration are developed in consultation with the advisor and may be selected from the following: art, biology, early childhood, English, general science, health and physical education, history and social science, mathematics, music, physical science, reading and science. Additional areas of teaching concentration may be cooperatively planned between specific Colleges and the Director of Education on an individual basis. Although all elementary majors will receive the same license and grade level endorsement, it is recommended that students planning to teach in the upper grade levels include the addition of minors in their program. This is especially desirable for teaching in grades seven and eight. Students desiring added licensure should consider a K-12 minor.

Secondary Education
Accreditation standards of Montana middle and secondary schools identify the particular endorsements and, in many instances, the number of credit hours of subject matter teachers must possess. Students should consult with the Dean of Education, Arts, Sciences, and Nursing if there are questions regarding the middle and/or high school courses in which their major or minor will permit them to teach.

Several majors and minors (Art, Health and Physical Education, Traffic Education, Reading Specialist) lead to a K-12 license. This license makes possible a teaching assignment in the specific subject in all grades from kindergarten through grade 12. Students seeking this type of licensure must plan course work and field experiences at both the elementary and the secondary grade levels.

Graduates of all Montana State University-Northern Teacher Education Programs will be eligible for a recommendation for a Standard Class II Educator License. However, prospective teachers who plan to teach selected high school career and technical education subjects in technical schools, community colleges, junior colleges, or other programs where state licensure is a requirement for federal or state reimbursement programs must also complete specific career and technical education course work and meet appropriate on-the-job work experience requirements. The evaluation of an individual's on-the-job work experience is completed by personnel in the Montana Office of Public Instruction. Students seeking to teach in a reimbursed career and technical education program should check with their advisor early in their program.

Admission to Teacher Education
Upon declaring an education major a student will be classified as a pre-education major. Each student is assigned an education advisor. With the assistance of an advisor, each student should plan a program of study and work toward Level One Admission to Teacher Education.

All students seeking admission to the undergraduate education program for initial educator license are required to apply to the Department of Education for Admission to Teacher Education.

Level One. Admission to Teacher Education is required of all students prior to their enrolling in any professional education core courses at the 300 level or above. After admission to Level One, students will be referred to as candidates and be classified as education majors.

The following General Education Core courses have to be completed with a “C” or better before application to Level One Teacher Education:

A. ENGL 112
B. MATH 112 and MATH 120
C. SPCH 142
D. CIS 320

Criteria for Level One Admission to Teacher Education:

A. Completion of Level One application
B. Completion of 54 semester credits of course work, including general education core, with a minimum cumulative grade point average of 2.5
C. Completion of EDPY 215, EDUC 100, HPE 235, and PSYC 205 with a minimum grade of “C”
D. Demonstration of ability to communicate verbally in a fluent and understandable manner
E. Recommendation by the student's major advisor
F. Submission of references from supervisors or faculty
G. Completion of current First Aid and CPR Certification
H. Background check
I. Student insurance

Admission to Level One of the Teacher Education is granted by the Teacher Education Admission and Retention Committee after a thorough evaluation of the student’s application. The application packet is available in the Education Office online at [http://educ.msun.edu](http://educ.msun.edu).

Student applicants will be notified according to the following classifications:
1. Approved for Level One admission
2. Granted provisional admission (one semester only)
3. Not approved

A student who is granted provisional admission will be monitored for progress and will be dropped from the Teacher Education Program if the provisions specified for provisional status are not met. A student who is not approved or a candidate who is suspended from the program may appeal the decision. The first step in the appeals process is to notify the Dean of the College of Education, Arts & Sciences, and Nursing in writing. The complete appeals process is outlined in the Student Handbook. It is the responsibility of the student to familiarize themselves with the policy. Additional copies of the handbook are available from the education department. Other department information is available at [www.educ.msun.edu](http://www.educ.msun.edu).

Student and candidate progress in the program is closely monitored by the department faculty. All candidates’ performances are reviewed each semester by a faculty committee. Decisions for suspension and retention are forwarded to the appropriate administration.

In addition, the following applies:
- No required professional education major, minor, or area of concentration courses may be taken on a pass-fail basis (except EDUC 400 and EDUC 450 and EDUC 475).
- Students not admitted to the program, candidates who do not have the required prerequisites, or students suspended from the program who are registered for EDUC courses above the 300 level may be administratively withdrawn from the course(s).
- Grades below C are not accepted in required professional education courses or in courses included in the major, minor, or areas of concentration.
- Coursework five (5) years or older will be evaluated on a case-by-case basis for matriculation into the program.

**Student Teacher Practicum**
Candidates seeking to be recommended for an educator license through the Teacher Education Program at Montana State University-Northern must successfully complete a teaching practicum in their senior year. The candidate must apply and have acquired Final Admission to Level Two of the Teacher Education Program prior to enrolling in EDUC 400 Elementary Teaching Practicum and Seminar, EDUC 450 Secondary Teaching Practicum and Seminar, or EDUC 475 Elementary and Secondary Teaching Practicum and Seminar. In addition, the candidate must have completed all professional education courses. The teaching practicum is a full time responsibility; therefore, the candidate will not be allowed to enroll in additional courses during this time. Candidates wishing to student teach must apply by mid-term the semester before they plan to student teach. Dates are posted for each semester’s application deadline. A $100 fee is assessed to all candidates enrolled in EDUC 400, EDUC 450, or EDUC 475.

**Teacher Education Prerequisites**
Some credits identified as Teacher Education Program prerequisites should be substantially completed during the freshman and sophomore years and prior to making application for Level One Admission to Teacher Education and enrollment in specific upper division teacher education courses.

**Professional Education**
Professional education courses are designed to prepare students to apply their academic training to their interactions with students, parents, colleagues, and administrators in the K-12 schools and may be taken after receiving Admission to Teacher Education. This portion of the degree requirement is designed to help students plan and prepare instructional experiences, develop insight into how children learn and grow, and provide actual experience with the manner in which K-12 schools are organized and operated.
The **Elementary Education Core** requirements consist of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPY 215 Intro to Education Psychology</td>
<td>3</td>
</tr>
<tr>
<td>EDPY 350 Education and Psychology Exceptional Children</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 100 Foundations of Education</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 300 Introduction to Curriculum Planning and Practice*</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 302 Methods of Teaching Elementary Mathematics*</td>
<td>2</td>
</tr>
<tr>
<td>EDUC 304 Methods of Teaching Elementary Science*</td>
<td>2</td>
</tr>
<tr>
<td>EDUC 306 Methods of Teaching Elementary Social Studies*</td>
<td>2</td>
</tr>
<tr>
<td>EDUC 310 Methods of Teaching Integrated Creative Arts*</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 334 Teaching the Integrated Language Arts*</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 335 Fundamental and Corrective Strategies in the Elementary Reading Program*</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 336 Integrated Field Experience*</td>
<td>2</td>
</tr>
<tr>
<td>EDUC 351 Diversity and Technology in the Classroom</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 353 Health Enhancement for Elementary Education</td>
<td>2</td>
</tr>
<tr>
<td>EDUC 376 Assessment in Education*</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 380 Classroom Environment and Management*</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 430 Integrating Content Across the Curriculum</td>
<td>2</td>
</tr>
<tr>
<td>EDUC 448 Reading Materials for the Elementary Child</td>
<td>2</td>
</tr>
<tr>
<td>EDUC 455 Advanced Practicum in Education*</td>
<td>3</td>
</tr>
<tr>
<td>HPE 235 Principles of Health &amp; Wellness</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 205 Human Growth and Development</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 400 Elementary Teaching Practicum and Seminar*</td>
<td>12</td>
</tr>
<tr>
<td><strong>OR</strong></td>
<td></td>
</tr>
<tr>
<td>EDUC 475 Elementary and Secondary Teaching Practicum and Seminar*</td>
<td>12</td>
</tr>
</tbody>
</table>

*Upon Admission to Teacher Education, prescribed courses must be taken in sequence (blocks).

**TOTAL 65**

The **Secondary Education Core** requirements consist of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPY 215 Intro to Education Psychology</td>
<td>3</td>
</tr>
<tr>
<td>EDPY 350 Education and Psychology Exceptional Children</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 100 Foundations of Education</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 321 Integrating Technology into Education</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 376 Assessment in Education*</td>
<td>1</td>
</tr>
<tr>
<td>EDUC 445 Teaching Reading, Writing &amp; Critical Thinking Across the Curriculum</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 455 Advanced Practicum in Education*</td>
<td>2</td>
</tr>
<tr>
<td>EDUC 450 Secondary Teaching Practicum and Seminar*</td>
<td>12</td>
</tr>
<tr>
<td>HPE 235 Principles of Health &amp; Wellness</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 205 Human Growth and Development</td>
<td>3</td>
</tr>
</tbody>
</table>

**TOTAL 39**

VOED 350 Principles of Industrial/Technology Technology, VOED 360 Analysis & Prep Lab Management, and VOED 370 Methods of Teaching Industrial/Technology Education are suggested for Industrial Technology and Business Education majors (or minors) who plan on being able to verify appropriate work experience through the Office of Public Instruction and who want to qualify for vocational approval to teach in a state or federally reimbursed program.
## PROGRAMS IN TECHNICAL SCIENCES

### Bachelor of Science degrees
- Agricultural Operations Technology
- Automotive Technology
- Business Technology
- Civil Engineering Technology*
- Computer Engineering Technology
- Computer Information Systems
- Design Drafting Technology
- Diesel Technology
- Diesel Technology: Field Maintenance Option
- Industrial Technology
- Industrial Technology (Teaching Option)

### Associate of Applied Science degrees
- Agricultural Mechanics Technology
- Agricultural Technology
- Automotive Technology
- Automotive Technology (Auto Body)
- Civil Engineering Technology
- Computer Engineering Technology
- Computer Information Systems
- Design Drafting Technology
- Diesel Technology
- Engineering Technology: Electronics Engineering Technology
- Plumbing
- School Business Administration

### Associate of Science degree
- With a program of study in Business Technology

### Minors
- Accounting
- Agricultural Mechanics Technology
- Applied Agriculture
- Automotive Technology
- Automotive Technology: Auto Body*
- Business Technology
- Civil Engineering Technology*
- Computer Information Systems
- Design Drafting Technology
- Diesel Technology
- Diesel Technology: Field Maintenance Option
- Marketing:
  - Technical Sales & Service
- Small Business Management

### Certificate
- Automotive Technology
- Welding Technology

### Departmental Certificate
- Agricultural Mechanics Technology
- Automotive Technology: Auto Body
- Land Survey Technology

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**Office:** Brockmann Center Room 210

The curricula offered by the College of Technical Sciences combines significant hands-on experience with foundations in liberal arts for a comprehensive learning experience.

**Advising Information**

You (the student) are encouraged to meet with your advisor at the beginning of each semester to confirm your plan of study and make any necessary adjustments. Meeting with an advisor before registering for classes each semester prepares you to plan a schedule that meets your needs and assists you in completing requirements in an efficient manner.

*These programs are in moratorium. Please see the Provost (Cowan Hall 204) for availability of these degrees.
# PROGRAMS IN GRADUATE STUDIES

## Master of Education degrees
- Counselor Education
- General Science*

## Master of Science degree
- Learning Development

## K-12 Principal Endorsement

*Office: Cowan Hall Room 105*

The graduate program “Policy and Procedure Manual” is subject to change. Please check with your advisor regarding the most current policy or on-line at http://grad.msun.edu.

The graduate programs provide sound academic preparation for individual graduate students, taking into consideration the student's experience, interests, and previous education. The programs provide studies that focus on recognition and definition of problems, data gathering, interpretation, and application.

Students who hold Class II licensure, have three years teaching experience, and have successfully completed the Master of Education degree will be recommended for a Class I Teaching License.

Students who complete the Master of Education, Counselor Education Option, but lack teacher licensure may be eligible for the Class 6 Specialist Certificate.

### Classification of Graduate Students
All students not matriculated for specific degrees are classified as graduate, non-degree students.

### Graduate Admission
Students who apply for admission to Graduate Studies will be asked to state their objectives for degrees, credentials, or certification.

This statement should apply to any of the areas described below:
1. Master of Education in:
   - Counselor Education
   - General Science*
2. Master of Science in Education in:
   - Learning Development
3. Other certification or licensure objectives.

### Advising
Upon Admission to Graduate Studies and the declaration of Master's degree objectives, the Graduate Office will assign the student an advisor who will assist in planning a program to meet the individual's objectives.

### Residence, Transfer, and Extension Credit
A maximum of 25% of the required credit hours to complete the degree can be transfer courses. Courses accepted for transfer credit must have been earned at the graduate level from an accredited institution and carry a letter grade of "B" or better. Courses which carry grades such as "P" or "S" are unacceptable for transfer credit.

### Credit Earned Before Matriculation
Up to 10 semester-hours of course credits earned by Montana State University-Northern students, or the credits completed in the first semester prior to degree matriculation, may be applied toward a graduate degree.

### Credit Load
A student may carry up to 12 credits of graduate coursework in any semester.

*These programs are in moratorium. Please see the Provost (Cowan Hall 204) for availability of these degrees*
Standards of Scholarship
A student admitted to graduate study must maintain a grade average of "B" or better in all graduate work. Students receiving a grade of "C", "D", or "F" may repeat the course one time. The original grade shall remain on the transcript and be computed in the cumulative GPA. Students who receive an “incomplete” for a class must complete the course requirements by the end of the following semester or the grade will revert to an “F”. A student who fails to meet these standards will be placed on probation, suspended from graduate study, or dismissed from the University. Decisions on such matters will be made by the Graduate Council in consultation with the appropriate advisor. A student who is suspended from Graduate Study or dismissed from the University may, through the petition procedure, request a review of the case by the Provost.

Admission to Candidacy
Admission to Candidacy is granted when the student has obtained a minimum of nine (9), but fewer than fifteen (15) credits, in a degree program and has satisfied the requirements listed below.

The following qualifications and procedures are necessary for Admission to Candidacy:

1. **Graduate Record Examination or Miller Analogy Test**
   Students seeking the Master of Education degree must complete the General Test of the Graduate Record Examination with a specified minimum score, or the M.A.T. before gaining Admission to Candidacy in a program. Students should contact the Graduate Office for specific information.

2. **Scholarship**
   At the time of application for Admission to Candidacy to a program, the student must demonstrate adequate proficiency in oral and written communication and have a grade point average (GPA) of 3.00 or above for all graduate work taken at Montana State University-Northern to be applied toward the Master's degree.

3. **Removal of Deficiencies**
   Any deficiencies in the student's undergraduate program (identified at the time of admission to graduate studies) must be removed before making application for Admission to Candidacy for a Master's degree.

4. **Program of Study**
   As part of the application for matriculation, each candidate will file a program of study for a specific degree. The program of study will meet all graduation requirements and will be kept in the Graduate Office. Subsequent deviations must be appropriately approved. Contact the Graduate Office for specific admission requirements for each program.

Comprehensive Examinations
Candidates for a Master's degree shall complete a comprehensive evaluation during the last semester of enrollment in the graduate program. Such evaluations consist of both written and oral examinations. Candidates should notify their advisor and the Graduate Programs Office of their intention to complete the examinations and complete their application for graduation. The written examination assesses the student's professional experience, knowledge, and understanding. This examination is developed, administered, and evaluated by members of the student's Graduate Program Committee.

The candidate's advisor generally serves as the chairperson of the Graduate Program Committee, which is appointed by the Graduate Council. The Graduate Program Committee also administers the comprehensive oral examination for each degree candidate and shall assign a grade of pass or fail for the comprehensive evaluation based on its determination of the candidate's competence. Those students who choose to write a thesis must file their thesis before their comprehensive examinations.

Application for Graduation
A candidate for the Master's degree must file an application for graduation with the Registrar’s Office at least one semester prior to the semester in which the work for the degree is anticipated to be completed. In addition, the student's advisor must indicate approval for graduation to the Graduate Council.
Requirements for Graduation
It is the responsibility of the Graduate Council to certify that a student has met all the requirements for the degree, certificate, or credential sought. The requirements for graduation include:

- Filing an application for graduation at least one semester prior to the semester in which the degree is being granted.
- Completing all coursework as indicated on the approved program sheet. An approved petition must substantiate any changes.
- Maintaining a "B" (3.00) average in all graduate work presented for the approved program.
- Satisfactorily completing the required comprehensive examinations.
- Completing all credits applied to the program within six consecutive years or seven consecutive summers prior to the awarding of the degree.
- Completion of exit requirements.

Conferring of Degrees
Although the completion of a degree is posted on the student's transcript at the end of the semester in which it was earned, diplomas are conferred only at the conclusion of Spring Semester with commencement exercises held on campus. While attendance at the exercises is not mandatory, students are urged to participate.
# AGRICULTURE

## Bachelor of Science

### Agricultural Operations Technology

<table>
<thead>
<tr>
<th>General Education Core Required*</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category I Communication</td>
<td>6</td>
<td>ENGL 112</td>
<td>3</td>
</tr>
<tr>
<td>Category II Mathematics</td>
<td>3</td>
<td></td>
<td>3 or 4</td>
</tr>
<tr>
<td>Category III Natural Sciences with lab</td>
<td>6</td>
<td>AG 204</td>
<td>4</td>
</tr>
<tr>
<td>Category IV Social Sciences</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category V History</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category VI Cultural Diversity</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category VII Fine Arts</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category VIII Humanities</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category IX Technology</td>
<td>3</td>
<td>IT 100</td>
<td>3</td>
</tr>
</tbody>
</table>

*Accepted General Education Core courses are found on page 9.

### Required Courses

- AG 101 Animal Science .......................................................... 3
- AG 102 Plant Science ................................................................. 3
- AG 105 Agricultural Marketing & Economics ........................................ 3
- AG 125 Farm Management .............................................................. 3
- AG 150 Agricultural Computing ......................................................... 3
- AG 204 Soils (CAT III) ................................................................. (4)
- AG 218 Crop Production ................................................................. 4
- AG 230 Agricultural Pest Management ............................................... 4
- AG 244 Livestock Feeding ................................................................. 4
- AG 245 Livestock Production ................................................................. 3

### OR

- AG 254 Forage & Range Management ................................................. 4

### Agri-Business Option

Choose a minimum of nine (9) credits from one of the following lower division courses:

- ACCT 261 Principles of Accounting ............................................... 3
- AG 279 Cooperative Education .......................................................... 3
- BUED 245 Personal Finance .............................................................. 3
- BUS 100 Introduction to Business ....................................................... 3

(continued on next page)
BUS 110 Creative Problem Solving ................................................................................................................ 3
BUS 250 Business Statistics ........................................................................................................................... 3
BUS 271 Legal Environment of Business ...................................................................................................... 3

Choose one (1) of the following Upper Division Requirements and Options

**Agribusiness Option Requirements**

- BUS 300 Management in Organizations ................................................................................................. 3
- BUS 332 Human Resource Management ................................................................. .............................. 3
- BUS 335 Principles of Marketing ........................................................................................................... 3

**Agribusiness Option Upper Division (15 Credits Needed)**

- AOT 479 Cooperative Education ......................................................................................................... 3
- BUS 360 Project Management ............................................................................................................... 3
- BUS 380 Operations Management ....................................................................................................... 3
- BUS 405 Ethics in Management and Technology .................................................................................. 3
- BUS 430 Senior Project ......................................................................................................................... 3
- BUS 436 Sales and Sales Management ................................................................................................ 3
- SBM 402 Small Business Management ............................................................................................... 3
- SBM 416 New Venture Development ................................................................................................... 3

**OR**

**Agri-Technology Option**

**Choose a minimum of 9 credits from the following lower division courses:**

- AGMT 110 Introduction Agricultural Machines & Equipment ................................................................. 2
- AGMT 120 Forage Implements .............................................................................................................. 3
- AGMT 130 Introduction to Tractors ...................................................................................................... 3
- AGMT 205 Introduction to Grain Harvesting Equipment ...................................................................... 3
- AGMT 210 Tillage, Planting, & Spraying Implements ............................................................................ 3
- ATDI 134 Auto/Diesel Electrical/Electronic Systems I .......................................................................... 4
- ATDI 265 Heating and Air Conditioning ............................................................................................... 4
- IT 111 Industrial Safety/Waste Management ......................................................................................... 2
- IT 130 Construction Technology ....................................................................................................... 3
- METL 140 Introduction to Welding Cutting .............................................................................................. 3

**Agri-Technology Option Requirements**

- AGMT 410 Agricultural Machinery Management .................................................................................. 3
- ISET 308 Industrial Electronics ............................................................................................................. 4
- TSCI 304 Fuels & Lubricants (CAT III) ................................................................................................... 3

**Choose a minimum of 15 upper division credits from courses with prefixes of:**

AG, AGMT, AOT, ATDI, AUTO, CIS, DIES, DRFT, EET, METL, or TSCI ................................................. 15

**Total minimum credits required for degree** ............................................................................................. 120
Minors

Agricultural Mechanics Technology

Required Courses
AGMT 120 Forage Implements ................................................................. 3
AGMT 130 Introduction to Agricultural Tractors .................................... 3
AGMT 205 Intro to Grain Harvesting Equipment .................................. 3
AGMT 210 Tillage, Planting, & Spraying Implements ...................... 3
AGMT 350 Agricultural Tractor & Equipment Applied Technology .... 4
AGMT 370 Advanced Grain Harvesting Equipment ......................... 4
DIES 420 Diesel Shop Management .................................................. 2

Choose seven (7) credits from the following:
AG 101 Animal Science ....................................................................... 3
AG 102 Plant Science .......................................................................... 3
AG 204 Soils (CAT III) ....................................................................... 4
ATDI 134 Auto/Diesel Electrical/Electronic Systems I ....................... 4
DIES 104 Introduction to Diesel Engines .......................................... 3
DIES 114 Introduction to Diesel Engines Lab .................................... 3

Total credits required for minor ................................................................ 29

Applied Agriculture

Required Courses
AG 101 Animal Science ................................................................. 3
AG 102 Plant Science ................................................................. 3
AG 150 Agricultural Computing .................................................. 3
AG 440 Trends and Issues in Agriculture ........................................ 3

Choose a minimum of eight (8) credits from the following:
AG 204 Soils (CAT III) ................................................................. 4
AG 218 Crop Production ................................................................. 4
AG 244 Livestock Feeding ................................................................. 4
AG 254 Forage and Range Management .......................................... 4

Choose a minimum of six (6) (UD) upper division level credits from the following:
AG 305 Ag Commodity Marketing ............................................. 3
AG 350 Ag Computer Management ............................................. 3
AG 479 Cooperative Education ................................................... 3
AOT 300 Economic Development in Rural Areas ......................... 2
AOT 301 Global Positioning Systems (CAT IX) ............................. 2
AOT 310 Soil & Water Management ........................................... 2
AOT 315 Geographic Information Systems ................................. 2

Total minimum credits required for minor ..................................... 26
## Associate of Applied Science

### Agricultural Mechanics Technology

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 111 Written Communication I (CAT I)</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>SPCH 141 Fundamentals of Speech (CAT I)</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>SPCH 142 Interpersonal Communication (CAT I)</td>
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</tr>
<tr>
<td>MAAS 106 Elementary Technical Math</td>
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</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>MATH 110 Math for Liberal Arts (CAT II)</td>
<td>4</td>
</tr>
<tr>
<td>OR</td>
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</tr>
<tr>
<td>MATH 112 College Algebra (CAT II)</td>
<td>3</td>
</tr>
<tr>
<td>Technology (CAT IX)</td>
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### Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGMT 110 Introduction to Agricultural Machines and Equipment</td>
<td>2</td>
</tr>
<tr>
<td>AGMT 120 Forage Implements</td>
<td>3</td>
</tr>
<tr>
<td>AGMT 130 Introduction to Agricultural Tractors</td>
<td>3</td>
</tr>
<tr>
<td>AGMT 205 Grain Harvesting Equipment</td>
<td>3</td>
</tr>
<tr>
<td>AGMT 210 Tillage, Planting, &amp; Spraying Implements</td>
<td>3</td>
</tr>
<tr>
<td>ATDI 134 Auto/Diesel Electrical/Electronic Systems I</td>
<td>4</td>
</tr>
<tr>
<td>ATDI 264 Auto/Diesel Electrical/Electronic Systems II</td>
<td>4</td>
</tr>
<tr>
<td>ATDI 265 Heating and Air Conditioning</td>
<td>4</td>
</tr>
<tr>
<td>DIES 104 Introduction to Diesel Engines</td>
<td>3</td>
</tr>
<tr>
<td>DIES 114 Introduction to Diesel Engines Lab</td>
<td>3</td>
</tr>
<tr>
<td>DIES 115 Introduction to Diesel Fuel Systems</td>
<td>4</td>
</tr>
<tr>
<td>DIES 204 Intro to Hydraulics and Pneumatics</td>
<td>2</td>
</tr>
<tr>
<td>DIES 214 Intro to Hydraulics and Pneumatics Lab</td>
<td>2</td>
</tr>
<tr>
<td>DIES 216 Heavy Duty Power Trains</td>
<td>4</td>
</tr>
<tr>
<td>DIES 262 Diesel Engine Diagnosis and Repair</td>
<td>2</td>
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<tr>
<td>DIES 272 Diagnosis of Diesel Engine and Repair Lab</td>
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</tr>
<tr>
<td>METL 140 Introduction to Welding</td>
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<tr>
<td>METL 260 Repair and Maintenance Welding</td>
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Total minimum required credits for degree ........................................... 65
**Agricultural Technology**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
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<td>OR</td>
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<tr>
<td>IT 100 Introduction to Technology (CAT IX)</td>
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</table>

**Required Courses**

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<th>Credits</th>
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<td>3</td>
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<tr>
<td>AG 102 Plant Science</td>
<td>3</td>
</tr>
<tr>
<td>AG 105 Agricultural Marketing &amp; Economics</td>
<td>3</td>
</tr>
<tr>
<td>AG 125 Farm Management</td>
<td>3</td>
</tr>
<tr>
<td>AG 150 Agricultural Computing</td>
<td>3</td>
</tr>
<tr>
<td>AG 204 Soils (CAT III)</td>
<td>4</td>
</tr>
<tr>
<td>AG 218 Crop Production</td>
<td>4</td>
</tr>
<tr>
<td>AG 230 Agricultural Pest Management</td>
<td>4</td>
</tr>
<tr>
<td>AG 244 Livestock Feeding</td>
<td>4</td>
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<tr>
<td>AG 245 Livestock Production</td>
<td>3</td>
</tr>
<tr>
<td>AG 254 Forage and Range Management</td>
<td>4</td>
</tr>
<tr>
<td>IT 100 Introduction to Technology (CAT IX)</td>
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</tr>
<tr>
<td>Advisor Approved Electives (Lower Division)</td>
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</table>

**Choose ONE of the following Lower Division Emphasis:**

**Agri-Business Emphasis (9 credits needed)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ACCT 261 Principles of Accounting I</td>
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<tr>
<td>AG 279 Cooperative Education</td>
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<tr>
<td>BUED 245 Personal Finance</td>
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</tr>
<tr>
<td>BUS 100 Introduction to Business</td>
<td>3</td>
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<tr>
<td>BUS 110 Creative Problem Solving</td>
<td>3</td>
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<tr>
<td>BUS 250 Business Statistics</td>
<td>3</td>
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<tr>
<td>BUS 271 Legal Environment of Business</td>
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</tbody>
</table>

**Agri-Technology Emphasis (9 credits needed)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AGMT 110 Intro to Ag Machines &amp; Equipment</td>
<td>2</td>
</tr>
<tr>
<td>AGMT120 Forage Implements</td>
<td>3</td>
</tr>
<tr>
<td>AGMT 130 Introduction to Agricultural Tractors</td>
<td>3</td>
</tr>
<tr>
<td>AGMT 205 Introduction to Grain Harvesting Equipment</td>
<td>3</td>
</tr>
<tr>
<td>ATDI 134 Auto/Diesel Electrical/Electronic Systems I</td>
<td>4</td>
</tr>
<tr>
<td>ATDI 265 Heating &amp; Air Conditioning</td>
<td>4</td>
</tr>
<tr>
<td>IT 111 Industrial Safety/Waste Management</td>
<td>2</td>
</tr>
<tr>
<td>IT 130 Construction Technology</td>
<td>3</td>
</tr>
<tr>
<td>METL 140 Introduction to Welding and Cutting</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total minimum required credits for degree** ................................... 65
# Departmental Certificate*

## Agricultural Mechanics Technology

### Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AGMT 120 Forage Implements</td>
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<tr>
<td>AGMT 205 Introduction to Grain Harvesting Equipment</td>
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<tr>
<td>ATDI 134 Auto/Diesel Electrical/Electronic Systems I</td>
<td>4</td>
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<td>DIES 104 Introduction to Diesel Engines</td>
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<td>DIES 114 Introduction to Diesel Engines Lab</td>
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<tr>
<td>DIES 115 Introduction to Diesel Fuel Systems</td>
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</tr>
<tr>
<td>DIES 204 Introduction to Hydraulic &amp; Pneumatics</td>
<td>2</td>
</tr>
<tr>
<td>DIES 214 Introduction to Hydraulic &amp; Pneumatics Lab</td>
<td>2</td>
</tr>
<tr>
<td>DIES 216 Heavy Duty Power Trains</td>
<td>4</td>
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<tr>
<td>DIES 219 Heavy Duty Chassis</td>
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</table>

**Total credits required for certificate**: 32

* Students should note that departmental certificates are not University degrees.
ASSOCIATE OF ARTS

This is a degree designed for students who expect to complete a Bachelor’s degree at MSU-Northern but are undecided on a major, or who wish to complete their general education requirements at MSU-Northern before transferring to another institution to complete the remaining requirements for a Bachelor’s degree. Completion of the Associate of Arts degree at Northern satisfies all Bachelor degree general education requirements throughout the Montana University system.

The Associate of Arts degree requires that students complete MSU-Northern’s General Education Core. *Students enrolled in the Associate of Arts degree who plan to transfer to a Bachelor’s degree program should contact the office of the Dean of Education, Arts and Sciences, and Nursing early in their first semester for assistance in choosing electives from the Transferable Core and electives to support their future plans for study.

<table>
<thead>
<tr>
<th>MSU-Northern’s Required General Education Core*</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category I Communication</td>
<td>6</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category II Mathematics</td>
<td>3</td>
<td></td>
<td>3 or 4</td>
</tr>
<tr>
<td>Category III Natural Sciences with lab</td>
<td>6</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category IV Social Sciences</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category V History</td>
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<td></td>
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</tr>
<tr>
<td>Category VI Cultural Diversity</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category VII Fine Arts</td>
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<td></td>
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</tr>
<tr>
<td>Category VIII Humanities</td>
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<td></td>
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<td>Category IX Technology</td>
<td>3</td>
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</tbody>
</table>

**Total General Education Core Credits** ........................................................................................................33-34

Accepted General Education Core courses are found on page 9.

Advisor Approved Electives .................................................................................................................................27

**Total minimum credits required for degree** ........................................................................................................60

* Students must be careful NOT to mix the two cores. Please see the Dean or your advisor for more information.
ART

Minor

Teaching, K-12

Required Courses
ART 100 Introduction to Art (CAT VIII) ................................................................. 3
ART 115 Ceramics (CAT VII) ................................................................................. 3
ART 120 Drawing I (CAT VII) ............................................................................... 3
ART 150 Two Dimensional Design I (CAT VII) .................................................. 3
ART 254 Painting I .................................................................................................. 3

OR
ART 256 Watercolor Painting I .............................................................................. 3
ART 361 Art History of Western Civilization I (CAT VII) .................................... 3

OR
ART 362 Art History of Western Civilization II (CAT VII) .................................. 3
EDUC 259 Field Experience .................................................................................. 1
EDUC 310 Methods of Teaching Integrated Creative Arts .................................. 3

Total minimum credits required for minor ......................................................... 22

PLEASE NOTE: Students enrolled in this program may pay between $10 - $30/semester in course fees. These fees are in addition to tuition and other mandatory fees.
# AUTOMOTIVE TECHNOLOGY

## Bachelor of Science

### Automotive Technology

<table>
<thead>
<tr>
<th>General Education Core Required*</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category I Communication</td>
<td>6</td>
<td>See CAT I below</td>
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</tr>
<tr>
<td>Category II Mathematics</td>
<td>3</td>
<td>See CAT I below</td>
<td>3</td>
</tr>
<tr>
<td>Category III Natural Sciences</td>
<td></td>
<td>See Cat II below.</td>
<td>3 or 4</td>
</tr>
<tr>
<td>Category IV Social Sciences</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category V History</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category VI Cultural Diversity</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category VII Fine Arts</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td>Category VIII Humanities</td>
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<td></td>
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</tr>
<tr>
<td>Category IX Technology</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

**Total General Education Core Credits** ................................................................. 33

*Accepted General Education Core courses are found on page 9.

### Required Courses

- ATDI 134 Auto/Diesel Electrical/Electronic Systems I
- ATDI 257 Automatics
- ATDI 264 Auto/Diesel Electrical/Electronic Systems II
- ATDI 265 Heating and Air Conditioning
- ATDI 383 Alternative Automotive Power Systems
- ATDI 384 Auto/Diesel Electrical/Electronic Systems III
- ATDI 400 Shop Procedures*
- AUTO 115 Introduction to Automotive Service
- AUTO 117 Automotive Manual Power Trains
- AUTO 119 Automotive Braking Systems
- AUTO 128 Engines
- AUTO 151 Diagnosis and Tune Up
- AUTO 152 Diagnosis and Tune Up Lab
- AUTO 220 Automotive Steering and Suspension
- AUTO 251 Computerized Engine Control Systems
- AUTO 252 Computerized Engine Control Systems Lab
- AUTO 355 Automotive Service Operations
- AUTO 408 Current Trends in Mobility Technology
- AUTO 450 Dynamometer Testing/Computer System Data Analysis
- AUTO 457 Advanced Power Trains
- AUTO 488 Automotive Practicum
- ENGL 112 Written Communication II
- ENGL 111 Written Communication I (CAT I)
- OR
- SPCH 141 Fundamentals of Speech (CAT I)
- OR
- SPCH 142 Interpersonal Communication (CAT I)

(continued on next page)
MATH 110 Math for Liberal Arts (CAT II) ................................................................. (4)

OR

MATH 112 College Algebra (CAT II) ................................................................. (3)

ENGL 366 (CAT I) ................................................................................................. 3

Electives or Minor ................................................................................................. 14

Choose seventeen (17) credits from the following: (at least 5 credits must be upper division)*

ACCT 261 Principles of Accounting I ................................................................. 3
AUTO 479 Cooperative Education ........................................................................ 3
BODY 140 Panel Adjustments and Glass ............................................................ 2
BODY 143 Refinishing .......................................................................................... 3
BODY 144 Refinishing Lab ..................................................................................... 3
BUS 250 Business Statistics ................................................................................ 3
BUS 300 Management in Organizations ............................................................ 3
CIS 111 Integrated Business Applications ......................................................... 3
ENGL 366 Technical Writing and Editing (CAT I) .............................................. (3)
METL 140 Introduction to Welding and Cutting ................................................. 3
TSS 222 Customer Service ................................................................................... 3

*Only required if no minor

Total minimum credits required for degree ........................................................................ 120

PLEASE NOTE: Students enrolled in this program may pay between $20 - $50/semester in course fees. These fees are in addition to tuition and other mandatory fees.
Minor

Automotive Technology

Required Courses
AUTO 115 Introduction to Automotive Service ................................................................. 1
AUTO 117 Automotive Manual Power Trains ................................................................. 4
AUTO 151 Diagnosis and Tune Up .................................................................................. 3
AUTO 152 Diagnosis and Tune Up Lab ........................................................................ 3
ATDI 134 Auto/Diesel Electrical/Electronic Systems I .................................................... 4
ATDI 264 Auto/Diesel Electrical/Electronic Systems II ............................................... 4
ATDI 383 Alternative Automotive Power Systems ....................................................... 4
ATDI 384 Auto/Diesel Electronics Applications ......................................................... 4
ATDI 400 Shop Procedures ....................................................................................... 2

Total minimum credits required for minor .................................................................... 29

PLEASE NOTE: Students enrolled in this program may pay between $20 - $50/semester in course fees. These fees are in addition to tuition and other mandatory fees.

Automotive Technology (Automotive Body)
This program is in moratorium. Please see the Provost (Cowan Hall 204) for availability of this degree.

Required Courses
ATDI 400 Shop Procedures ....................................................................................... 2
BODY 140 Panel Adjustment and Glass ........................................................................ 2
BODY 141 Introduction to Metal Refinishing ............................................................... 3
BODY 142 Metal Repair Lab ..................................................................................... 3
BODY 143 Refinishing ............................................................................................... 3
BODY 144 Refinishing Lab ........................................................................................ 3
BODY 215 Principles of Unibody Repair Fundamentals ............................................ 3
BODY 241 Estimating ............................................................................................... 4
BODY 354 Auto Body Shop Management Lab .......................................................... 3

Total minimum credits required for minor .................................................................... 26

PLEASE NOTE: Students enrolled in this program may pay between $20 - $50/semester in course fees. These fees are in addition to tuition and other mandatory fees.
## Associate of Applied Science

### Automotive Technology

<table>
<thead>
<tr>
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<tbody>
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</table>

**Technology (CAT IX)**

<table>
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</tr>
</thead>
<tbody>
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</table>

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>ATDI 257 Automatics</td>
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<tr>
<td>ATDI 264 Auto/Diesel Electrical/Electronic Systems II</td>
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<tr>
<td>ATDI 265 Heating and Air Conditioning</td>
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<tr>
<td>AUTO 115 Introduction to Automotive Service</td>
</tr>
<tr>
<td>AUTO 117 Automotive Manual Power Trains</td>
</tr>
<tr>
<td>AUTO 119 Automotive Braking Systems</td>
</tr>
<tr>
<td>AUTO 128 Engines</td>
</tr>
<tr>
<td>AUTO 151 Diagnosis and Tune Up</td>
</tr>
<tr>
<td>AUTO 152 Diagnosis and Tune Up Lab</td>
</tr>
<tr>
<td>AUTO 220 Automotive Steering and Suspension</td>
</tr>
<tr>
<td>AUTO 251 Computerized Engine Control Systems</td>
</tr>
<tr>
<td>AUTO 252 Computerized Engine Control Systems Lab</td>
</tr>
<tr>
<td>AUTO 255 Applied Service Technology</td>
</tr>
<tr>
<td>BODY 140 Panel Adjustments and Glass</td>
</tr>
<tr>
<td>Advisor Approved Elective</td>
</tr>
</tbody>
</table>

**Total minimum credits required for degree**

62-63

**TOYOTA T-TEN PROGRAM**

Students enrolled in the T-Ten Program will complete the requirements above as listed above for the associate degree. In addition, sixteen weeks or 640 hours of cooperative education experience over two summers in a Toyota dealership is required. Students sponsored by Toyota dealers receive financial aid and scholarships. Further information is available upon request—please see your advisor.

**PLEASE NOTE:** Students enrolled in this program may pay between $20 - $50/semester in course fees. These fees are in addition to tuition and other mandatory fees.
Automotive Technology (Automotive Body) | Credits
---|---
ENGL 111 Written Communication I (CAT I) | 3
OR
SPCH 141 Fundamentals of Speech (CAT I) | 3
OR
SPCH 142 Interpersonal Communication | 3
MAAS 106 Elementary Technical Math | 3
OR
MATH 110 Math for Liberal Arts (CAT II) | 4
OR
MATH 112 College Algebra (CAT II) | 3
CIS 110 Introduction to Computers (or higher) | 3

**Required Courses**
- ATDI 134 Auto/Diesel Electrical/Electronic Systems I | 4
- ATDI 265 Heating and Air Conditioning | 4
- AUTO 220 Automotive Steering and Suspension | 4
- BODY 140 Panel Adjustment and Glass | 2
- BODY 141 Introduction to Metal Refinishing | 3
- BODY 142 Metal Repair Lab | 3
- BODY 143 Refinishing | 3
- BODY 144 Refinishing Lab | 3
- BODY 215 Principles of Unibody Repair Fundamentals | 3
- BODY 216 Unibody Repair Technology | 3
- BODY 241 Estimating | 4
- BODY 243 Shop Production | 3
- BODY 244 Shop Production Lab | 3
- METL 140 Introduction to Welding and Cutting | 3
- METL 154 Gas Arc Welding Processing | 3

Total minimum credits required for degree | 60

**PLEASE NOTE:** Students enrolled in this program may pay $20/semester in course fees. These fees are in addition to tuition and other mandatory fees.
## Certificate

### Automotive Technology

#### Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATDI 134 Auto/Diesel Electrical/Electronic System I</td>
<td>4</td>
</tr>
<tr>
<td>AUTO 115 Introduction to Automotive Service</td>
<td>1</td>
</tr>
<tr>
<td>AUTO 117 Automotive Manual Power Trains</td>
<td>4</td>
</tr>
<tr>
<td>AUTO 119 Automotive Braking Systems</td>
<td>4</td>
</tr>
<tr>
<td>AUTO 128 Engines</td>
<td>4</td>
</tr>
<tr>
<td>AUTO 151 Diagnosis and Tune Up</td>
<td>3</td>
</tr>
<tr>
<td>AUTO 152 Diagnosis and Tune Up Lab</td>
<td>3</td>
</tr>
<tr>
<td>BODY 140 Panel Adjustments and Glass</td>
<td>2</td>
</tr>
<tr>
<td>Advisor Approved Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

Choose one (1) course from the following:

- ENGL 111 Written Communication I (CAT I)                              | 3       |
- SPCH 141 Fundamentals of Speech (CAT I)                                | 3       |
- SPCH 142 Interpersonal Communication (CAT I)                           | 3       |

Total minimum credits required for certificate: .................................. 28

PLEASE NOTE: *Students enrolled in this program may pay between $20 - $50/semester in course fees. These fees are in addition to tuition and other mandatory fees.*

### Departmental Certificate*

#### Automotive Technology (Automotive Body)

#### Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BODY 140 Panel Adjustment and Glass</td>
<td>2</td>
</tr>
<tr>
<td>BODY 141 Introduction to Metal Refinishing</td>
<td>3</td>
</tr>
<tr>
<td>BODY 142 Metal Repair Lab</td>
<td>3</td>
</tr>
<tr>
<td>BODY 143 Refinishing</td>
<td>3</td>
</tr>
<tr>
<td>BODY 144 Refinishing Lab</td>
<td>3</td>
</tr>
<tr>
<td>BODY 215 Principles of Unibody Repair Fundamentals</td>
<td>3</td>
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<tr>
<td>BODY 216 Unibody Repair Technology</td>
<td>3</td>
</tr>
<tr>
<td>BODY 243 Shop Production</td>
<td>3</td>
</tr>
<tr>
<td>BODY 244 Shop Production Lab</td>
<td>3</td>
</tr>
<tr>
<td>METL 154 Gas Arc Welding Processing</td>
<td>3</td>
</tr>
</tbody>
</table>

Total minimum credits required for certificate: .................................. 29

* Students should note that departmental certificates are not University degrees.

PLEASE NOTE: *Students enrolled in this program may pay $20/semester in course fees. These fees are in addition to tuition and other mandatory fees.*
BIOLOGY

Bachelor of Science

Biology (No Minor Required)

<table>
<thead>
<tr>
<th>General Education Core Required*</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Category I Communication</td>
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<td>ENGL 112</td>
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<tr>
<td></td>
<td></td>
<td>SPCH 141</td>
<td>3</td>
</tr>
<tr>
<td>Category II Mathematics</td>
<td>3</td>
<td>MATH 112 or higher</td>
<td>3</td>
</tr>
<tr>
<td>Category III Natural Sciences with lab</td>
<td>6</td>
<td>See any science below</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>See any science below</td>
<td>3</td>
</tr>
<tr>
<td>Category IV Social Sciences</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category V History</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category VI Cultural Diversity</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category VII Fine Arts</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category VIII Humanities</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category IX Technology</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Total General Education Core Credits .......................................................................................... 33

*Accepted General Education Core courses are found on page 9.

Common Science Core (35 credits):
BIOL 140 Cell Biology ................................................................. 4
BIOL 141 Cell Biology Lab .......................................................... 1
BIOL 221 Botany I ............................................................................ 3
BIOL 222 Botany I Lab ................................................................. 2
BIOL 348 Zoology ............................................................................ 3
BIOL 350 Zoology Lab ..................................................................... 2
CHEM 121 General Inorganic Chemistry I ....................................... 3
CHEM 122 General Inorganic Chemistry II ...................................... 3
CHEM 123 General Inorganic Chemistry I Lab .................................. 2
CHEM 124 General Inorganic Chemistry II Lab ............................... 2
PHYS 231 Fundamentals of Physics I ............................................ 3
PHYS 232 Fundamentals of Physics II ............................................ 3
PHYS 234 Fundamentals of Physics I Lab ...................................... 2
PHYS 235 Fundamentals of Physics II Lab ...................................... 2

Required Program Course (22 credits):
BIOL 314 General Ecology .......................................................... 4
BIOL 468 Molecular Biology & Genetics ........................................ 4
CHEM 341 Organic Chemistry I .......................................................... 3
CHEM 343 Organic Chemistry I Lab ................................................... 2
MATH 116 Statistics (CAT II) .......................................................... 3
NSCI 301 Essence of Science .......................................................... 3
NSCI 450 Undergraduate Research I .................................................. 3

(continued on next page)
Choose twelve (12) credits from the following:

- BIOL 217 Microbiology ................................................................. 4
- BIOL 241 Anatomy and Physiology I ........................................... 4
- BIOL 242 Anatomy and Physiology II ......................................... 4
- BIOL 322 Botany II ...................................................................... 4
- BIOL 324 Entomology ................................................................. 3
- BIOL 334 Ornithology ................................................................. 3
- BIOL 406 Molecular Biology Techniques .................................... 3
- BIOL 407 Freshwater Biology .................................................... 4
- BIOL 410 Field Biology Methods .............................................. 4
- BIOL 460 Advanced Microbiology ............................................ 3
- ESCI 310 Introduction to Paleontology ...................................... 3
- NSCI 451 Undergraduate Research II ......................................... 3

Advisor Approved Electives or Minor ........................................ 24

Total minimum credits required for degree .................................... 120

PLEASE NOTE: Students enrolled in this program may pay between $5 - $40/semester in course fees. These fees are in addition to tuition and other mandatory fees.
## Minor

### Biology

#### Required Courses (BIOL & NSCI are CAT III)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BIOL 140 Cell Biology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 141 Cell Biology Lab</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 217 Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 221 Botany I</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 222 Botany I Lab</td>
<td>2</td>
</tr>
<tr>
<td>BIOL 322 Botany II</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 348 Zoology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 350 Zoology Lab</td>
<td>2</td>
</tr>
<tr>
<td>BIOL 407 Freshwater Biology</td>
<td>4</td>
</tr>
<tr>
<td>NSCI 301 Essence of Science</td>
<td>3</td>
</tr>
</tbody>
</table>

Total minimum credits required for minor .................................................. 30

**PLEASE NOTE:** Students enrolled in this program may pay between $5 - $40/semester in course fees. These fees are in addition to tuition and other mandatory fees.
BUSINESS

Bachelor of Science

Business Technology – Minor Required

<table>
<thead>
<tr>
<th>General Education Core Required*</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Category I Communication</td>
<td>6</td>
<td>ENGL 112</td>
<td>3</td>
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<td></td>
<td>SPCH 142</td>
<td>3</td>
</tr>
<tr>
<td>Category II Mathematics</td>
<td>3</td>
<td>MATH 110 or 112</td>
<td>3 or 4</td>
</tr>
<tr>
<td>Category III Natural Sciences with lab</td>
<td>6</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category IV Social Sciences</td>
<td>3</td>
<td>ENCON 241</td>
<td>3</td>
</tr>
<tr>
<td>Category V History</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category VI Cultural Diversity</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category VII Fine Arts</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category VIII Humanities</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category IX Technology</td>
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<td></td>
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</tbody>
</table>

Total General Education Core Credits ..................................................33-34

*Accepted General Education Core courses are found on page 9.

Required Courses
ACCT 261 Principles of Accounting I .................................................................3
ACCT 262 Principles of Accounting II ...............................................................3
BUS 110 Creative Problem Solving ........................................................................3
BUS 120 Leadership ..............................................................................................3
BUS 250 Business Statistics ................................................................................3
BUS 271 Legal Environment of Business ................................................................3
BUS 300 Management in Organizations ................................................................3
BUS 332 Human Resource Management ..................................................................3
BUS 335 Principles of Marketing ..........................................................................3
BUS 341 Advanced Marketing Applications ..........................................................3
BUS 350 Financial Management ............................................................................3
BUS 380 Operations Management .........................................................................3
BUS 405 Ethics in Management & Technology ........................................................3
BUS 406 Management Information Systems ..........................................................3
BUS 410 International Business ...........................................................................3
BUS 430 Senior Project .........................................................................................3
BUS 450 Business Senior Seminar .......................................................................3
ECON 241 Microeconomics (CAT IV) ....................................................................(3)
ENGL 112 Written Communication II (CAT I) .....................................................(3)
MATH 110 Math for Liberal Arts (CAT II) ............................................................(4)
OR
MATH 112 College Algebra (CAT II) ......................................................................(3)
SPCH 142 Interpersonal Communication (CAT I) .................................................(3)
Advisor Approved Elective ....................................................................................6

Total program credits .......................................................................................60

Minor..................................................................................................................30

Total credits required for degree ......................................................................120
Minors

Accounting

Required Courses
ACCT 261 Principles of Accounting I .................................................................................................................. 3 
ACCT 262 Principles of Accounting II .................................................................................................................. 3 
ACCT 285 Accounting Systems* .......................................................................................................................... 3 
ACCT 315 Intermediate Accounting I* .................................................................................................................. 3 
ACCT 316 Intermediate Accounting II* .................................................................................................................. 3 
ACCT 321 Managerial Accounting** .................................................................................................................... 3 
ACCT 365 Income Tax Planning .......................................................................................................................... 3 
ACCT 407 Financial Statement Analysis** ............................................................................................................ 3 
BUS 271 Legal Environment of Business ............................................................................................................ 3 
BUS 350 Financial Management .......................................................................................................................... 3 

Total credits required for minor .......................................................................................................................... 30 

* Offered even dated years 
**Offered odd dated years

Suggested selective General Education courses:
ECON 241 Microeconomic Principles (CAT IV) .................................................................................................. 3 
ECON 242 Macroeconomic Principles (CAT IV) .................................................................................................. 3

Business Technology

Required Courses
ACCT 261 Principles of Accounting I .................................................................................................................. 3 
ACCT 262 Principles of Accounting II .................................................................................................................. 3 
BUS 100 Introduction to Business .......................................................................................................................... 3 
BUS 110 Creative Problem Solving .......................................................................................................................... 3 
BUS 120 Leadership .................................................................................................................................................. 3 
BUS 271 Legal Environment of Business ............................................................................................................ 3 
BUS 300 Management in Organizations .............................................................................................................. 3 
BUS 335 Principles of Marketing .............................................................................................................................. 3 
BUS 410 International Business .............................................................................................................................. 3 
ECON 241 Microeconomic Principles (CAT IV) .................................................................................................. 3 

Total minimum credits required for degree .......................................................................................................... 30
Marketing: Technical Sales and Service

Required Courses
BUS 110 Creative Problem Solving ................................................................. 3
BUS 300 Management in Organizations .......................................................... 3
BUS 332 Human Resource Management ......................................................... 3
BUS 335 Principles of Marketing ................................................................. 3
BUS 341 Advanced Marketing Application ...................................................... 3
BUS 436 Sales and Sales Management ............................................................ 3
SBM 338 Promotion ................................................................................ 3
TSS 222 Customer Service .................................................................... 3
TSS 246 Technical Sales ........................................................................ 3
TSS 248 Retail/Distributorship ................................................................ 3

Suggested selective General Education courses:
SOC 101 Introduction to Sociology (CAT IV) .................................................. 3
PSYC 100 Introduction to Psychology (CAT IV) ............................................. 3

Total credits required for minor ................................................................ 30

Small Business Management

Required Courses
ACCT 261 Principles of Accounting I .......................................................... 3
ACCT 262 Principles of Accounting II ............................................................ 3
BUS 271 Legal Environment of Business ...................................................... 3
BUS 300 Management in Organizations ......................................................... 3
BUS 332 Human Resource Management ......................................................... 3
BUS 335 Principles of Marketing ................................................................. 3
SBM 338 Promotion ................................................................................ 3
SBM 402 Small Business Management ........................................................ 3
SBM 416 New Venture Development ............................................................. 3
TSS 222 Customer Service .................................................................... 3

Total minimum credits required for minor ................................................. 30
Associate of Science

Program of Study in Business Technology

<table>
<thead>
<tr>
<th>General Education Core Required*</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>Category I Communication</td>
<td>6</td>
<td>ENGL 112</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SPCH 141 or SPCH 142</td>
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</tr>
<tr>
<td>Category II Mathematics</td>
<td>3</td>
<td>MATH 110 or 112</td>
<td>3 or 4</td>
</tr>
<tr>
<td>Category III Natural Sciences with lab</td>
<td>6</td>
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<td>3</td>
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<tr>
<td>Category IV Social Sciences</td>
<td>3</td>
<td>ECON 241</td>
<td>3</td>
</tr>
<tr>
<td>Category V History</td>
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</tr>
<tr>
<td>Category VI Cultural Diversity</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category VII Fine Arts</td>
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<td></td>
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</tr>
<tr>
<td>Category VIII Humanities</td>
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<td></td>
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</tr>
<tr>
<td>Category IX Technology</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Total General Education Core Credits .......................................................................................... 33

*Accepted General Education Core courses are found on page 9.

Required Courses

ACCT 261 Principles of Accounting I ................................................................. 3
ACCT 262 Principles of Accounting II ................................................................. 3
BUED 245 Personal Finance .................................................................................. 3
BUS 100 Introduction to Business ........................................................................ 3
BUS 110 Creative Problem Solving ....................................................................... 3
BUS 120 Leadership .............................................................................................. 3
BUS 250 Business Statistics ................................................................................ 3
BUS 271 Legal Environment of Business ............................................................ 3
CIS 111 Integrated Business Applications ......................................................... 3
ECON 241 Microeconomics Principles (CAT IV) .................................................... (3)
ENGL 112 Written Communication II (CAT I) ....................................................... (3)
MATH 110 Math for Liberal Arts (CAT II) ............................................................ (4)
OR
MATH 112 College Algebra (CAT II) ..................................................................... (3)
SPCH 141 Fundamentals of Speech (CAT I) ........................................................... (3)
OR
SPCH 142 Interpersonal Communication (CAT I) .................................................. (3)

Total minimum credits required for degree ............................................................................ 60
## COMMUNICATION

### Bachelor of Arts

**Communication-Minor Required**

*This program is in moratorium. See the Provost (Cowan Hall 204) for availability of this degree.*

<table>
<thead>
<tr>
<th>General Education Core Required*</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category I Communication</td>
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<td>ENGL 112</td>
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<td></td>
<td></td>
<td>SPCH 142</td>
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</tr>
<tr>
<td>Category II Mathematics</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category III Natural Sciences with lab</td>
<td>6</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category IV Social Sciences</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category V History</td>
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<td></td>
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</tr>
<tr>
<td>Category VI Cultural Diversity</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Category VII Fine Arts</td>
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<td></td>
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</tr>
<tr>
<td>Category VIII Humanities</td>
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</tr>
<tr>
<td>Category IX Technology</td>
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</tr>
</tbody>
</table>

**Total General Education Core Credits** .......................................................... 33

*Accepted General Education Core courses are found on page 9.

### Required Courses

**ART 361 Art History of Western Civilization I (CAT VII)** .......................................................... 3
**ART 362 Art History of Western Civilization II (CAT VII)** .......................................................... 3
**DRMA 123 Introduction to Theatre** ......................................................................................... 3
**MUS 101 Introduction to Music History (CAT VIII)** ................................................................. 3
**ENGL 114 Introduction to Literature (CAT VIII)** ................................................................. 3
**ENGL 214 Introduction to World Literature (CAT VIII)** ......................................................... 3
**ENGL 338 Public Relations Writing** ......................................................................................... 3
**Language (French, Spanish, German, or Native American) (CAT VI)** ........................................ 6
**HIST 142 History of Civilization II (CAT V)** ........................................................................ 3

**OR**

**SOSC 201 Introduction to Social Science (CAT IV)** ................................................................. 3
**BUS 250 Business Statistics** .................................................................................................... 3

**OR**

**MATH 116 Applied Statistics** .................................................................................................... 3
**SOC 240 Social Psychology (CAT IV)** ......................................................................................... 3
**SPCH 240 Small Group/Organization Communication** .......................................................... 3
**SPCH 310 Organizational Communication** ................................................................................ 3
**SPCH 320 Communication Theory** ............................................................................................ 3
**SPCH 485 Special Topics in Communication** ............................................................................ 3

**Choose nine (9) credits from the following list:**

**BUS 300 Management in Organizations** .................................................................................. 3
**BUS 332 Human Resource Management** .................................................................................. 3
**CMSV 302 Community Service Research** .................................................................................. 3
**CMSV 310 Grants** ..................................................................................................................... 3
**ENGL 366 Technical Writing and Editing (CAT I)** .................................................................. 3
**ENGL 368 Writing for Grants** .................................................................................................. 3
NAS 310 Native Cultures of North America (CAT VI) ................................................................. 3
PSYC 315 Psychology of Life Adjustment (CAT IV) ................................................................. 3
PSYC 350 Personality ............................................................................................................ 3
SOC 315 Race, Gender, & Ethnic Relations (CAT VI) ............................................................... 3

Advisor Approved Electives and Minor .................................................................................. 48

Total minimum credits required for degree ............................................................................ 120

Minor

Communication

This program is in moratorium. See the Provost (Cowan Hall 204) for availability of this degree.

Required Courses
ENGL 338 Public Relations Writing ......................................................................................... 3
SOC 240 Social Psychology (CAT IV) ................................................................................. 3
SPCH 141 Fundamentals of Speech (CAT I) ................................................................. 3
SPCH 142 Interpersonal Communication (CAT I) .............................................................. 3
SPCH 240 Small Group/Organizational Theory ................................................................. 3
SPCH 310 Organizational Communication ............................................................................ 3
SPCH 320 Communication Theory ....................................................................................... 3
SPCH 485 Special Topics in Communication ........................................................................ 3

Total minimum credits required for minor ............................................................................. 24
# COMMUNITY SERVICE

## Bachelor of Arts

### Community Service-Minor Required

<table>
<thead>
<tr>
<th>General Education Core Required*</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category I Communication</td>
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<td>ENGL 112</td>
<td>3</td>
</tr>
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<td></td>
<td></td>
<td>SPCH 142</td>
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</tr>
<tr>
<td>Category II Mathematics</td>
<td>3</td>
<td>See CAT II below</td>
<td>3</td>
</tr>
<tr>
<td>Category III Natural Sciences with lab</td>
<td>6</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category IV Social Sciences</td>
<td>3</td>
<td>See CAT IV below</td>
<td>3</td>
</tr>
<tr>
<td>Category V History</td>
<td>3</td>
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</tr>
<tr>
<td>Category VI Cultural Diversity</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Category VII Fine Arts</td>
<td>3</td>
<td>See CAT VII below</td>
<td>3</td>
</tr>
<tr>
<td>Category VIII Humanities</td>
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<td>See CAT VIII below</td>
<td>3</td>
</tr>
<tr>
<td>Category IX Technology</td>
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<td>3</td>
</tr>
</tbody>
</table>

**Total General Education Core Credits** .................................................................................................................................................. 33

*Accepted General Education Core courses are found on page 9.

### Required Courses

- BUS 215 Managerial Planning in Not-For-Profit Enterprises ................................................................. 3
- BUS 300 Management in Organizations ..................................................................................................... 3
- CMSV 101 Introduction to Community Service (CAT IV) ........................................................................ 3
- CMSV 201 Volunteer Services Practicum ..................................................................................................... 2
- CMSV 260 Foundations of Non Profit Service ............................................................................................. 3
- CMSV 301 Community Service Readings ..................................................................................................... 3
- CMSV 302 Community Service Research .................................................................................................... 3
- CMSV 310 Grants ..................................................................................................................................... 3
- CMSV 350 Conflict Management ............................................................................................................... 3
- CMSV 401 Community Service Seminar .................................................................................................... 3
- CMSV 479 Cooperative Education ........................................................................................................... 6
- ENGL 112 Written Communications II (CAT I) .......................................................................................... 3
- ENGL 338 Public Relations Writing ......................................................................................................... 3
- SOSC 201 Introduction to Social Sciences (CAT IV) ............................................................................. 3
- Language (French, Spanish, German, or Native American) (CAT VI) ..................................................... 6-8
- SPCH 141 Fundamentals of Speech (CAT I) ............................................................................................... 3

**OR**

- SPCH 142 Interpersonal Communication (CAT I) .................................................................................... 3
- SPCH 240 Small Group/Organizational Communication ............................................................................. 3
- SPCH 310 Organizational Communication ................................................................................................. 3

### Advisor Approved Electives and Minor

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<th>Credits</th>
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<tbody>
<tr>
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</tbody>
</table>

*Students are encouraged to take electives courses that are pertinent to community service such as ECON 241 Microeconomics, ENGL 368 Writing for Grants, Psychology, and Sociology.*

(continued on next page)
NOTE: In addition to the coursework listed above, community service majors are strongly advised to complete a concentrated program of study in some specialty area. The specialty areas will permit students to complete coursework that could prepare them for careers in communication, non-profit administration, community health and wellness, social work or tribal leadership and administration. Community service majors should work with their faculty advisor to select the appropriate classes.

Total minimum credits required for degree ........................................................................................... 120

Minor

Community Service

Required Courses
CMSV 101 Introduction to Community Service (CAT IV) ................................................................. 3
CMSV 201 Volunteer Services Practicum .................................................................................................. 3
CMSV 260 Foundations of Non Profit Service .......................................................................................... 3
SOSC 201 Introduction to the Social Sciences (CAT IV) .................................................................... 3

Choose one of the following 3 credit upper-level CMSV courses:
CMSV 301 Community Service Reading ................................................................................................. 3
CMSV 310 Grants .................................................................................................................................... 3
CMSV 350 Conflict Management ............................................................................................................ 3

Choose three (3) selective credits from three of the four areas: (Two courses must be upper division level courses.)

Area One:
SOC 240 Social Psychology (CAT IV) ................................................................................................. 3
SOC 315 Race, Ethnic & Gender Relations (CAT IV) ......................................................................... 3

Area Two:
PSYC 205 Human Growth & Development (CAT IV) ....................................................................... 3
PSYC 360 Personality ............................................................................................................................ 3

Area Three:
SPCH 240 Small Group/Organizational Communication ..................................................................... 3
SPCH 320 Communication Theory ........................................................................................................ 3
SPCH 485 Special Topics in Communication ......................................................................................... 3

Area Four:
NAS 350 Federal Indian Law .................................................................................................................. 3
POL 134 American Government (CAT IV) ............................................................................................ 3
POL 201 State and Local Government .................................................................................................. 3

Total minimum credits required for minor .......................................................................................... 24
COMPUTER ENGINEERING TECHNOLOGY

Bachelor of Science

Computer Engineering Technology

*This degree is going through major revisions. Please see your advisor for assistance.*

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</table>

Total General Education Core Credits .......................................................................................... 33

*Accepted General Education Core courses are found on page 9.

Required Courses

CIS 111 Integrated Business Applications .............................................................................................. 3
CIS 115 Visual Basic Programming ......................................................................................................... 3
CIS 155 Java Programming ...................................................................................................................... 3
CPET 260 Networking I .............................................................................................................................. 3
EET 101 Intro to Electricity/Electronics .................................................................................................. 5
EET 103 Electronic Fundamentals I ......................................................................................................... 5
EET 204 Electronic Fundamentals II ....................................................................................................... 4
EET 207 Digital Fundamentals ................................................................................................................. 5
EET 450 Advanced Digital Systems ........................................................................................................... 3
ISET 300 Operating Systems Introduction ................................................................................................ 3
ISET 230 Computer Hardware Support ....................................................................................................... 3
ISET 305 Digital Systems ........................................................................................................................... 3
ISET 350 Advanced Java Programming ..................................................................................................... 3
ISET 360 Bus Telecommunications & Networking .................................................................................... 3
ISET 401 Interfacing – (Senior Project) ................................................................................................. 3
ISET 430 Adv Communication Systems (Dig) ............................................................................................ 3
IT 100 Introduction to Technology (CAT IX) ..........................................................................................(3)
MATH 112 College Algebra (CAT II) .........................................................................................................(3)
MATH 125 Trigonometry ........................................................................................................................... 2
MATH 133 Introduction to Calculus .......................................................................................................... 3
MATH 220 Calculus & Analytic Geometry I ............................................................................................... 5
PHYS 231 Fundamentals of Physics I (CAT III) ..........................................................................................(3)
PHYS 234 Fundamentals of Physics I Lab (CAT III) ..................................................................................(1)
Advisor Approved Electives ....................................................................................................................... 26

Total minimum credits required for degree .......................................................................................... 120
Associate of Applied Science

Computer Engineering Technology

*This degree is going through major revisions. Please see your advisor for assistance.*

CIS 111 Integrated Business Applications ................................................................. 3
CIS 115 Visual Basic Programming ............................................................................ 3
CIS 155 Java Programming ....................................................................................... 3
CPET 260 Networking I ........................................................................................... 3
EET 101 Intro to Electricity/Electronics ................................................................... 5
EET 103 Electronic Fundamentals I .......................................................................... 5
EET 204 Electronic Fundamentals II ........................................................................ 4
EET 207 Digital Fundamentals ................................................................................. 5
ENGL 112 Written Communication II (CAT I) ........................................................ 3
ISET 230 Computer Hardware Support ..................................................................... 3
IT 100 Introduction to Technology (CAT IX) .......................................................... (3)
MATH 125 Trigonometry .......................................................................................... 2
MATH 133 Introduction to Calculus ........................................................................... 3
PHYS 231 Fundamentals of Physics I (CAT III) ......................................................... 3
PHYS 234 Fundamentals of Physics I Lab (CAT III) .................................................. 1
Advisor Approved Electives .................................................................................... 6
Advisor Approved CIS Elective ............................................................................... 3

Total minimum credits required for degree ................................................................ 67
COMPUTER INFORMATION SYSTEMS

Bachelor of Science

Computer Information Systems
This degree is going through major revisions. Please see your advisor for assistance.

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</table>

*Accepted General Education Core courses are found on page 9.

Required Courses
ACCT 261 Principles of Accounting I ................................................................. 3
CIS 111 Integrated Business Applications ......................................................... 3
CIS 112 Web Site Development .............................................................................. 3
CIS 115 Visual Basic Programming ....................................................................... 3
CIS 155 Java Programming .................................................................................... 3
CIS 171 Desktop/Small Business Databases using MS Access ............................. 3
CIS 270 Systems Analysis and Design .................................................................. 3
CIS 285 Spreadsheet ............................................................................................ 3
ENGL 112 Written Communication II (CAT I) ...................................................... (3)
ENGL 366 Technical Writing (CAT I) ................................................................... 3
ISET 300 Operating Systems Introduction ............................................................ 3
ISET 305 Digital Systems ..................................................................................... 3
ISET 350 Advanced Java Programming .................................................................. 3
ISET 355 Data Structures ..................................................................................... 3
ISET 360 Bus Telecommunications & Networking ............................................... 3
ISET 365 Software Engineering ............................................................................ 3
ISET 371 Enterprise Databases Using Oracle ...................................................... 3
ISET 410 Enterprise Resource Planning .............................................................. 3
ISET 455 E-commerce Programming ................................................................... 3
ISET 471 Information System Engineering .......................................................... 3
MATH 110 Math for Liberal Arts (CAT II) ........................................................... (4)
OR
MATH 112 College Algebra (CAT II) .................................................................... (3)
SPCH 142 Interpersonal Communications (CAT I) .............................................. (3)
Advisor Approved Electives (must include 9 credits of 300-400 level courses) ....... 30

**Total minimum credits required for degree** ................................................. 120
Minor

Computer Information Systems

This degree is going through major revisions. Please see your advisor for assistance.

Required Courses
CIS 115 Visual Basic Programming ............................................................................................... 3
CIS 155 Java Programming ....................................................................................................... 3
CIS 171 Desktop/Small Business Databases using MS Access ................................................. 3
CIS 285 Spreadsheet ........................................................................................................... 3
ISET 230 Computer Hardware Support .................................................................................... 3
ISET 350 Advanced Java Programming .................................................................................... 3
ISET 360 Business Telecommunications & Networking ............................................................. 3
ISET 410 Enterprise Resource Planning .................................................................................... 3

Choose six (6) credits from the following:
ISET 300 Operating Systems Introduction ............................................................................... 3
ISET 305 Digital Systems ....................................................................................................... 3
ISET 335 Computer Network Security ..................................................................................... 3
ISET 355 Data Structures ....................................................................................................... 3
ISET 371 Enterprise Database Using Oracle .............................................................................. 3
ISET 435 Network Routing & Security .................................................................................... 3
ISET 455 E-Commerce Programming ..................................................................................... 3

Total minimum credits required for minor ........................................................................... 30
Associate of Applied Science

Computer Information Systems

This degree is going through major revisions. Please see your advisor for assistance.

Credits

ENGL 111 Written Communication I (CAT I) ................................................................. 3
SPCH 142 Interpersonal Communication (CAT I) ......................................................... 3
MATH 110 Math for Liberal Arts (CAT II) .................................................................... 4
OR
MATH 112 College Algebra (CAT II) ............................................................................. 3
Technology (CAT IX) .................................................................................................... 3

Required Courses
ACCT 261 Principles of Accounting I ................................................................. 3
CIS 111 Integrated Business Applications ............................................................... 3
CIS 112 Web Site Development ................................................................................ 3
CIS 115 Visual Basic Programming ......................................................................... 3
CIS 155 Java Programming ....................................................................................... 3
CIS 171 Desktop/Small Business Databases using MS Access .................................. 3
CIS 270 Systems Analysis and Design ....................................................................... 3
CIS 285 Spreadsheet .................................................................................................. 3
ISET 230 Computer Hardware Support ...................................................................... 3
Advisor Approved Electives ..................................................................................... 21

Total minimum credits required for degree ......................................................... 60
DRAFTING (DESIGN) TECHNOLOGY

Bachelor of Science

Design Drafting Technology

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<td>Category IX Technology</td>
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</tbody>
</table>

Total General Education Core Credits .......................................................................................... .......... 33

*Accepted General Education Core courses are found on page 9.

Required Courses

CET 173 Architectural Construction & Materials ................................................................. 3
CIS 111 Integrated Business Applications .............................................................................. 3
CIS 171 Desktop/Small Business Databases using MS Access .................................................. 3
DRFT 131 Technical Graphics I .................................................................................................. 3
DRFT 132 Descriptive Geometry ................................................................................................ 3
DRFT 156 Introduction to CAD .................................................................................................. 3
DRFT 201 Residential Drafting .................................................................................................. 3
DRFT 205 Machine Drafting ........................................................................................................ 3
DRFT 244 Topographic Mapping & GIS Applications ................................................................. 3
DRFT 256 3D CAD ..................................................................................................................... 3
DRFT 316 Industrial CAD Modeling ............................................................................................ 3
DRFT 336 Process Piping ............................................................................................................ 3
DRFT 356 CAD Presentation ........................................................................................................ 4
DRFT 409 Industrial Product Design .......................................................................................... 3
DRFT 428 Technical Illustration ................................................................................................ 3
DRFT 456 CAD Presentation II ................................................................................................... 3
DRFT 457 Architectural CAD ...................................................................................................... 3
ENGL 112 Written Communications II (CAT I) ..................................................................... (3)
ENGL 366 Technical Writing & Editing (CAT I) ..................................................................... 3
MATH 112 College Algebra (CAT II) ......................................................................................... (3)
MATH 125 Trigonometry ........................................................................................................... 2
METL 155 Machining Processes ................................................................................................. 3
MFGT 200 Manufacturing Processes ......................................................................................... 3
MFGT 341 CAD/CAM Applications ............................................................................................. 3
MFGT 342 CAD/CAM II .............................................................................................................. 3
MFGT 427 Quality Assurance .................................................................................................. 3
PHYS 114 Fundamentals of Physical Science (CAT III) ............................................................. (3)
SPCH 141 Fundamentals of Speech (CAT I) ........................................................................... (3)
Advisor Approved Electives (must include six (6) credits of 300-400 level courses) .............. 8

(continued on next page)
Choose one of the following tracks.

**Design Drafting Track**
General Education (CAT V) .......................................................................................................................... (3)
CET 181 Surveying .......................................................................................................................................... 3
CET 221 Engineering Mechanics I .................................................................................................................. 3
PHYS 231 Fundamentals of Physics (CAT III) ............................................................................................... (3)
PHYS 234 Fundamentals of Physics Lab (CAT III) ......................................................................................... 1

**Drafting Technology Track**
General Education (CAT III) .......................................................................................................................... (3)
General Education (CAT V) .......................................................................................................................... (3)
Advisor Approved Electives .......................................................................................................................... 7

Total minimum credits required for degree .................................................................................................. 120

**PLEASE NOTE:** Students enrolled in this program may pay between $14 - $30/semester in course fees. These fees are in addition to tuition and other mandatory fees.

**Minor**

**Design Drafting Technology**

**Required Courses**
DRFT 131 Technical Graphics I .................................................................................................................. 3
DRFT 132 Descriptive Geometry ................................................................................................................... 3
DRFT 156 Introduction to CAD .................................................................................................................... 3
DRFT 201 Residential Drafting ..................................................................................................................... 3
DRFT 205 Machine Drafting .......................................................................................................................... 3
DRFT 256 3D CAD ........................................................................................................................................ 3

Choose nine (9) credits from the following:
CET 385 Highway Design & Construction ..................................................................................................... 4
DRFT 336 Process Piping .................................................................................................................................. 3
MFGT 341 CAD/CAM Applications .............................................................................................................. 3
DRFT 316 Industrial CAD Modeling .............................................................................................................. 3
DRFT 356 CAD Presentation .......................................................................................................................... 4
DRFT 409 Industrial Product Design ............................................................................................................. 3
DRFT 428 Technical Illustration ..................................................................................................................... 3
DRFT 457 Architectural CAD ........................................................................................................................ 3

Total credits required for minor ................................................................................................................... 27

**PLEASE NOTE:** Students enrolled in this program may pay between $14 - $30/semester in course fees. These fees are in addition to tuition and other mandatory fees.
## Associate of Applied Science

### Design Drafting Technology

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<td>MATH 112 College Algebra (CAT II)</td>
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<td>Technology (CAT IX)</td>
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### Required Courses

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<tr>
<td>CIS 111 Integrated Business Applications</td>
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<tr>
<td>CIS 171 Desktop Small Business Databases/Access</td>
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<td>CET 173 Architectural Construction &amp; Materials</td>
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<tr>
<td>DRFT 131 Technical Graphics I</td>
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<td>DRFT 132 Descriptive Geometry</td>
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<td>DRFT 156 Introduction to CAD</td>
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<td>DRFT 201 Residential Drafting</td>
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<td>DRFT 205 Machine Drafting</td>
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<td>DRFT 244 Topographic Mapping &amp; GIS Applications</td>
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<td>DRFT 256 3D CAD</td>
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<td>MATH 125 Trigonometry</td>
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<td>MFGT 200 Manufacturing Processes</td>
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<tr>
<td>PHYS 114 Foundations of Physical Science (CAT III)</td>
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### Choose one of the following tracks.

#### Design Drafting Track

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<th>Course</th>
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<td>PHYS 231 Fundamentals of Physics (CAT III)</td>
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#### Drafting Technology Track

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<td>General Education (CAT V)</td>
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### Total minimum credits required for degree

63

**PLEASE NOTE:** Students enrolled in this program may pay between $14 - $30/semester in course fees. These fees are in addition to tuition and other mandatory fees.
DIESEL TECHNOLOGY

Bachelor of Science

Diesel Technology

<table>
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Total General Education Core Credits .......................................................................................... 34

PLEASE NOTE: In addition to ENGL 366 and TSCI 304, four (4) credits of the General Education Core must be at the upper division level.

*Accepted General Education Core courses are found on page 9.

Required Courses
ATDI 134 Auto/Diesel Electrical/Electronic System I ................................................................. 4
ATDI 257 Automatics ......................................................................................................................... 4
ATDI 264 Auto/Diesel Electrical/Electronic Systems II ................................................................. 4
ATDI 265 Heating and Air Conditioning ......................................................................................... 4
ATDI 384 Auto/Diesel Electronics Applications ............................................................................. 4
ATDI 400 Shop Procedures ............................................................................................................. 2
DIES 104 Introduction to Diesel Engines ....................................................................................... 3
DIES 114 Introduction to Diesel Engines Lab ................................................................................ 3
DIES 115 Introduction to Diesel Fuel Systems .............................................................................. 4
DIES 204 Introduction to Hydraulics and Pneumatics .................................................................. 2
DIES 214 Introduction to Hydraulics and Pneumatics Lab ............................................................. 2
DIES 216 Heavy Duty Power Trains .................................................................................................. 2
DIES 219 Heavy Duty Chassis .......................................................................................................... 4
DIES 262 Diesel Engine Diagnosis & Repair ................................................................................... 2
DIES 272 Diagnosis of Diesel Engine & Repair Lab ....................................................................... 4
DIES 273 Diesel Shop Practices ....................................................................................................... 4
DIES 314 Hydraulics and Pneumatics II ............................................................................................. 4
DIES 420 Diesel Shop Management .................................................................................................. 2
DIES 440 Advanced Fuel Systems .................................................................................................... 4
DIES 434 Current Model Year Technology ...................................................................................... 3
DIES 450 Diagnosis of Power Shifts & Heavy Duty Automatics ..................................................... 4
DIES 479 Cooperative Education ..................................................................................................... 6
ENGL 112 Written Communications II (CAT I) ................................................................................. (3)
ENGL 366 Technical Writing and Editing (CAT I) .......................................................................... (3)

(continued on next page)
MATH 110 Math for Liberal Arts (CAT II) ................................................................. (4)
METL 140 Introduction to Welding & Cutting .......................................................... 3
METL 155 Machining Processes ............................................................................... 3
METL 260 Repair and Maintenance Welding ......................................................... 3
TSCI 304 Fuels and Lubricants (CAT III) ............................................................... (3)
Total minimum credits required for degree ......................................................... 120

PLEASE NOTE: Students enrolled in this program may pay between $15 - $40/semester in course fees. These fees are in addition to tuition and other mandatory fees.

Bachelor of Science

Diesel Technology: Field Maintenance Option

<table>
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<td>ENGL 366</td>
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<tr>
<td>Category II Mathematics</td>
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<td>MATH 110</td>
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<tr>
<td>Category III Natural Sciences with lab</td>
<td>6</td>
<td>TSCI 304</td>
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<td>Category IV Social Sciences</td>
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<td>Category V History</td>
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<td>Category VI Cultural Diversity</td>
<td>3</td>
<td></td>
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<tr>
<td>Category VII Fine Arts</td>
<td>3</td>
<td></td>
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<td>Category VIII Humanities</td>
<td>3</td>
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<tr>
<td>Category IX Technology</td>
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</tr>
<tr>
<td>Total General Education Core Credits</td>
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</tr>
</tbody>
</table>

PLEASE NOTE: In addition to ENGL 366 and TSCI 304, four (4) credits of the General Education Core must be at the upper division level.

*Accepted General Education Core courses are found on page 9.

Required Courses

Advisor Approved Electives .................................................................................. 3
ATDI 134 Auto/Diesel Electrical/Electronic System I ......................................... 4
ATDI 264 Auto/Diesel Electrical/Electronic Systems II .................................... 4
ATDI 265 Heating and Air Conditioning ............................................................ 4
ATDI 384 Auto/Diesel Electronics Applications .............................................. 4
ATDI 400 Shop Procedures .................................................................................. 2
DIES 104 Introduction to Diesel Engines ....................................................... 3
DIES 114 Introduction to Diesel Engines Lab ................................................. 3
DIES 115 Introduction to Diesel Fuel Systems ............................................... 4
DIES 204 Introduction to Hydraulics and Pneumatics .................................... 2
DIES 214 Introduction to Hydraulics and Pneumatics Lab ................................ 2
DIES 216 Heavy Duty Power Trains ................................................................. 4
DIES 262 Diesel Engine Diagnosis & Repair ................................................. 2
DIES 272 Diagnosis of Diesel Engine & Repair Lab ....................................... 4
DIES 314 Hydraulics and Pneumatics II ......................................................... 4
DIES 440 Advanced Fuel Systems .................................................................... 4

(continued on next page)
DIES 434 Current Model Year Technology (Capstone) ................................................................. 3
DIES 450 Diagnosis of Power Shifts & Heavy Duty Automatics ................................................... 4
ENGL 112 Written Communication II (CAT I) ................................................................. (3)
ENGL 366 Technical Writing and Editing (CAT I) ................................................................. (3)
IT 111 Industrial Safety & Waste Management ................................................................... 2
MATH 110 Math for Liberal Arts (CAT II) ........................................................................... (4)
METL 140 Introduction to Welding & Cutting ............................................................................ 3
METL 150 Shielded Metal Arc Welding ......................................................................................... 3
METL 154 Gas Arc Welding Processing ......................................................................................... 3
METL 155 Machining Processes .................................................................................................... 3
METL 260 Repair and Maintenance Welding ............................................................................ 3
METL 285 Weld Certification I ..................................................................................................... 3
METL 356 Weld Certification II .................................................................................................... 3
METL 357 Weld Certification III .................................................................................................. 3
TSCI 304 Fuels and Lubricants (CAT III) .................................................................................. 3

Total minimum credits required for degree ........................................................................... 120

PLEASE NOTE: Students enrolled in this program may pay between $15 - $40/semester in course fees. These fees are in addition to tuition and other mandatory fees.

Minor

Diesel Technology

Required Courses
DIES 104 Introduction to Diesel Engines ................................................................................. 3
DIES 114 Introduction to Diesel Engines Lab ............................................................................... 3
DIES 115 Introduction to Diesel Fuel Systems ............................................................................. 4
DIES 204 Introduction to Hydraulics and Pneumatics ................................................................. 2
DIES 214 Introduction to Hydraulics and Pneumatics Lab .......................................................... 2

Choose ten (10) credits from the following:
DIES 450 Diagnosis of Power Shifts and H.D. Automatics ......................................................... 4
DIES 440 Advanced Fuel Systems ................................................................................................ 4
DIES 314 Hydraulics and Pneumatics II ......................................................................................... 4
DIES 420 Diesel Shop Management .......................................................................................... 2
DIES 434 Current Model Year Technology .................................................................................. 3

Total credits required for minor ............................................................................................... 24

PLEASE NOTE: Students enrolled in this program may pay between $15 - $40/semester in course fees. These fees are in addition to tuition and other mandatory fees.
## Associate of Applied Science

### Diesel Technology

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENGL 111 Written Communication I (CAT I)</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>SPCH 141 Fundamentals of Speech (CAT I)</td>
<td>3</td>
</tr>
<tr>
<td>MAAS 106 Elementary Technical Math</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>MATH 110 Math for Liberal Arts (CAT II)</td>
<td>4</td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>MATH 112 College Algebra (CAT II)</td>
<td>3</td>
</tr>
<tr>
<td>CIS 110 Introduction to Computers (CAT IX)</td>
<td>3</td>
</tr>
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</table>

### Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ATDI 134 Auto/Diesel Electrical/Electronic Systems I</td>
<td>4</td>
</tr>
<tr>
<td>ATDI 257 Automatics</td>
<td>4</td>
</tr>
<tr>
<td>ATDI 264 Auto/Diesel Electrical/Electronic Systems II</td>
<td>4</td>
</tr>
<tr>
<td>ATDI 265 Heating and Air Conditioning</td>
<td>4</td>
</tr>
<tr>
<td>CIS 110 Introduction to Computers (CAT IX)</td>
<td>(3)</td>
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<tr>
<td>DIES 104 Introduction to Diesel Engines</td>
<td>3</td>
</tr>
<tr>
<td>DIES 114 Introduction to Diesel Engines Lab</td>
<td>3</td>
</tr>
<tr>
<td>DIES 115 Introduction to Diesel Fuel Systems</td>
<td>4</td>
</tr>
<tr>
<td>DIES 204 Introduction to Hydraulics and Pneumatics</td>
<td>2</td>
</tr>
<tr>
<td>DIES 214 Introduction to Hydraulics and Pneumatics Lab</td>
<td>2</td>
</tr>
<tr>
<td>DIES 216 Heavy Duty Power Trains</td>
<td>4</td>
</tr>
<tr>
<td>DIES 219 Heavy Duty Chassis</td>
<td>4</td>
</tr>
<tr>
<td>DIES 262 Diesel Engine Diagnosis &amp; Repair</td>
<td>2</td>
</tr>
<tr>
<td>DIES 272 Diagnosis of Diesel Engine Repair Lab</td>
<td>4</td>
</tr>
<tr>
<td>DIES 273 Diesel Shop Practices</td>
<td>4</td>
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<tr>
<td>METL 140 Introduction to Welding and Cutting</td>
<td>3</td>
</tr>
<tr>
<td>Advisor Approved Electives</td>
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</table>

**Total minimum credits required for degree..........................................................** 63

**PLEASE NOTE:** *Students enrolled in this program may pay between $15 - $40/semester in course fees. These fees are in addition to tuition and other mandatory fees.*
EDUCATION (TEACHING)

Core Requirements

*The Elementary and Secondary Education Core Requirements are included with the required courses for each education major in this catalog.*

**Elementary Education Core Requirements:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPY 215</td>
<td>Introduction to Education Psychology</td>
<td>3</td>
</tr>
<tr>
<td>EDPY 350</td>
<td>Education and Psychology Exceptional Children</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 100</td>
<td>Foundations of Education</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 300</td>
<td>Introduction to Curriculum Planning and Practice*</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 302</td>
<td>Methods of Teaching Elementary Mathematics*</td>
<td>2</td>
</tr>
<tr>
<td>EDUC 304</td>
<td>Methods of Teaching Elementary Science*</td>
<td>2</td>
</tr>
<tr>
<td>EDUC 306</td>
<td>Methods of Teaching Elementary Social Studies*</td>
<td>2</td>
</tr>
<tr>
<td>EDUC 310</td>
<td>Methods of Teaching Integrated Creative Arts*</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 321</td>
<td>Integrating Technology into Education*</td>
<td>1</td>
</tr>
<tr>
<td>EDUC 334</td>
<td>Teaching the Integrated Language Arts*</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 335</td>
<td>Fundamental and Corrective Strategies in the Elementary Reading Program*</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 336</td>
<td>Integrated Field Experience*</td>
<td>2</td>
</tr>
<tr>
<td>EDUC 347</td>
<td>Speech, Hearing, &amp; Language Development of the Pre-School Child*</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 376</td>
<td>Assessment in Education*</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 380</td>
<td>Classroom Environment and Management*</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 448</td>
<td>Reading Materials for the Elementary Child*</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 455</td>
<td>Advanced Practicum in Education*</td>
<td>3</td>
</tr>
<tr>
<td>HPE 235</td>
<td>Principles of Health &amp; Wellness</td>
<td>3</td>
</tr>
<tr>
<td>HPE 300</td>
<td>Physical Education in the Elementary Schools*</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 205</td>
<td>Human Growth and Development (CAT IV)</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 400</td>
<td>Elementary Teaching Practicum and Seminar*</td>
<td>12</td>
</tr>
<tr>
<td>EDUC 475</td>
<td>Elementary and Secondary Teaching Practicum and Seminar*</td>
<td>12</td>
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**Total: 65 Credits**

**Secondary Education Core Requirements:**

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<tr>
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<tr>
<td>EDPY 215</td>
<td>Introduction to Education Psychology</td>
<td>3</td>
</tr>
<tr>
<td>EDPY 350</td>
<td>Education and Psychology Exceptional Children</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 100</td>
<td>Foundations of Education</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 300</td>
<td>Introduction to Curriculum Planning and Practice*</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 321</td>
<td>Integrating Technology into Education*</td>
<td>1</td>
</tr>
<tr>
<td>EDUC 376</td>
<td>Assessment in Education*</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 445</td>
<td>Teaching Reading, Writing &amp; Critical Thinking Across the Curriculum</td>
<td>2</td>
</tr>
<tr>
<td>EDUC 455</td>
<td>Advanced Practicum in Education*</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 450</td>
<td>Secondary Teaching Practicum and Seminar*</td>
<td>12</td>
</tr>
<tr>
<td>HPE 235</td>
<td>Principles of Health &amp; Wellness</td>
<td>3</td>
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<tr>
<td>PSYC 205</td>
<td>Human Growth and Development (CAT IV)</td>
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</table>

**Total: 39 Credits**

VOED 350 Principles of Industrial/Technology Technology, VOED 360 Analysis & Prep Lab Management, and VOED 370 Methods of Teaching Industrial/Technology Education are suggested for Industrial Technology and Business Education majors (or minors) who plan on being able to verify appropriate work experience through the Office of Public Instruction and who want to qualify for vocational approval to teach in a state or federally reimbursed program.
EDUCATION-ELEMENTARY/SECONDARY (K-12)

Bachelor of Science in Education

Elementary Education K-8

<table>
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<tr>
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<td>ENGL 112</td>
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<td>SPCH 142</td>
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</tr>
<tr>
<td>Category II Mathematics</td>
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<td>MATH 112</td>
<td>3</td>
</tr>
<tr>
<td>Category III Natural Sciences with lab</td>
<td>6</td>
<td>BIOL 151 OR BIOL 204</td>
<td>3</td>
</tr>
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<td></td>
<td></td>
<td>PHYS 114</td>
<td>3</td>
</tr>
<tr>
<td>Category IV Social Sciences</td>
<td>3</td>
<td>POL 134</td>
<td>3</td>
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<tr>
<td>Category V History</td>
<td>3</td>
<td>HIST 216</td>
<td>3</td>
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<tr>
<td>Category VI Cultural Diversity</td>
<td>3</td>
<td>NAS 310 OR NAS 330</td>
<td>3</td>
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<tr>
<td>Category VII Fine Arts</td>
<td>3</td>
<td>ENGL 114</td>
<td>3</td>
</tr>
<tr>
<td>Category VIII Humanities</td>
<td>3</td>
<td>CIS 320</td>
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</table>

Total General Education Core Credits .......................................................................................... 33

*Accepted General Education Core courses are found on page 9.

Required Courses

- BIOL 151 Essentials of Biology (CAT III Lab Science) ................................................................... (3)
- OR
- BIOL 204 Essentials of Anatomy and Physiology (CAT III Lab Science) ................................... (4)
- CIS 320 Computers in Education (CAT IX) .......................................................................................... (3)
- EDPY 215 Introduction to Education Psychology ........................................................................... 3
- EDPY 350 Education and Psychology Exceptional Children .............................................................. 3
- EDUC 100 Foundations of Education ................................................................................................... 3
- EDUC 300 Introduction to Curriculum Planning and Practice* ............................................................. 3
- EDUC 302 Methods of Teaching Elementary Mathematics* ................................................................ 2
- EDUC 304 Methods of Teaching Elementary Science* ........................................................................ 2
- EDUC 306 Methods of Teaching Elementary Social Studies* ................................................................ 2
- EDUC 310 Methods of Teaching Integrated Creative Arts* ................................................................. 3
- EDUC 334 Methods of Teaching Integrated Language Arts* ............................................................... 3
- EDUC 335 Fundamental and Corrective Strategies in the Elementary Reading Program* .................... 3
- EDUC 336 Integrated Field Experience* ............................................................................................ 1
- EDUC 351 Diversity and Technology in the Classroom ...................................................................... 3
- EDUC 353 Health Enhancement for Elementary Education .................................................................. 2
- EDUC 376 Assessment in Education* .................................................................................................. 3
- EDUC 380 Classroom Environment and Management* ...................................................................... 3
- EDUC 400 Elementary Teaching Practicum and Seminar* .................................................................. 12
- OR
- EDUC 475 Elementary and Secondary Teaching Practicum and Seminar* ............................................ 12
- EDUC 430 Integrating Content Across the Curriculum ....................................................................... 2
- EDUC 448 Reading Materials for the Elementary Child ..................................................................... 2
- EDUC 455 Advanced Practicum in Education* .................................................................................. 3
- ENGL 112 Written Communication II (CAT I) ..................................................................................... (3)

(continued on next page)
ENGL 114 Introduction to Literature (CAT VIII) ................................................................. (3)
HIST 216 Montana History (CAT V) .................................................................................... (3)
HPE 235 Principles of Health & Wellness .......................................................................... 3
MATH 112 College Algebra (CAT II) ................................................................................. (3)
MATH 120 Mathematics for Elementary Teachers I ......................................................... 3
NAS 310 Native Cultures of North America (CAT VI) ....................................................... (3)
OR
NAS 330 American Indian Oral Tradition (CAT VI) ......................................................... (3)
PHYS 114 Foundations of Physical Science (CAT III) ..................................................... (3)
POL 134 American Government (CAT IV) .................................................................. (3)
PSYC 205 Human Growth and Development (CAT IV) ............................................... 3
SPCH 142 Interpersonal Communications (CAT I) ......................................................... (3)
Major/Minor/Electives .................................................................................................. 28

*Upon Admission to Teacher Education, prescribed courses must be taken in sequence (blocks). See your advisor for more information.

Total minimum credits required for degree ........................................................................ 128
Bachelor of Science in Education

Health and Physical Education (K-12)

<table>
<thead>
<tr>
<th>General Education Core Required*</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Category I Communication</td>
<td>6</td>
<td>ENGL 112</td>
<td>3</td>
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<td></td>
<td>SPCH 142</td>
<td>3</td>
</tr>
<tr>
<td>Category II Mathematics</td>
<td>3</td>
<td>MATH 112</td>
<td>3</td>
</tr>
<tr>
<td>Category III Natural Sciences with lab</td>
<td>6</td>
<td>BIOL 204 OR BIOL 241</td>
<td>4</td>
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<tr>
<td>Category IV Social Sciences</td>
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<td>PSYC 205</td>
<td>3</td>
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<tr>
<td>Category V History</td>
<td>3</td>
<td>HIST 216</td>
<td>3</td>
</tr>
<tr>
<td>Category VI Cultural Diversity</td>
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<tr>
<td>Category VII Fine Arts</td>
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<td></td>
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</tr>
<tr>
<td>Category VIII Humanities</td>
<td>3</td>
<td></td>
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<tr>
<td>Category IX Technology</td>
<td>3</td>
<td>CIS 320</td>
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<td><strong>Total General Education Core Credits</strong></td>
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</tbody>
</table>

*Accepted General Education Core courses are found on page 9.

Required Courses

BIOL 204 Essentials of Anatomy and Physiology (CAT III) .................................................................(4)

OR

BIOL 241 Anatomy and Physiology I (CAT III) .......................................................................................... (4)

CIS 320 Computers in Education (CAT IX) ............................................................................................... (3)

EDPY 215 Introduction to Educational Psychology .................................................................................. 3

EDPY 350 Education and Psychology of Exceptional Children ................................................................ 3

EDUC 100 Foundations of Education ....................................................................................................... 3

EDUC 300 Introduction to Curriculum Planning and Practice* ................................................................. 3

EDUC 339 Secondary Field Experience* ................................................................................................... 2

EDUC 351 Diversity and Technology in the Classroom* ......................................................................... 3

EDUC 355 Health Enhancement for Elementary Education* .................................................................... 2

HPE 376 Tests & Measurements in Health and Physical Education* ......................................................... 3

EDUC 380 Classroom Environment and Management* ............................................................................ 3

EDUC 445 Teaching Reading, Writing & Critical Thinking Skills Across Curriculum* ......................... 2

EDUC 455 Advanced Practicum in Education* ......................................................................................... 3

EDUC 475 Elementary & Secondary Teaching Practicum & Seminar* ..................................................... 12

ENGL 112 Written Communication II (CAT I) ......................................................................................... (3)

HIST 216 Montana History (CAT V) ......................................................................................................... (3)

HPE 233 Foundations of Health and Physical Education ........................................................................... 2

HPE 235 Principles of Health & Wellness ............................................................................................... 3

HPE 274 Personal and Community Health ................................................................................................ 3

HPE 300 Physical Education in Elementary Schools* ......................................................................... 3

HPE 305 Methods & Materials in Health Education* ............................................................................ 3

HPE 306 Adapted Physical Education* .................................................................................................... 2

HPE 325 Organization & Administration of Health & Physical Education .............................................. 3

HPE 330 Lifetime Activities .................................................................................................................... 3

(continued on next page)
HPE 357 Kinesiology ............................................................................................................ 3
Advisor Approved Electives ..................................................................................................... 4
HPE 358 Physiology of Exercise ............................................................................................. 3
MATH 112 College Algebra (CAT II) ....................................................................................... (3)
PSYC 205 Human Growth and Development (CAT IV) ........................................................... (3)
SPCH 142 Interpersonal Communication (CAT I) .................................................................... (3)

*Upon Admission to Teacher Education, prescribed courses must be taken in sequence (blocks). See your advisor for more information.

Choose one (1) course from the following:

15X Aquatic Skills Selectives
HPEA 150 Beginning Swimming ................................................................. 1
HPEA 151 Intermediate Swimming ............................................................. 1
HPEA 152 Skin and Scuba Diving ................................................................. 1
HPEA 153 Canoeing .................................................................................... 1
HPEA 154 Aqua Exercise ............................................................................ 1
HPEA 159 Selected Topics in Aquatic Skills ................................................ 1

Choose (1) one of the following two Areas of Concentration (required only if no minor)

Teaching and Coaching
HPE 236 Intramural and Recreational Activities ......................................................... 3
HPE 247 Techniques of Officiating .................................................................................... 2
HPE 248 Foundations of Coaching .................................................................................. 2
HPE 359 Field Experience in Physical Education ......................................................... 1
HPE 370 Prevention and Care of Athletic Injuries ......................................................... 3
HPE 378 Sex Education ......................................................................................... 3
HPE 407 Issues in Competitive Athletics ................................................................. 3

OR
HPE 448 Psychology and Sociology in Sports ......................................................... 3

HPEA Advisor Approved Elective ................................................................................. 1

Choose (1) one course from the following:
HPE 340 Coaching Football ......................................................................................... 2
HPE 341 Coaching Basketball ....................................................................................... 2
HPE 342 Coaching Track and Field ................................................................................ 2
HPE 343 Coaching Volleyball ....................................................................................... 2
HPE 344 Coaching Wrestling ....................................................................................... 2
HPE 345 Coaching Baseball/Softball .......................................................................... 2
HPE 346 Coaching Gymnastics .................................................................................... 2
HPE 340 Coaching Swimming ..................................................................................... 2

Health Enhancement
HPE 236 Intramural and Recreational Activities ......................................................... 3
HPE 307 Community and School Recreation .............................................................. 3
HPE 370 Prevention and Care of Athletic Injuries ......................................................... 3
HPE 374 Current Issues in Health .................................................................................. 3
HPE 378 Sex Education ......................................................................................... 3
HPE 394 Outdoor Recreation ....................................................................................... 3

(continued on next page)
Choose (2) two courses from the following list of 18X Fitness and Wellness:

- HPEA 180 Weight Control ........................................................................................................ 1
- HPEA 181 Weight Training ...................................................................................................... 1
- HPEA 182 Aerobic Dance ....................................................................................................... 1
- HPEA 183 Personal Self Defense ............................................................................................ 1
- HPEA 184 Trimnastics ........................................................................................................... 1
- HPEA 185 Conditioning Activities .......................................................................................... 1
- HPEA 186 Yoga .................................................................................................................... 1
- HPEA 187 Advanced Weight Training .................................................................................... 1
- HPEA 189 Selected Topics in Fitness and Wellness Skills ..................................................... 1

Total minimum credits required for degree ........................................................................... 128

PLEASE NOTE: Students enrolled in this program may pay between $7 - $25/semester in course fees. These fees are in addition to tuition and other mandatory fees.

Minors

Art K-12 (Teaching)

Required Courses

- ART 100 Introduction to Art (CAT VIII) ................................................................. 3
- ART 115 Ceramics (CAT VII) .................................................................................... 3
- ART 120 Drawing I (CAT VII) .................................................................................... 3
- ART 150 Two Dimensional Design I (CAT VII) ....................................................... 3
- ART 254 Painting I .................................................................................................... 3

OR

- ART 256 Watercolor Painting I .................................................................................... 3

- ART 361 Art History of Western Civilization I (CAT VII) ............................................ 3

OR

- ART 362 Art History of Western Civilization II (CAT VII) .......................................... 3
- EDUC 259 Field Experience ....................................................................................... 1
- EDUC 310 Methods of Teaching Integrated Creative Arts ....................................... 3

Total minimum credits required for minor ........................................................................... 22

PLEASE NOTE: Students enrolled in this program may pay between $10 - $30/semester in course fees. These fees are in addition to tuition and other mandatory fees.
Physical Education & Health K-12 (Teaching)

Required Courses
BIOL 204 Essentials of Anatomy and Physiology (CAT III) ................................................................. 4
OR
BIOL 241 Anatomy and Physiology I (CAT III) ........................................................................................ 4
EDUC 339 Secondary Field Experience ..................................................................................................... 1
HPE 233 Foundations of Health & Physical Education ............................................................................... 2
HPE 235 Principles of Health and Wellness .................................................................................................. 3
HPE 274 Personal & Community Health ..................................................................................................... 3
HPE 300 Physical Education in the Elementary Schools* ........................................................................ 3
HPE 305 Methods and Materials in Health Education* .......................................................................... 3
HPE 306 Adapted Physical Education* ......................................................................................................... 2
HPE 325 Organization & Administration of Health & Physical Education ..................................................... 3
HPE 330 Lifetime Activities ....................................................................................................................... 3
HPE 357 Kinesiology .................................................................................................................................. 3
HPE 358 Physiology of Exercise .................................................................................................................. 3
HPE 376 Tests & Measurements in Health & Physical Education ................................................................. 3

Choose (1) one course from the following:
HPEA 150 Beginning Swimming .............................................................................................................. 1
HPEA 151 Intermediate Swimming ........................................................................................................... 1
HPEA 152 Skin and Scuba Diving ............................................................................................................. 1
HPEA 153 Canoeing ................................................................................................................................... 1
HPEA 154 Aqua Exercise ............................................................................................................................. 1
HPEA 159 Selected Topics in Aquatic Skills ............................................................................................... 1

Total minimum credits required for minor .............................................................................................. 37

PLEASE NOTE: Students enrolled in this program may pay between $7 - $25/semester in course fees. These fees are in addition to tuition and other mandatory fees.

Reading K-12 (Teaching)

Required Courses
EDPY 425 Learning Disabilities ................................................................................................................ 3
EDUC 334 Teaching the Integrated Language Arts .................................................................................... 3
EDUC 335 Fund & Corrective Strategies in the Elem Reading Program ..................................................... 3
EDUC 336 Integrated Field Experience ....................................................................................................... 1
EDUC 430 Integrating Content Across the Curriculum .............................................................................. 2
EDUC 440 Assessment in the Remedial Reading Program ....................................................................... 2
EDUC 445 Teaching Reading/Writing/Critical Thinking Across the Curr .................................................. 2
EDUC 448 Reading Materials for the Elementary Child .......................................................................... 2
ENGL 310 Literature for Children and Adolescents (CAT VIII) ............................................................... 3
ENGL 337 English Grammar ..................................................................................................................... 3
ENGL 380 Linguistics ................................................................................................................................. 3
NAS 330 American Indian Oral Tradition (CAT VI) ............................................................................... 3

Total minimum credits required for minor .............................................................................................. 30

PLEASE NOTE: Students enrolled in this program may pay between $7 - $15/semester in course fees. These fees are in addition to tuition and other mandatory fees.
EDUCATION- SECONDARY (5-12)

Bachelor of Science in Education

Business Education 5-12 (Teaching)

This program is in moratorium. Please see the Provost (Cowan Hall 204) for availability of this degree.

<table>
<thead>
<tr>
<th>General Education Core Required*</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
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<td>ENGL 112</td>
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<td>Category II Mathematics</td>
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<tr>
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<tr>
<td>Category IV Social Sciences</td>
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<td>PSYC 205</td>
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<td>Category VI Cultural Diversity</td>
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<tr>
<td>Category VII Fine Arts</td>
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<td>Category VIII Humanities</td>
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<td>Category IX Technology</td>
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<td>CIS 320</td>
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</tbody>
</table>

Total General Education Core Credits 33

*Accepted General Education Core courses are found on page 9.

Required Courses

ACCT 261 Principles of Accounting I ................................................................. 3
ACCT 262 Principles of Accounting II ................................................................. 3
ACCT 285 Accounting Systems ............................................................................. 3
BUED 110 Introduction to Business Education and Portfolio Dev ....................... 1
BUED 142 Introduction to Word Processing .......................................................... 2
BUED 230 Office Skills ....................................................................................... 2
BUED 245 Personal Finance .................................................................................. 3
BUED 280 The Internet, Web Page Design, and On-line Course Supplements for Educators .......................................................... 2
BUED 302 Introduction to E-Commerce and Internet Marketing ................................ 3
BUED 305 Video Editing and Production ............................................................... 3
BUED 315 Methods of Teaching Accounting .......................................................... 1
BUED 316 Methods of Teaching Keyboarding and Word Processing ....................... 1
BUED 317 Methods of Teaching Office Skills ......................................................... 1
BUED 318 Methods of Teaching Personal Finance .................................................. 1
BUED 319 Methods of Teaching Business Law ....................................................... 1
BUED 348 Business Communications ..................................................................... 3
BUED 421 Methods of Teaching Marketing ............................................................ 1
BUED 422 Methods of Teaching Entrepreneurship ............................................... 1
BUED 423 Methods of Teaching Computer Applications ....................................... 1
BUED 424 Methods of Teaching Business to Special Learners ................................ 1
BUED 455 Pre-Practicum Seminar ....................................................................... 1
BUS 110 Creative Problem Solving ....................................................................... 3
BUS 271 Legal Environment of Business .............................................................. 3
BUS 300 Management in Organizations ................................................................ 3
BUS 335 Principles of Marketing ........................................................................ 3
BUS 410 International Business .......................................................................... 3

(continued on next page)
EDPY 215 Intro to Education Psychology ................................................................. 3
CIS 320 Computers in Education (CAT IX)........................................................................ (3)
EDPY 350 Education and Psychology Exceptional Children......................................... 3
EDUC 100 Foundations of Education .............................................................................. 3
EDUC 300 Introduction to Curriculum Planning and Practice ........................................ 3
EDUC 321 Integrating Technology into Education.......................................................... 1
EDUC 376 Assessment in Education .............................................................................. 3
EDUC 445 Teaching Reading, Writing & Critical Thinking Across the Curriculum .......... 2
EDUC 455 Advanced Practicum in Education ................................................................. 3
EDUC 450 Secondary Teaching Practicum and Seminar ................................................. 12
ENGL 112 Written Communication II (CAT I) .............................................................. (3)
HPE 235 Principles of Health & Wellness ...................................................................... 3
PSYC 205 Human Growth and Development (CAT IV)................................................ (3)
SBM 416 New Venture Development .......................................................................... 3
Advisor Approved Electives ......................................................................................... 3

Total minimum credits required for degree .................................................................. 128
Bachelor of Science in Education

**English 5-12 (Teaching) -Teaching Minor Required**

### General Education Core Required*

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<td>Category II Mathematics</td>
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<td>Category III Natural Sciences with lab</td>
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<td>Category IX Technology</td>
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<td>CIS 320</td>
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</table>

**Total General Education Core Credits** 33

*Accepted General Education Core courses are found on page 9.

### Required Courses

- CIS 320 Computers in Education (CAT IX) ............................................................... (3)
- EDPY 215 Introduction to Education Psychology .................................................. 3
- EDPY 350 Education and Psychology Exceptional Children ......................................... 3
- EDUC 100 Foundations of Education ........................................................................ 3
- EDUC 300 Introduction to Curriculum Planning and Practice ..................................... 3
- EDUC 313 Methods of Teaching English .................................................................... 3
  OR
  ENGL 313 Methods of Teaching English .................................................................... 3
- EDUC 321 Integrating Technology into Education ..................................................... 3
- EDUC 376 Assessment in Education .......................................................................... 3
- EDUC 445 Teaching Reading, Writing & Critical Thinking Across the Curriculum .......... 2
- EDUC 450 Secondary Teaching Practicum and Seminar ............................................. 12
- EDUC 455 Advanced Practicum in Education ............................................................ 3
- ENGL 112 Written Communications II (CAT I) .......................................................... (3)
  OR
  ENGL 114 Introduction to Literature (CAT VIII) ....................................................... 3
  OR
  ENGL 214 Introduction to World Literature (CAT VIII) ............................................. 3
- ENGL 310 Literature for Children and Adolescents (CAT VIII) .............................. 3
- ENGL 311 Creative Writing (CAT VII) .................................................................... 3
- ENGL 380 Linguistics ............................................................................................. 3
- ENGL 385 Shakespeare (CAT VIII) .......................................................................... 3
- ENGL 402 Literary Criticism ................................................................................. 3
- HIST 141 History of Civilization I (CAT V) ............................................................ 3
  OR
  HIST 142 History of Civilization II (CAT V) .......................................................... 3
- HPE 235 Principles of Health and Wellness .............................................................. 3

(continued on next page)
NAS 105 Introduction to Native American Language (CAT VI) ................................................................. 6
OR
SPAN 105 Elementary Spanish I (CAT VI) ................................................................................................ 8
NAS 331 Literature by & About Native Americans (CAT VI) .................................................................. 3
OR
NAS 330 American Indian Oral Tradition (CAT VI) .............................................................................. 3
PSYC 205 Human Growth and Development (CAT IV) ....................................................................... (3)
SPCH 141 Fundamentals of Speech (CAT I) .......................................................................................... (3)
OR
SPCH 142 Interpersonal Communications (CAT I) ........................................................................... (3)

Choose (3) three courses from the following:
ENGL 201 American Literature I (CAT VIII) ......................................................................................... 3
ENGL 202 American Literature II (CAT VIII) .......................................................................................... 3
ENGL 221 English Literature I (CAT VIII) ............................................................................................... 3
ENGL 222 English Literature II (CAT VIII) ............................................................................................. 3

Choose (2) two courses from the following (at least one at the 400 level):
ENGL 330 Modern Poetry (CAT VIII) ...................................................................................................... 3
ENGL 360 Dramatic Literature .................................................................................................................. 3
ENGL 401 Contemporary Literature ......................................................................................................... 3
ENGL 409 Major Authors ........................................................................................................................ 3
ENGL 435 Development of the Novel ....................................................................................................... 3

Minor ....................................................................................................................................................... 23

Total minimum credits required for degree ......................................................................................... 128
Bachelor of Science in Education

General Science 5-12 (Teaching)-No Minor Required

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<td>Category IV Social Sciences</td>
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</table>

Total General Education Core Credits .......................................................................................... .......... 33

*Accepted General Education Core courses are found on page 9.

Required Courses:

BIOL 140 Cell Biology .......................................................................................................... 4
BIOL 141 Cell Biology Lab ...................................................................................................... 1
BIOL 221 Botany I .............................................................................................................. 3
BIOL 222 Botany I Lab ......................................................................................................... 2
BIOL 314 General Ecology ................................................................................................... 4
BIOL 348 Zoology ............................................................................................................... 3
BIOL 350 Zoology Lab ........................................................................................................... 2
BIOL 425 Methods of Teaching Secondary Science .................................................................... 3

OR

CHEM 121 General Inorganic Chemistry I .................................................................................. 3
CHEM 122 General Inorganic Chemistry II ............................................................................. 3
CHEM 123 General Inorganic Chemistry I Lab ........................................................................ 2
CHEM 124 General Inorganic Chemistry II Lab ........................................................................ 2
CIS 320 Computers in Education (CAT IX) ................................................................................ (3)
EDPY 215 Introduction to Education Psychology ....................................................................... 3
EDPY 350 Education and Psychology Exceptional Children ..................................................... 3
EDUC 100 Foundations of Education .......................................................................................... 3
EDUC 300 Introduction to Curriculum Planning and Practice ................................................... 3
EDUC 321 Integrating Technology into Education ...................................................................... 1
EDUC 376 Assessment in Education ........................................................................................... 3
EDUC 445 Teaching Reading, Writing & Critical Thinking Across the Curriculum .................... 2
EDUC 450 Secondary Teaching Practicum and Seminar ............................................................ 12
EDUC 455 Advanced Practicum in Education ............................................................................ 3
ENGL 112 Written Communications II (CAT I) ......................................................................... (3)
ESCI 115 Foundations of Earth Science ..................................................................................... 4
ESCI 204 Physical Geology ..................................................................................................... 4
ESCI 315 General Hydrology .................................................................................................. 3

(continued on next page)
HPE 235 Principles of Health and Wellness ................................................................. 3
PHYS 231 Fundamentals of Physics I ................................................................. 3
PHYS 232 Fundamentals of Physics II ............................................................... 3
PHYS 234 Fundamentals of Physics I Lab .......................................................... 2
PHYS 235 Fundamentals of Physics II Lab .......................................................... 2
PSYC 205 Human Growth and Development (CAT IV) ..................................... (3)
SPCH 141 Fundamentals of Speech (CAT I) ................................................... (3)
Advisor Approved Electives ............................................................................... 6

Choose six (6) credits from the following:
BIOL 241 Anatomy & Physiology I ................................................................. 4
BIOL 242 Anatomy & Physiology II ............................................................... 4
BIOL 322 Botany II ........................................................................................... 4
BIOL 324 Entomology ......................................................................................... 3
BIOL 334 Ornithology ........................................................................................ 3
BIOL 406 Molecular Biology Techniques ....................................................... 3
BIOL 407 Freshwater Biology .......................................................................... 4
BIOL 410 Field Biology Methods ..................................................................... 4
BIOL 460 Advanced Microbiology .................................................................. 3
ESCI 310 Introduction to Paleontology ........................................................... 3
NSCI 450 Undergraduate Research I ................................................................ 3
NSCI 451 Undergraduate Research II ............................................................. 3

Total minimum credits required for degree ...................................................... 128

PLEASE NOTE: Students enrolled in this program may pay between $5 - $20/semester in course fees. These fees are in addition to tuition and other mandatory fees.
Bachelor of Science

Industrial Technology 5-12 (Teaching)

<table>
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<td>Category IX Technology</td>
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<td>CIS 320</td>
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</table>

Total General Education Core Credits .......................................................................................... 33-34

*Accepted General Education Core courses are found on page 9.

Required Courses

AUTO 128 Engines ............................................................................................................................ 4
CIS 320 Computers in Education (CAT IX).......................................................................................(3)
DRFT 131 Technical Graphics I......................................................................................................... 3
DRFT 156 Introduction to CAD........................................................................................................ 3
EDPY 215 Introduction to Educational Psychology ........................................................................... 3
EDPY 350 Education and Psychology of Exceptional Children .......................................................... 3
EDUC 100 Foundations of Education ............................................................................................... 3
EDUC 300 Introduction to Curriculum Planning and Practice .......................................................... 3
EDUC 321 Integrating Technology into Education ........................................................................... 1
EDUC 376 Assessment in Education .................................................................................................. 3
EDUC 445 Teaching Reading, Writing & Critical Thinking Across the Curriculum ......................... 2
EDUC 450 Secondary Teaching Practicum & Seminar ...................................................................... 12
EDUC 455 Advanced Practicum in Education ..................................................................................... 3
EET 110 Electronics Survey I ........................................................................................................... 3
ENGL 112 Written Communications II (CAT I)..................................................................................(3)
HPE 235 Principles of Health & Wellness ......................................................................................... 3
ISET 308 Industrial Electronics ........................................................................................................ 4
IT 100 Introduction to Technology (CAT IX).................................................................................... 3
IT 109 Introduction to Woodworking ............................................................................................... 3
IT 130 Construction Technology ..................................................................................................... 3
IT 209 Furniture & Cabinetmaking ................................................................................................ 3
MATH 110 Math for Liberal Arts .....................................................................................................(4)
OR
MATH 112 College Algebra ...............................................................................................................(3)
METL 140 Introduction to Welding and Cutting ................................................................................ 3
METL 155 Machining Processes .......................................................................................................... 3
MFGT 200 Manufacturing Process & Materials .................................................................................. 3
PSYC 205 Human Growth and Development (CAT IV) ................................................................... 3
VOED 350 Principles of Industrial/Technology Education ................................................................. 3
VOED 360 Analysis & Prep Lab Management ..................................................................................... 3
VOED 370 Methods of Teaching Industrial/Technology Education ................................................ 3
Advisor Approved Elective ................................................................................................................ 2
Technical Endorsement ..................................................................................................................... 10

Total minimum credits required for degree ..................................................................................... 128
Social Science-Broadfield 5-12 (Teaching)-No Minor Required

General Education Core Required* Credits Course Prefix & # Credits
Category I Communication 6 ENGL 112 3
Category II Mathematics 3
Category III Natural Sciences with lab 6
Category IV Social Sciences 3 See CAT IV below
Category V History 3 See CAT V below
Category VI Cultural Diversity 3 See CAT VI below
Category VII Fine Arts 3 See CAT VII below
Category VIII Humanities 3 See CAT VIII below
Category IX Technology 3 CIS 320

Total General Education Core Credits ................................................................. 33

*Accepted General Education Core courses are found on page 9.

Required Courses

- ART 361 Art History of Western Civilization I (CAT VII).................................(3)
- OR
- ART 362 Art History of Western Civilization II (CAT VII).................................(3)

CIS 320 Computers in Education (CAT IX).............................................................(3)
EDPY 215 Introduction to Educational Psychology .............................................. 3
EDPY 350 Educational and Psychology of Exceptional Children ......................... 3
EDUC 100 Foundations of Education ..................................................................... 3
EDUC 300 Introduction to Curriculum Planning and Practice ............................... 3
EDUC 321 Integrating Technology into Education ................................................ 1
EDUC 336 Integrated Field Experience .................................................................. 1
EDUC 376 Assessment in Education ...................................................................... 3
EDUC 445 Teaching Reading, Writing & Critical Thinking Skills Across Curriculum .... 2
EDUC 450 Secondary Teaching Practicum & Seminar .......................................... 12
EDUC 455 Advanced Practicum in Education ...................................................... 3
ENGL 112 Written Communications II (CAT I) ......................................................(3)
ENGL 114 Introduction to Literature (CAT VIII) .................................................... 3
OR
ENGL 214 Introduction to World Literature (CAT VIII) ......................................... 3

HIST 131 American History I (CAT V) ................................................................. 3
HIST 132 American History II (CAT V) ............................................................... 3
HIST 141 History of Civilization I (CAT V) ......................................................... 3
HIST 142 History of Civilization II (CAT V) ........................................................ 3
HIST 216 Montana History (CAT V) .................................................................... 3
HIST 449 Historiography ..................................................................................... 3
HPE 235 Principles of Health & Wellness ............................................................ 3
NAS 105 Introduction to Native American Language (CAT VI) .........................(3)
OR
SPAN 105 Elementary Spanish I (CAT VI) ........................................................ (4)

POL 134 American Government (CAT IV) ........................................................... 3
POL 201 State and Local Government .................................................................. 3
POL 235 Political Ideologies (CAT IV) ................................................................. 3

(continued on next page)
POL 303 American Constitution (CAT IV) .................................................................................................... 3
POL 344 International Relations .................................................................................................................. 3
PSYC 205 Human Growth and Development (CAT IV) .......................................................................... 3
SOSC 325 Methods of Teaching History and Social Science ..................................................................... 3
OR
EDUC 325 Methods of Teaching History and Social Science .................................................................... 3
Advisor Approved Electives ...................................................................................................................... 7

Choose six (6) credits HIST prefix at the 300 or 400 level ........................................................................ 6

Choose (12) twelve credits from one of the following prefixes (3 credits must be at the 300 level): .... 12
ECON, PSYC, SOC

Total minimum credits required for major ............................................................................................ 128

Minors

Business Education 5-12 (Teaching)

This program is in moratorium. Please see the Provost (Cowan Hall 204) for availability of this degree.

Required Courses
ACCT 261 Principles of Accounting I ............................................................................................................ 3
ACCT 285 Accounting Systems .................................................................................................................... 3
BUED 142 Introduction to Word Processing ................................................................................................. 2
BUED 245 Personal Finance ........................................................................................................................ 3
BUED 315 Methods of Teaching Accounting .............................................................................................. 1
BUED 316 Methods of Teaching Keyboarding and Word Processing .......................................................... 1
BUED 318 Methods of Teaching Personal Finance ...................................................................................... 1
BUED 319 Methods of Teaching Business Law ............................................................................................ 1
BUED 421 Methods of Teaching Marketing .................................................................................................. 1
BUED 422 Methods of Teaching Entrepreneurship ...................................................................................... 1
BUED 423 Methods of Teaching Computer Applications ............................................................................. 1
BUS 100 Introduction to Business ................................................................................................................ 3
BUS 271 Business Law .................................................................................................................................. 3
BUS 335 Principles of Marketing ................................................................................................................ 3
SBM 416 New Venture Development ........................................................................................................... 3

Total minimum credits required for minor .............................................................................................. 30
## Computer Information Systems 5-12 (Teaching)

This program is in moratorium. Please see the Provost (Cowan Hall 204) for availability of this degree.

### Required Courses
- CIS 115 Visual Basic Programming ................................................................. 3
- CIS 155 Java Programming ............................................................................... 3
- CIS 171 Desktop/Small Business Databases using MS Access .................... 3
- CIS 230 Computer Hardware Support ............................................................ 3
- CIS 285 Spreadsheet ...................................................................................... 3
- ISET 350 Advanced Java Programming ........................................................ 3
- ISET 360 Business Telecommunications & Networking ............................... 3
- ISET 410 Enterprise Resource Planning ......................................................... 3

### Choose six (6) credits from the following:
- ISET 300 Operating Systems Introduction ...................................................... 3
- ISET 305 Digital Systems ................................................................................ 3
- ISET 335 Computer Network Security ............................................................ 3
- ISET 355 Data Structures .............................................................................. 3
- ISET 371 Enterprise Database Using Oracle .................................................. 3
- ISET 435 Network Routing & Security ........................................................... 3
- ISET 455 E-Commerce Programming ............................................................ 3

### Total minimum credits required for minor .................................................. 30

## English 5-12 (Teaching)

### Required Courses
- ENGL 214 Introduction to World Literature (CAT VIII) ............................... 3
- ENGL 310 Literature for Children and Adolescents (CAT VIII) ................. 3
- ENGL 313 Methods of Teaching English ........................................................ 3

### OR
- EDUC 313 Methods of Teaching English ........................................................ 3

### Choose three courses from the following:
- ENGL 201 American Literature I (CAT VIII) ................................................ 3
- ENGL 202 American Literature II (CAT VIII) ............................................... 3
- ENGL 221 English Literature I (CAT VIII) ..................................................... 3
- ENGL 222 English Literature II (CAT VIII) ................................................... 3

### Total minimum credits required for minor .................................................. 24

## Traffic Education K-12 (Teaching)

### Required Courses
- EDUC 361 Traffic Safety Education I .............................................................. 3
- EDUC 362 Traffic Safety Education II .............................................................. 3
- EDUC 365 Motor Vehicle Law and Enforcement ............................................. 2
- HPE 234 First Aid and CPR .......................................................................... 2
- HPE 368 Safety Education ............................................................................ 2
- Advisor Approved Electives ......................................................................... 8

Additional possibilities for electives must be approved by your advisor.

### Total minimum credits required for minor .................................................. 20
## ENGINEERING TECHNOLOGY

### Bachelor of Science

**Engineering Technology: Civil Engineering Technology**

*This program is in moratorium. Please see the Provost (Cowan Hall 204) for availability of this degree.*

<table>
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<td>Category VII Fine Arts</td>
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<td>CIS 110</td>
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</tbody>
</table>

*Accepted General Education Core courses are found on page 9.*

### Required Courses

- CET 173 Architectural Construction & Materials .......................................................... 3
- CET 181 Surveying ............................................................................................................. 3
- CET 220 Construction Management & Bid Estimation .......................................................... 3
- CET 221 Engineering Mechanics ....................................................................................... 3
- CET 232 Strength of Materials ......................................................................................... 3
- CET 305 Engineering Economics ....................................................................................... 3
- CET 307 Structural Analysis ............................................................................................ 3
- CET 315 Soil Mechanics and Foundations ......................................................................... 4
- CET 361 Design/Details of Steel Buildings ....................................................................... 4
- CET 375 Applied Fluid Mechanics .................................................................................... 3
- CET 385 Highway Design .................................................................................................. 4
- CET 411 Reinforced Concrete Design & Details .................................................................. 4
- CHEM 111 General Chemistry (CAT III) .......................................................................... (3)
- CIS 110 Introduction to Computers (CAT IX) .................................................................. (3)
- CIS 171 Desktop/Small Business Databases using MS Access ......................................... 3
- DRFT 131 Technical Graphics I ......................................................................................... 3
- DRFT 156 Introduction to CAD ........................................................................................ 3
- DRFT 244 Topographic Mapping & GIS Applications ......................................................... 3
- EET 110 Electronics Survey I .......................................................................................... 3
- ENGL 111 Written Communications I or Elective ............................................................... 3
- ENGL 112 Written Communication II ................................................................................(3)
- ISET 410 Enterprise Resource Planning ............................................................................ 3
- IT 100 Introduction to Technology (CAT IX) .................................................................... 3
- IT 111 Industrial Safety/Waste Management ................................................................... 2
- IET 480 Senior Project I .................................................................................................. 1
- IET 481 Senior Project II ................................................................................................. 2

(continued on next page)
MATH 112 College Algebra (CAT II) ................................................................. (3)
MATH 125 Trigonometry (CAT II) ........................................................................ 2
MATH 133 Introduction to Calculus (CAT II) ......................................................... (3)
MATH 220 Calculus & Analytic Geometry I (CAT II) ............................................ 5
MFGT 427 Quality Assurance .................................................................................. 2
PHYS 231 Fundamentals of Physics I (CAT III) .......................................................(3)
PHYS 234 Fundamentals of Physics I Lab (CAT III) ................................................ 1
SPCH 141 Fundamentals of Speech (CAT I) ..........................................................(3)
Advisor Approved Electives ...................................................................................... 8
[Of the eight (8) credits four (4) are a math/science elective, three of them are a science electives*, and one is a straight elective.]

*Advisor approved ABET requirement.

Total minimum credits required for degree .............................................................................. 124

Minor

Engineering Technology: Civil Engineering Technology

This program is in moratorium. Please see the Provost (Cowan Hall 204) for availability of this degree.

Choose one of the following options:

GIS Option
CET 181 Surveying ............................................................................................... 3
CET 305 Engineering Economics .......................................................................... 3
CET 385 Highway Design & Construction ........................................................... 4
CIS 171 Desktop/Small Business Databases using MS Access ................................3
DRFT 244 Topographic Mapping & GIS Applications ......................................... 3
ISET 410 Enterprise Resource Planning ................................................................. 3
IT 100 Introduction to Technology (CAT IX) ......................................................... 3

Structures Option
CET 221 Engineering Mechanics .......................................................................... 3
CET 232 Strength of Materials ............................................................................ 3
CET 305 Engineering Economics .......................................................................... 3
CET 307 Structural Analysis .................................................................................. 3
CET 361 Design and Details of Steel Buildings ..................................................... 4
CET 411 Reinforced Concrete Design & Details .................................................... 4
IT 100 Introduction to Technology (CAT IX) ......................................................... 3

Total minimum credits required for minor ........................................................................ 22-23

PLEASE NOTE: Students enrolled in this program may pay between $12 - $30/semester in course fees. These fees are in addition to tuition and mandatory other fees.
# Associate of Applied Science

## Engineering Technology: Civil Engineering Technology

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>ENGL 111 Written Communications I (CAT I)</td>
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<tr>
<td>MATH 112 College Algebra (CAT II)</td>
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<td>CIS 110 Introduction to Computers CAT IX)</td>
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<tr>
<td>CET 173 Architectural Construction &amp; Materials</td>
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<td>CET 220 Construction Management &amp; Bid Estimation</td>
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<td>CET 221 Engineering Mechanics</td>
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<td>CET 232 Strength of Materials</td>
<td>3</td>
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<tr>
<td>CHEM 111 General Chemistry</td>
<td>3</td>
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<td>CIS 171 Desktop/Small Business Databases using MS Access</td>
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<td>DRFT 131 Technical Graphics I</td>
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<td>DRFT 156 Introduction to CAD</td>
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<td>DRFT 244 Topographic Mapping &amp; GIS Applications</td>
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<td>EET 110 Electronics Survey I</td>
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<td>ENGL 111 Written Communications I (CAT I)</td>
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<tr>
<td>IT 100 Introduction to Technology (CAT IX)</td>
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<tr>
<td>IT 111 Industrial Safety/Waste Management</td>
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<td>MATH 112 College Algebra (CAT II)</td>
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<td>MATH 125 Trigonometry</td>
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<td>MATH 133 Introduction to Calculus</td>
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<td>PHYS 231 Fundamentals of Physics I (CAT III)</td>
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<td>PHYS 234 Fundamentals of Physics I Lab (CAT III)</td>
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<tr>
<td>SPCH 141 Fundamentals of Speech (CAT I)</td>
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<td>Advisor Approved Elective or Advisor Approved Science Elective*</td>
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Total minimum credits required for degree .................................................. 62

*Advisor approved ABET requirement. Student should select a science elective if planning to get a Bachelor’s degree.

**PLEASE NOTE:** Students enrolled in this program may pay between $12 - $30/semester in course fees. These fees are in addition to tuition and other mandatory fees.
Associate of Applied Science

Engineering Technology: Electronics Engineering Technology

This degree is going through major revisions. Please see your advisor for assistance.

Accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering (ABET) and Technology, 111 Market Place, Suite 1050, Baltimore, MD 21202-401 telephone (410)347-7700.

Credits

ENGL 111 Written Communications I (CAT I) .............................................................................................. 3
MATH 112 College Algebra (CAT II) ........................................................................................................... 3
IT 100 Introduction to Technology (CAT IX) .............................................................................................. 3

Required Courses

CAT IV or V or VI ABET Required ........................................................................................................ 3
CIS 110 Introduction to Computers (CAT IX) ............................................................................................. 3
CIS 115 Visual Basic Programming ........................................................................................................ 3
CPET 260 Networking I .......................................................................................................................... 3
DRFT 156 Introduction to CAD ............................................................................................................... 3
EET 101 Introduction to Electricity/Electronics ...................................................................................... 5
EET 103 Electronic Fundamentals I ........................................................................................................ 5
EET 204 Electronic Fundamentals II ...................................................................................................... 4
EET 205 Communications Fundamentals .............................................................................................. 4
EET 206 Electronics Equipment Design & Fabrication ........................................................................... 4
EET 207 Digital Fundamentals ............................................................................................................... 5
ENGL 111 Written Communications I (CAT I) ....................................................................................... (3)
IT 100 Introduction to Technology (CAT IX) ......................................................................................... (3)
MATH 112 College Algebra (CAT II) ......................................................................................................... (3)
MATH 125 Trigonometry (CAT II) ........................................................................................................... 2
MATH 133 Introduction to Calculus (CAT II) ........................................................................................... 3
PHYS 231 Fundamentals of Physics I (CAT III) ...................................................................................... 3
PHYS 234 Fundamentals of Physics I Lab (CAT III) ............................................................................... 1
PHYS 232 Fundamentals of Physics II (CAT III) ..................................................................................... 3
PHYS 235 Fundamentals of Physics II Lab (CAT III) ............................................................................. 1
SPCH 141 Fundamentals of Speech (CAT I) .......................................................................................... 3

OR

SPCH 142 Interpersonal Communications (CAT I) ................................................................................ 3

Total minimum credits required for degree ........................................................................................... 67

PLEASE NOTE: Students enrolled in this program may pay between $15 - $25/semester in course fees. These fees are in addition to tuition and other mandatory fees.
Departmental Certificate*

Land Surveying Technology (GIS)

Associate of Applied Science degree or higher in any discipline required.

**Required Courses**

- CET 181 Surveying................................................................. 3
- CET 305 Engineering Economics......................................................... 3
- CET 385 Highway Design & Construction.............................................. 4
- CIS 115 Visual Basic Programming .................................................... 3
- CIS 171 Desktop/Small Business Databases using MS Access......................... 3
- DRFT 156 Introduction to CAD .................................................... 3
- DRFT 244 Topographic Mapping & GIS Applications............................ 3
- ISET 410 Enterprise Resource Planning ............................................. 3
- IT 100 Introduction to Technology (CAT IX) ....................................... 3
- MATH 140 Probability & Statistics (CAT II) ....................................... 4

**Total minimum credits required for certificate**........................................... 32

* Students should note that departmental certificates are not University degrees.
# GRAPHIC DESIGN

## Bachelor of Arts

### Graphic Design (Minor Required)

<table>
<thead>
<tr>
<th>General Education Core Required*</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
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<td>Category I Communication</td>
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<td>ENGL 112</td>
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<td>Category II Mathematics</td>
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<td>Category III Natural Sciences with lab</td>
<td>6</td>
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<td>Category IV Social Sciences</td>
<td>3</td>
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<td>Category V History</td>
<td>3</td>
<td>See CAT V below</td>
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<tr>
<td>Category VI Cultural Diversity</td>
<td>3</td>
<td>See CAT VI below</td>
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<tr>
<td>Category VII Fine Arts</td>
<td>3</td>
<td>See CAT VII below</td>
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<td>Category VIII Humanities</td>
<td>3</td>
<td>See CAT VIII below</td>
<td>3</td>
</tr>
<tr>
<td>Category IX Technology</td>
<td>3</td>
<td></td>
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</tr>
</tbody>
</table>

**Total General Education Core Credits** .......................................................................................... 33

*Accepted General Education Core courses are found on page 9.

### Required Courses

**ART 120 Drawing I (CAT VII) .................................................. 3**
**ART 150 Two-Dimensional Design I (CAT VII) ............................. 3**
**ART 151 Two-Dimensional Design II (CAT VII) ............................. 3**

**ART 254 Painting I ................................................................. 3**
**OR**
**ART 256 Watercolor Painting I ................................................. 3**

**ART 361 Art History of Western Civilization I (CAT VII) ............. 3**
**OR**
**ART 362 Art History of Western Civilization II (CAT VII) .......... 3**

**ENGL 112 Written Communications II (CAT I) ........................... (3)**
**ENGL 114 Introduction to Literature (CAT VIII) ....................... 3**
**OR**
**ENGL 214 Introduction to World Literature (CAT VIII) ............. 3**

**GDSN 220 Illustration I ............................................................. 3**
**GDSN 231 Graphic Design Applications ....................................... 3**
**GDSN 240 Electronic Design I ................................................... 3**
**GDSN 250 Graphic Design I ....................................................... 3**
**GDSN 270 Introduction to Photography (CAT VII) ...................... 3**
**GDSN 320 Illustration II ........................................................... 3**
**GDSN 340 Electronic Design II ................................................ 3**
**GDSN 350 Graphic Design II .................................................... 3**
**GDSN 370 Photography II ....................................................... 3**
**GDSN 450 Graphic Design III .................................................. 4**
HIST 142 History of Civilization II (CAT V) .............................................................. 3

OR
SOSC 201 Introduction to Social Science (CAT IV) .................................................. 3
Language (CAT VI) ........................................................................................................ 6-8

Minor and Advisor Approved Electives (18 credits must be upper division) ........... 41

Total minimum credits required for degree .................................................................. 120

PLEASE NOTE: Students enrolled in this program may pay between $20 - $40/semester in course fees. These fees are in addition to tuition and other mandatory fees.

Associate of Applied Science

Graphic Design

<table>
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<tr>
<th>Course</th>
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<tr>
<td>Communications</td>
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<tr>
<td>Mathematics</td>
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<tr>
<td>Technology (CAT IX)</td>
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</table>

Required Courses

ART 100 Introduction to Art (CAT VIII) ................................................................ 3
ART 120 Drawing I (CAT VII) .................................................................................. 3
ART 150 Two-Dimensional Design I (CAT VII) ......................................................... 3
ART 151 Two-Dimensional Design II (CAT VII) ......................................................... 3
ART 254 Painting I ................................................................................................. 3

OR
ART 256 Watercolor Painting I .................................................................................. 3
GDSN 220 Illustration I ............................................................................................ 3
GDSN 231 Graphic Design Applications .................................................................... 3
GDSN 232 Electronic Design Applications ................................................................ 3
GDSN 240 Electronic Design I .................................................................................. 3
GDSN 250 Graphic Design I ...................................................................................... 3
GDSN 270 Introduction to Photography (CAT VI) ..................................................... 3
Advisor Approved Electives ......................................................................................... 25

Total minimum credits required for degree ............................................................... 67

PLEASE NOTE: Students enrolled in this program may pay between $20 - $40/semester in course fees. These fees are in addition to tuition and other mandatory fees.
HEALTH PROMOTION

Bachelor of Science

Health Promotion (Non-Teaching)

<table>
<thead>
<tr>
<th>General Education Core Required*</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
<th>Credits</th>
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<tr>
<td>Category I Communication</td>
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<td>ENGL 112</td>
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<td>Category II Mathematics</td>
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<td>MATH 112</td>
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<td>Category III Natural Sciences with lab</td>
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<td>BIOL 204</td>
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<td>Category IV Social Sciences</td>
<td>3</td>
<td>See CAT IV below</td>
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<td>Category V History</td>
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<td>Category VI Cultural Diversity</td>
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<tr>
<td>Category VII Fine Arts</td>
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<tr>
<td>Category VIII Humanities</td>
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<tr>
<td>Category IX Technology</td>
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</tbody>
</table>

**Total General Education Core Credits** ................................................................. 33

*Accepted General Education Core courses are found on page 9.

**Required Courses**

- ACCT 261 Principles of Accounting I ........................................................................ 3
- BIOL 204 Essentials of Anatomy and Physiology (CAT III) ..................................... (4)
- BUS 110 Creative Problem Solving ............................................................................. 3
- BUS 120 Leadership .................................................................................................... 3
- BUS 271 Legal Environment of Business ..................................................................... 3
- BUS 300 Management in Organizations ....................................................................... 3
- BUS 332 Human Resource Management ....................................................................... 3
- BUS 335 Principles of Marketing ............................................................................... 3
- ENGL Upper Division Selective in Writing .................................................................. 3
- ENGL 112 Written Communication II (CAT I) .............................................................. (3)
- HPE 234 First Aid and CPR ....................................................................................... 2
- HPE 235 Principles of Health & Wellness .................................................................... 3
- HPE 236 Intramural & Recreational Activities ............................................................ 3
- HPE 274 Personal and Community Health ................................................................... 3
- HPE 302 Theory & Practice of Health Promotion ....................................................... 3
- HPE 330 Lifetime Activities ....................................................................................... 3
- HPE 357 Kinesiology .................................................................................................. 3
- HPE 358 Physiology of Exercise .................................................................................. 3
- HPE 359 Field Experience in Physical Education ......................................................... 1
- HPE 370 Prevention & Care of Athletic Injuries ......................................................... 3
- HPE 374 Current Issues in Health ............................................................................... 3
- HPE 376 Tests & Measurements in Health & Physical Education ............................... 3
- HPE 378 Sex Education ............................................................................................. 3

(continued on next page)
### HPEA 18X Fitness and Wellness Skills – Select one
Choose one (1) course:

- HPEA 180 Weight Control .................................................. 1
- HPEA 181 Weight Training .................................................. 1
- HPEA 182 Aerobic Dance .................................................. 1
- HPEA 183 Personal Self Defense ....................................... 1
- HPEA 184 Trimnastics .......................................................... 1
- HPEA 185 Conditioning Activities .................................. 1
- HPEA 186 Yoga ................................................................. 1
- HPEA 187 Advanced Weight Training .......................... 1
- HPEA 189 Selected Topics in Fitness and Wellness Skills 1

### MATH 112 College Algebra (CAT II) ................................................. (3)
### PSYC 101 Introduction to Psychology (CAT IV) ................................. (3)
### OR
### PSYC 205 Human Growth and Development (CAT IV) .................. 3
### SBM 338 Promotions .............................................................. 3
### SBM 402 Small Business Management ...................................... 3
### SPCH 141 Fundamentals of Speech (CAT I) .................................... (3)
### OR
### SPCH 142 Interpersonal Communications (CAT I) ....................... (3)
### Advisor Approved Electives ................................................... 2

**Total minimum credits required for degree** ........................................ 120

### Minor

#### Health Promotion (Non-Teaching)

<table>
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<th>Required Courses</th>
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<td>HPE 233 Foundations of Health and Physical Education</td>
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<td>HPE 234 First Aid and CPR</td>
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<tr>
<td>HPE 235 Principles of Health &amp; Wellness</td>
<td>3</td>
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<tr>
<td>HPE 274 Personal and Community Health</td>
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<tr>
<td>HPE 302 Theory &amp; Practice of Health Promotion</td>
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</tr>
<tr>
<td>HPE 359 Field Experience in Physical Education</td>
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</tr>
<tr>
<td>HPE 374 Current Issues in Health</td>
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<td>HPE 378 Sex Education</td>
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<tr>
<td>HPE 423 Marriage and Family Relationships</td>
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**Total minimum credits required for minor** ........................................ 23
INDUSTRIAL TECHNOLOGY

Bachelor of Science

Industrial Technology (Non-Teaching)-Minor Required

<table>
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<td>Category III Natural Sciences with lab</td>
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<td>Category IV Social Sciences</td>
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<td>Category IX Technology</td>
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</table>

**Total General Education Core Credits** ..........................................................................................34

*Accepted General Education Core courses are found on page 9.

**Required Courses**

| AUTO 128 Engines                                      | 4       |
| BUS 300 Management in Organizations                   | 3       |
| DRFT 131 Technical Graphics I                          | 3       |
| DRFT 156 Introduction to CAD                           | 3       |
| EET 110 Electronics Survey I                           | 3       |
| ENGL 112 Written Communication II (CAT I)              | (3)     |
| ENGL 366 Technical Writing & Editing (CAT I)           | (3)     |
| ISET 305 Digital Systems                               | 3       |
| ISET 308 Industrial Electronics                         | 4       |
| IT 100 Introduction to Technology (CAT IX)             | (3)     |
| IT 109 Introduction to Woodworking                     | 3       |
| IT 111 Industrial Safety/Waste Management              | 2       |
| IT 130 Construction Technology                          | 3       |
| IT 209 Furniture & Cabinetmaking                       | 3       |
| MATH 110 Math for Liberal Arts (CAT II)                | (4)     |
| METL 140 Introduction to Welding and Cutting            | 3       |
| METL 155 Machining Processes                            | 3       |
| METL 315 Metallurgy                                     | 3       |
| MFGT 200 Manufacturing Processes & Materials            | 3       |
| MFGT 341 CAD/CAM I                                     | 3       |
| MFGT 342 CAD/CAM II                                    | 3       |
| MFGT 427 Quality Assurance                             | 3       |
| Advisor Approved Electives                              | 7       |

**Minor** ........................................................................................................................................24

**Total minimum credits required for degree** .................................................................................120
# Bachelor of Science

## Industrial Technology 5-12 (Teaching)

<table>
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<tr>
<td>Category IV Social Sciences</td>
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<td>PSYC 205</td>
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<td>Category V History</td>
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<tr>
<td>Category VI Cultural Diversity</td>
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<tr>
<td>Category IX Technology</td>
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</table>

**Total General Education Core Credits** .......................................................................................... 33

*Accepted General Education Core courses are found on page 9.

## Required Courses

- AUTO 128 Engines ................................................................. 4
- CIS 320 Computers in Education (CAT IX) ................................. (3)
- DRFT 131 Technical Graphics I ................................................. 3
- DRFT 156 Introduction to CAD .................................................. 3
- EDPY 215 Introduction to Educational Psychology ......................... 3
- EDPY 350 Education and Psychology of Exceptional Children .......... 3
- EDUC 100 Foundations of Education .............................................. 3
- EDUC 300 Introduction to Curriculum Planning and Practice ............ 3
- EDUC 321 Integrating Technology into Education ............................... 3
- EDUC 376 Assessment in Education .............................................. 3
- EDUC 445 Teaching Reading, Writing & Critical Thinking Across the Curriculum ........ 2
- EDUC 450 Secondary Teaching Practicum & Seminar ......................... 12
- MATH 110 Math for Liberal Arts (CAT II) ........................................ (4)
- OR
  - MATH 112 College Algebra (CAT II) ............................................ (3)
- MATH 112 Written Communications II (CAT I) ...................................(3)
- MATH 110 Math for Liberal Arts (CAT II) ........................................ (4)
- METL 140 Introduction to Welding and Cutting ................................. 3
- METL 155 Machining Processes .................................................... 3
- METL 200 Manufacturing Process & Materials .................................... 3
- PSYC 205 Human Growth and Development (CAT IV) ......................... (3)
- VOED 350 Principles of Industrial/Technology Education............... 3
- VOED 360 Analysis & Prep Lab Management .................................... 3
- VOED 370 Methods of Teaching Industrial/Technology Education ........ 3
- Technical Endorsement .................................................................. 10
- Advisor Approved Elective ......................................................... 2

**Total minimum credits required for degree** .................................................................................. 128
LIBERAL ARTS AND NATIVE AMERICAN STUDIES

Bachelor of Arts

Liberal Studies-Minor Required

<table>
<thead>
<tr>
<th>General Education Core Required*</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
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<tr>
<td>Category I Communication</td>
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<td>Category II Mathematics</td>
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<tr>
<td>Category III Natural Sciences with lab</td>
<td>6</td>
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<tr>
<td>Category IV Social Sciences</td>
<td>3</td>
<td>See CAT IV below</td>
<td>3</td>
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<tr>
<td>Category V History</td>
<td>3</td>
<td>See CAT V below</td>
<td>3</td>
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<td>Category VI Cultural Diversity</td>
<td>3</td>
<td>See CAT VI below</td>
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<tr>
<td>Category VII Fine Arts</td>
<td>3</td>
<td>See CAT VII below</td>
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<td>Category VIII Humanities</td>
<td>3</td>
<td>See CAT VIII below</td>
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<tr>
<td>Category IX Technology</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Total General Education Core Credits ........................................................................33

*Accepted General Education Core courses are found on page 9.

Required Courses

ART 361 Art History of Western Civilization I (CAT VII) ..................................................... (3)
OR
ART 362 Art History of Western Civilization II (CAT VII) ..................................................... (3)
OR
DRMA 123 Introduction to Theatre ......................................................................................... 3
OR
MUS 101 Introduction to Music History (CAT VIII) ............................................................... 3
ENGL 112 Written Communication II (CAT I) ......................................................................... (3)
ENGL 114 Introduction to Literature (CAT VIII) ................................................................ (3)
OR
ENGL 214 Introduction to World Literature (CAT VIII) ......................................................... (3)
HUM 201 Introduction to the Humanities (CAT VIII) ............................................................ 3
PHIL 210 Ethics (CAT VIII) .................................................................................................. 3
HIST 142 History of Civilization II (CAT V) ..................................................................... (3)
OR
SOSC 201 Introduction to Social Science (CAT IV) ............................................................... (3)
Language (Spanish or Native American) (CAT VI) ...............................................................6-8

Choose (6) six credits from each of the following major areas (12 credits total) (100-200 level).

Art, Drama, English, Graphic Design, Music, Native American Studies, Speech* ............6*
Community Service, Economics, Geography, Political Science, Social Sciences* ..........6*

(continued on next page)
Choose (15) fifteen credits from each of two of the following major areas (30 credits total) (300-400 level) INCLUDING a Capstone course in one of the areas.*.

Art, Drama, Graphic Design, Music, Native American Studies, Speech .......................................................... 15
English .................................................................................................................................................................. 15
Community Service, Economics, History, Political Science, Sociology ................................................................. 15

*Methods courses excepted.

Minor and Advisor Approved Electives ............................................................................................................ 36

Total minimum credits required for degree ........................................................................................................ 120

Minor

Native American Studies

Required Courses
HIST 310 American West .................................................................................................................................. 3
NAS 220 Introduction to Ethnic Indian Studies (CAT VI) .................................................................................. 3
NAS 310 Native Cultures of North America (CAT VI) ...................................................................................... 3
NAS 330 American Indian Oral Tradition (CAT VI) .......................................................................................... 3
NAS 331 Literature by and About Native Americans (CAT VI) ....................................................................... 3
NAS 350 Federal Indian Law (CAT VI) ............................................................................................................... 3
NAS 364 History of American Indians (CAT VI) ............................................................................................... 3

Total credits required for minor .......................................................................................................................... 21
NURSING

Bachelor of Science
Students who plan to complete the BSN degree must first be awarded the ASN degree at MSU-Northern or at another approved nursing program.

Nursing
General Education Core Required* 

<table>
<thead>
<tr>
<th>Category</th>
<th>Course Prefix &amp; #</th>
<th>Credits</th>
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<tbody>
<tr>
<td>I Communication</td>
<td>ENGL 112</td>
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<tr>
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<td>SPCH 141</td>
<td>3</td>
</tr>
<tr>
<td>II Mathematics</td>
<td>MATH 110 or MATH 112</td>
<td>3 or 4</td>
</tr>
<tr>
<td>III Natural Sciences with lab</td>
<td>BIOL 217</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>BIOL 241</td>
<td>4</td>
</tr>
<tr>
<td>IV Social Sciences</td>
<td>PSYC 101</td>
<td>3</td>
</tr>
<tr>
<td>V History</td>
<td>PSYC</td>
<td>3</td>
</tr>
<tr>
<td>VI Cultural Diversity</td>
<td>PSYC</td>
<td>3</td>
</tr>
<tr>
<td>VII Fine Arts</td>
<td>PSYC</td>
<td>3</td>
</tr>
<tr>
<td>VIII Humanities</td>
<td>PSYC</td>
<td>3</td>
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<tr>
<td>IX Technology</td>
<td>CIS 110</td>
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<tr>
<td></td>
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</tbody>
</table>

*Accepted General Education Core courses are found on page 9.

Required Courses

BIOL 217 Microbiology (CAT III) .................................................................(4)
BIOL 241 Anatomy and Physiology I (CAT III) .............................................(4)
BIOL 242 Anatomy and Physiology II (CAT III) ...........................................4
BUS 250 Business Statistics ........................................................................3
OR
MATH 116 Applied Statistics ........................................................................3
OR
MATH 140 Probability and Statistics .........................................................3
OR
CHEM 112 Physiological Chemistry ..........................................................3
CIS 110 Introduction to Computers (CAT IX) ...............................................3
ENGL 112 Written Communication II (CAT I) ............................................3
MATH 110 Math for Liberal Arts (CAT II) ..................................................4
OR
MATH 112 College Algebra (CAT II) .........................................................3
NURS 128 Introduction to Nursing .............................................................6
NURS 136 Health Needs & Nursing Practice .............................................6
NURS 220 Psychiatric Mental Health/Illness** ...........................................4
NURS 250 Adult Health/Illness Needs I .....................................................4
NURS 251 Maternal-Child Health/Illness Needs ......................................7
NURS 252 Adult Health/Illness Needs II ...................................................6
NURS 253 Adult Health/Illness Needs III..................................................6
NURS 254 Principles of Nursing Practice ................................................1
NURS 321 Theoretical Foundations of Nursing ........................................3
NURS 322 Health Assessment ..................................................................3
NURS 344 Nursing Care of Clients with Complex Needs .......................3
NURS 347 Health Education .....................................................................3
(continued on next page)
NURS 349 Clinical Preceptorship ................................................................. 3
NURS 440 Leadership & Management .......................................................... 3
NURS 441 Leadership and Management Practicum ....................................... 3
NURS 444 Nursing Research ............................................................................ 3
NURS 446 Community Health Nursing ........................................................ 3
NURS 447 Community Health Practicum ....................................................... 3
PSYC 101 Introduction to Psychology (CAT IV) ............................................ (3)
SPCH 141 Fundamentals of Speech (CAT I) ................................................ (3)

Choose one course from the following:
NURS 305 Nursing Ethics ............................................................................. 3
NURS 331 Nursing in Diverse Cultures ......................................................... 3
NURS 346 Gerontological Nursing ............................................................... 3
NURS 350 End of Life Care ........................................................................... 3

Total minimum credits required for degree .................................................. 120

PLEASE NOTE: Students enrolled in this program may pay between $25 - $50/semester in course fees. These fees are in addition to tuition and other mandatory fees.

Associate of Science Nursing

Required Courses
BIOL 217 Microbiology (CAT III) ................................................................. 4
BIOL 241 Anatomy and Physiology I (CAT III) .......................................... 4
BIOL 242 Anatomy and Physiology II (CAT III) ......................................... 4
PSYC 101 Introduction to Psychology (CAT IV) ........................................... 3
CHEM 112 Physiological Chemistry*** ...................................................... 3
CIS 110 Introduction to Computers (CAT IX) .............................................. 3
ENGL 112 Written Communication II (CAT I) .......................................... 3
MATH 110 Math for Liberal Arts (CAT II) .................................................. (4)
OR
MATH 112 College Algebra (CAT II) .......................................................... (3)
NURS 128 Introduction to Nursing ............................................................. 6
NURS 136 Health Needs & Nursing Practice .............................................. 6
NURS 212 Transition to Associate Degree Nursing* .................................. 3
NURS 220 Psychiatric Mental Health/Illness** .......................................... 4
NURS 250 Adult Health/Illness Needs I ....................................................... 6
NURS 251 Maternal-Child Health/Illness Needs ......................................... 7
NURS 252 Adult Health/Illness Needs II ..................................................... 6
NURS 253 Adult Health/Illness Needs III .................................................... 6
NURS 254 Principles of Nursing Practice ................................................. 1
SPCH 141 Fundamentals of Speech (CAT I) .............................................. 3

*Course only for LPNs articulating into our ASN program.
**Sites vary. Course requires a week of clinicals in Lewistown.
***Prerequisite: Requires High School Chemistry or CHEM 111.

Total minimum credits required for degree .................................................. 72-73

After graduation from ASN program students are eligible to sit for NCLEX for RN licensure.

PLEASE NOTE: Students enrolled in this program will pay between $25 - $50/semester in lab fees and $175/semester in program fees. These fees are in addition to tuition and other mandatory fees.
# PLUMBING

## Associate of Applied Science

### Plumbing

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 111 Written Communications I (CAT I)</td>
<td>3</td>
</tr>
<tr>
<td>MAAS 106 Elementary Technical Math</td>
<td>3</td>
</tr>
<tr>
<td>CIS 110 Introduction to Computers (CAT IX)</td>
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</tr>
</tbody>
</table>

### Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRFT 131 Technical Graphics I</td>
<td>3</td>
</tr>
<tr>
<td>EET 110 Electronics Survey I</td>
<td>3</td>
</tr>
<tr>
<td>HPE 234 First Aid &amp; CPR</td>
<td>2</td>
</tr>
<tr>
<td>IT 111 Industrial Safety and Waste Management</td>
<td>2</td>
</tr>
<tr>
<td>METL 140 Introduction to Welding and Cutting</td>
<td>3</td>
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<tr>
<td>PLMB 100 Introduction to the Plumbing Trades</td>
<td>4</td>
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<tr>
<td>PLMB 110 Introduction to Plumbing and Drawing</td>
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<tr>
<td>PLMB 120 Introduction to Piping Systems</td>
<td>3</td>
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<tr>
<td>PLMB 125 Introduction to Plumbing Fixtures</td>
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<tr>
<td>PLMB 170 Plumbing Codes</td>
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<tr>
<td>PLMB 200 Pipe Fitting Tools and Motorized Equipment</td>
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</tr>
<tr>
<td>PLMB 210 Advanced Blueprint Reading</td>
<td>2</td>
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<tr>
<td>PLMB 230 Hangers, Supports, and Field Testing</td>
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<tr>
<td>PLMB 250 Special Piping</td>
<td>3</td>
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<tr>
<td>PLMB 260 Introduction to Control Circuit Troubleshooting</td>
<td>2</td>
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<tr>
<td>PLMB 270 Hydronic Heating and Cooling Systems</td>
<td>2</td>
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<tr>
<td>PLMB 280 Energy Management</td>
<td>1</td>
</tr>
<tr>
<td>PLMB 285 System Startup and Shutdown</td>
<td>1</td>
</tr>
<tr>
<td>SPCH 141 Fundamentals of Speech (CAT I)</td>
<td>3</td>
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<tr>
<td>TSCI 205 Distribution Systems</td>
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<tr>
<td>TSCI 206 Applied Water Hydraulics</td>
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<td>Advisor Approved Elective</td>
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</table>

**Total minimum credits required for degree** ................................................................. **60**
SCHOOL BUSINESS ADMINISTRATION

Associate of Applied Science

School Business Administration

ENGL 112 Written Communication II (CAT I) ............................................................................................. 3

AND

SPCH 141 Fundamentals of Speech (CAT I) ................................................................................................. 3

OR

SPCH 142 Interpersonal Communication (CAT I)......................................................................................... 3

MATH 112 College Algebra (CAT II) ............................................................................................................. 3

Technology (CAT IX) .................................................................................................................................. 3

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>ACCT 261 Principles of Accounting I</td>
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<tr>
<td>ACCT 262 Principles of Accounting II</td>
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<tr>
<td>ACCT 270 Accounting for Non-Profit Organizations</td>
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<tr>
<td>BM 225 Risk Management (MSU-COT Great Falls Course)</td>
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<tr>
<td>BUS 100 Introduction to Business</td>
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<tr>
<td>BUS 110 Creative Problem Solving</td>
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<tr>
<td>BUS 250 Business Statistics</td>
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<td>BUS 332 Human Resource Management</td>
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<tr>
<td>CIS 111 Integrated Business Applications</td>
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<td>ENGL 112 Written Communication II (CAT I)</td>
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<td>MAS 104 Student Activity Programs</td>
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<td>MAS 105 Pupil Transportation</td>
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<td>MAS 106 Food Services</td>
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<td>MAS 107 School Safety</td>
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<td>MAS 108 Retirement System</td>
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<td>MAS 130 Public Sector Ethics</td>
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<tr>
<td>MAS 268 School Law I</td>
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<tr>
<td>MAS 269 School Law II (Finance)</td>
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<td>Advisor Approved Electives</td>
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Total minimum credits required for degree ............................................................................................. 66
WATER QUALITY TECHNOLOGY

Bachelor of Science

Water Quality Technology: Environmental Health-No Minor Required

This degree is in moratorium. Please see the Provost (Cowan Hall 204) for availability of this degree.

<table>
<thead>
<tr>
<th>General Education Core Required*</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
<th>Credits</th>
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<td>Category I Communication</td>
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<td>ENGL 112</td>
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<td>Category II Mathematics</td>
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<td>MATH 112</td>
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<td>Category III Natural Sciences</td>
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<td>See All Science Courses below</td>
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<td>Category IV Social Sciences</td>
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<tr>
<td>Category V History</td>
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<tr>
<td>Category VI Cultural Diversity</td>
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<tr>
<td>Category VII Fine Arts</td>
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<tr>
<td>Category VIII Humanities</td>
<td>3</td>
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<td>Category IX Technology</td>
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<td>Total General Education Core</td>
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</tr>
</tbody>
</table>

*Accepted General Education Core courses are found on page 9.

Required Courses

BIOL 110 Introduction to Environmental Health ................................................................. 3
BIOL 217 Microbiology ................................................................. 4
CHEM 121 General Inorganic Chemistry I ................................................................. 3
CHEM 123 General Inorganic Chemistry I Lab ................................................................. 2
ENGL 112 Written Communication II (CAT I) .................................................................(3)
GEN 301 Society and Technology ................................................................. 3
HPE 234 First Aid and CPR ................................................................. 2
MATH 112 College Algebra (CAT II) ................................................................. 3
MATH 116 Applied Statistics (CAT II) ................................................................. 3

OR

MATH 125 Trigonometry (CAT II) ................................................................. 2
NSCI 450 Undergraduate Research ................................................................. 3
TSCI 110 Introduction to Water and Wastewater ................................................................. 4
TSCI 205 Distribution Systems ................................................................. 3
TSCI 206 Applied Water Hydraulics ................................................................. 3
TSCI 230 Introduction to Groundwater ................................................................. 3
TSCI 231 Wastewater Processes ................................................................. 3
TSCI 232 Wastewater Processes Lab ................................................................. 2
TSCI 233 Water Treatment Processes ................................................................. 3
TSCI 234 Water Treatment Processes Lab ................................................................. 2
TSCI 279 Cooperative Education ................................................................. 6
TSCI 415 Pollution Prevention ................................................................. 3

Advisor Approved Electives ........................................................................................................ 20

(continued on next page)
Select one of the following two tracks:

**Environmental Track**

**Required Courses**
- BIOL 151 Essentials of Biology ................................................................. 4
- TSCI 320 Environmental Analytical Techniques ........................................ 2

**Choose 12 credits from the following list.**
- BIOL 314 General Ecology ........................................................................... 4
- BIOL 322 Botany II ...................................................................................... 4
- BIOL 348 Zoology ....................................................................................... 3
- BIOL 350 Zoology Laboratory ................................................................. 2
- BIOL 407 Freshwater Biology ..................................................................... 4
- ESCI 315 General Hydrology ................................................................. 3

**Analytical Track**

**Required Courses**
- CHEM 112 Physiological Chemistry ........................................................ 3
- CHEM 122 General Inorganic Chemistry II ............................................. 3
- CHEM 124 General Inorganic Chemistry II Lab ....................................... 2

**Choose 10 credits from the following list.**
- CHEM 311 Quantitative Analysis ................................................................. 4
- CHEM 312 Quantitative and Instrumental Analysis .................................... 4
- CHEM 351 Instrumental Analysis ................................................................. 3
- CHEM 356 Physical Chemistry ................................................................. 3
- MATH 133 Introduction to Calculus (CAT II) ............................................. 4
- PHYS 231 Fundamentals of Physics I ....................................................... 4
- TSCI 320 Environmental Analytical Techniques ......................................... 2

*CHEM 111 General Chemistry will not substitute for CHEM 121/123.*

**Total minimum credits required for degree** ............................................. 120
Associate of Applied Science

Water Quality Technology: Environmental Health

Credits
Communications (CAT I) ................................................................. 3
Mathematics (CAT II) ................................................................. 3
Technology (CAT IX) ................................................................. 3

Required Courses
BIOL 110 Introduction to Environmental Health (CAT III) ................................................................. 3
BIOL 217 Microbiology (CAT III) ................................................................. 4
CHEM 111 General Chemistry (CAT III) ................................................................. 3
HPE 234 First Aid and CPR ................................................................. 2
TSCI 110 Intro to Water and Wastewater ................................................................. 4
TSCI 205 Distribution Systems ................................................................. 3
TSCI 206 Applied Water Hydraulics ................................................................. 3
TSCI 230 Introduction to Groundwater (CAT III) ................................................................. 3
TSCI 231 Wastewater Processes ................................................................. 3
TSCI 232 Wastewater Processes Lab ................................................................. 2
TSCI 233 Water Treatment Processes ................................................................. 3
TSCI 234 Water Treatment Processes Lab ................................................................. 2
TSCI 279 Cooperative Education ................................................................. 6
Advisor Approved Electives ................................................................. 10

PLEASE NOTE: CHEM 121/123 General Inorganic Chemistry I and Laboratory may be substituted for CHEM 111.

Total minimum required credits for degree ................................................................. 60
## WELDING

### Certificate

**Welding Technology**

**Required Courses**
- ENGL 111 or ENGL 112 ................................................................. 3
- MAAS 106 Elementary Technical Math ........................................... 3
- METL 140 Introductions to Welding & Cutting ......................... 3
- METL 150 Shielded Metal Arc Welding ......................................... 3
- METL 154 Gas Arc Welding Processing ........................................ 3
- METL 156 Welding Practice (may be taken for 3 credits twice) .... 6
- METL 260 Repair & Maintenance Welding ................................. 3
- METL 285 Welding Certification Procedures I ......................... 3
- Advisor Approved Electives ....................................................... 3

**Total minimum credits required for certificate** ........................................ 30
GRADUATE PROGRAMS

Master of Education

Counselor Education K-12

Graduate Core
PSYC 515 Psychology of Development & Adjustment ................................................................. 3
EDUC 606 Research Methods ............................................................................................................ 3
EDUC 607 Educational Measurement & Statistics ............................................................................. 3

Area of Specialization
CNSL 610 K-12 Counseling Program Development and Administration ........................................ 3
CNSL 625 Theories of Counseling & Development ........................................................................... 3
CNSL 635 Counseling Skills and Practice .......................................................................................... 3
CNSL 638 Counseling Practicum ............................................................................................................... 3
CNSL 643 Child & Adolescent Counseling ......................................................................................... 3
CNSL 652 Multi-Cultural Counseling ................................................................................................... 2
CNSL 654 Crisis Intervention Counseling ......................................................................................... 2
CNSL 660 Counseling & Medications ................................................................................................. 2
CNSL 661 Group Dynamics & Counseling ......................................................................................... 3
CNSL 671 Career Information System ............................................................................................... 2
CNSL 680 Counseling Internship ........................................................................................................ 6
CNSL 682 Advanced Counseling Practicum ....................................................................................... 6
Total credits required ......................................................................................................................... 50

Students who complete the Master of Education, Counselor Education, can plan their program in a manner that may qualify them to be eligible to apply to the Licensing Board to become licensed professional counselors. Candidates for licensure must complete the Graduate Core, the Area of Specialization, a list of specified counseling courses, for a minimum of (60) sixty semester credits.

Specified Counseling Courses:
CNSL 644 Marriage & Family Counseling ......................................................................................... 3
CNSL 648 Professional Ethics ................................................................................................................ 2
CNSL 657 Community & Agency Consultation .................................................................................. 2
CNSL 658 Diagnosis & Treatment in Counseling ............................................................................... 3
Total credits with specified counseling courses ............................................................................... 60
General Science
This program is in moratorium. Please see the Provost (Cowan Hall 204) for availability of this degree.

Graduate Core
EDUC 603 Curriculum Foundations and Design ................................................................. 3
OR
EDPY 604 Applied Classroom Psychology ................................................................. 3
EDUC 606 Research Methods ................................................................. 3
EDUC 607 Educational Measurement & Statistics .......................................................... 3

Area of Specialization
GSCI 512 Environmental Problems ........................................................................ 3
GSCI 602 History and Philosophy of Science ........................................................ 3
GSCI 621 Integrated Life Science ........................................................................... 3
GSCI 622 Integrated Physical Science ...................................................................... 3
GSCI 631 Integrated Science Principles for Teachers ........................................ 3
GSCI 693 Assessment Seminar ................................................................................ 2

Choose ten (10) credits from the following:
BIOL 506 Molecular Biology Techniques ............................................................ 3
BIOL 507 Freshwater Biology ............................................................................... 3
BIOL 508 Flowering Plants of the Plains and Mountains .................................. 3
BIOL 515 Ecological Methods ............................................................................. 3
BIOL 635 Advanced Zoology ............................................................................. 3
ESCI 505 Earth Science Investigations for Teachers ........................................... 3
Science Elective ................................................................................................. 3

Total minimum credits required for degree ........................................................................ 36
Master of Science in Education

Learning Development

The Master’s of Science degree, Learning Development option, is offered in a COHORT format. All courses are offered on a weekend basis (Internet support) and with a start to finish time line of two years. Individuals and groups interested in starting a COHORT group in their location should contact the Graduate Programs Office at 1-800-662-6132, extension 3738. Further information regarding the program will be made available to eligible participants.

Required Courses
EDUC 606 Research Methods .................................................................................................................. 3
EDUC 607 Educational Measurement & Statistics ....................................................................................... 3
EDUC 623 Learning Technologies ............................................................................................................... 3
EDUC 625 Assessment & Evaluation ......................................................................................................... 3
EDUC 648 Advanced Learning Theory ....................................................................................................... 3
EDUC 650 Critical and Creative Thinking in Learning ............................................................................... 3
EDUC 652 Learning Systems: Theory and Design ...................................................................................... 3
EDUC 654 Graduate Seminar .................................................................................................................... 3

Choose one (1) one of the three following application areas:

Learning Development:
EDUC 658 Enhancing Learning Through Content .................................................................................. 3
EDUC 674 Problem Solving Strategies ..................................................................................................... 3
EDUC 675 Achieving Student Outcomes Through Cooperative Learning .............................................. 3
EDUC 677 Purposeful Learning Through Multiple Intelligences .............................................................. 3

Reading:
EDPY 525 Learning Development .......................................................................................................... 3
EDUC 540 Assessment in Remedial Reading ............................................................................................ 3
EDUC 545 Teaching Reading, Writing, and Critical Thinking Skills Across the Curriculum .................. 3
EDUC 548 Reading Materials for the Elementary Child ........................................................................... 3

Administration:
EDUC 630 General School Administration and Finance .......................................................................... 3
EDUC 640 School Law ................................................................................................................................. 3
EDUC 670 K-12 Curriculum ...................................................................................................................... 3
EDUC 672 K-12 School Administration & Supervision ........................................................................... 3

Total minimum credits required for degree .......................................................................................... 36

*Application area does not fulfill OPI endorsement requirements in total. See major advisor for further information.
K-12 PRINCIPAL ENDORSEMENT

The K-12 principal endorsement is a 24-credit Office of Public Instruction (OPI) approved program designed to prepare students for service as K-12 principals. Requirements for entering the endorsement program are a master’s degree, three (3) years K-12 teaching experience, two (2) letters of recommendation from teaching peers, one (1) letter of recommendation from the immediate school administrator, one (1) letter of recommendation from the School Superintendent/School Board allowing the Internship, and completion of the endorsement coursework. In order to be endorsed by MSU-Northern, 80% of the coursework must be taken from MSU-Northern. Coursework is under revision and is subject to change.

CNSL 610 K-12 Counseling Program Development & Administration ......................................................... 3
EDUC 630 General School Administration & Finance ................................................................................... 3
EDUC 633 Supervision of Instruction ........................................................................................................... 2
EDUC 640 School Law .................................................................................................................................. 3
EDUC 670 K-12 Curriculum .......................................................................................................................... 3
EDUC 672 K-12 School Administration & Supervision .................................................................................... 3
EDUC 665 K-12 Principal Internship Seminar ............................................................................................... 1
EDUC 680 Internship ...................................................................................................................................... 6

Total.......................................................................................................................................................... 24
COURSE DESCRIPTIONS

ACCOUNTING

ACCT 261 Principles of Accounting I
3 semester credits
This course introduces the student to financial accounting. It includes recording transactions, making adjustments, and preparation of financial statements. Detailed coverage of accounting for cash, receivables, inventories, property, plant and equipment, payroll, and other current liabilities is included. The course covers the various forms of ownership including sole proprietorships, partnerships, and corporations.

ACCT 262 Principles of Accounting II
3 semester credits
This course completes the introduction to financial accounting by covering long-term investments and liabilities. Students learn to prepare and understand a statement of cash flows and perform financial statement analysis. The course then turns its focus to managerial accounting: Cost analysis and decision making, job costing, process costing, capital budgeting, cost-volume-profit analysis, and variance analysis. Prerequisite: ACCT 261.

ACCT 270 Accounting for Non-Profit Organizations
3 semester credits
Accounting for Non-Profit Organizations is an introductory course in school accounting systems. The course is outlined after the model presented in the Montana School Accounting Manual published by the Office of Public Instruction. The course will note the differences in accounting systems as learned in the ACCT 261 and ACCT 262 Accounting Principles courses and those systems used for school accounting.

ACCT 285 Accounting Systems
3 semester credits
This course presents qualities in manual and computer accounting systems. Students will learn how to establish a system to give them more detailed information for decision-making. Internal controls to safeguard both assets and records will be emphasized. Prerequisite: ACCT 261.

ACCT 315 Intermediate Accounting I
3 semester credits
The class emphasizes accounting principles and theory as they relate to the balance sheet and income statement. This course is primarily concerned with the conceptual basis of accounting, current and non-current assets, liabilities including lease obligations, and deferred taxes. Prerequisite: ACCT 262.

ACCT 316 Intermediate Accounting II
3 semester credits
This class completes the financial accounting sequence. It focuses on problem areas including pension obligations, various equity instruments, accounting for inflation, earnings per share, and Statement of Cash Flows. Prerequisite: ACCT 315.

ACCT 321 Managerial Accounting
3 semester credits
This course emphasizes the use of accounting information in managerial decision-making. Content includes cost-volume-profit analysis, budget preparation, analysis of variances, relevant costs, and pricing decisions. Prerequisite: ACCT 262.

ACCT 365 Income Tax Planning
3 semester credits
This course examines the fundamental principles of the federal income tax system primarily as they apply to business entities. A decision-making approach guides students in understanding the ways in which taxes affect both the planning process and financial outcomes. Topics include income and expense determination, property concepts and transactions, and specific applications to various forms of business entities as well as to individuals. Tax planning is a primary theme. Prerequisite: ACCT 262.

ACCT 407 Financial Statement Analysis
3 semester credits
Financial Statement Analysis trains the participant to thoroughly understand the financial statements of a business. It is useful for indicating problems a business may have while there is still time to take corrective action. Students learn that lenders and investors analyze a financial statement from a different perspective than management. It is, therefore, very useful for students planning to enter banking, accounting, management, or investing careers. Specific elements of the course include ratio analysis, understanding "window dressing", or the deliberate attempts by a company to glorify its financial statements, Dupont analysis, industry analysis, and forecasting bankruptcy. Prerequisite: ACCT 262.

AGRICULTURE

AG 100 Leadership Development
2 semester credits
Students will learn how to be more effective as a member, officer and leader in meetings and groups. Emphasis will be placed on developing parliamentary procedure skills for effectively conducting meetings. Leadership skill development, characteristics of leaders, and ways to become a more effective leader will be explored. Active participation in a campus club or organization is required for those enrolled in this class.

AG 101 Animal Science
3 semester credits
A general introductory class on animal agriculture dealing with livestock terminology, breeds, beef, sheep, swine, poultry, horses, and dairy animals. Livestock marketing, market classes and grades, and the industry as a whole will be covered.
AG 102 Plant Science
3 semester credits
A general introductory class covering basic plant structure, physiology, reproduction, ecology, geography and evolution. Emphasis will be on crops relating to Montana agriculture.

AG 105 Agricultural Marketing and Economics
3 semester credits
Principles of economics and agricultural marketing functions, agencies, services, and economic problems associated with production agriculture in Montana. The course includes an overview of commodity trading and the futures market.

AG 125 Farm Management
3 semester credits
Agricultural development and advancement; managerial balance of land, labor, capital, and implementation to provide for greatest returns; also includes farm business organization and arrangements, estate planning, credit, and farm business analysis.

AG 150 Agricultural Computing
3 semester credits
A class designed to acquaint students with agricultural computer applications. Emphasis is placed on software useful to the farmer, rancher and agri-businesses. Instructional computers will be IBM or compatibles that utilize the MS-DOS operating system. Prerequisite: CIS 110.

AG 204 Soils
4 semester credits
An examination of soil as a natural resource. Course topics include soil properties, soil classification, soil water, soil organisms, soil nutrients, and soil formation. Emphasis is placed on soil conservation and the proper management of our soil resources. Prerequisite: AG 102 or BIOL 221. This course does meet the laboratory science requirement.

AG 218 Crop Production
4 semester credits
Art and science of crop production; growth, development, and management of various agricultural field crops; emphasis given to crops important to the Northern Great Plains. Includes yield estimation, storage and handling facilities, tillage and harvesting methods, and practical applications in grading grains. Prerequisite: AG 102. Course Fee: $5.00

AG 230 Agricultural Pest Management
4 semester credits
This is a study of pest management for common Montana agriculture crops. Chemical and non-chemical controls will be discussed. Topics will include pest identification, biology and control; chemicals, safety and application. There will be an opportunity to qualify for private and commercial pesticide applicator certification as required by the state of Montana.

AG 244 Livestock Feeding
4 semester credits
Principles of animal nutrition and practical feeding of livestock; comprehensive information concerning the composition, properties, and uses of feeds; application of balanced rations incorporating the use of Substitution, Pearson Square, and Computerized ration formulation for private and commercial use. Course Fee: $5.00

AG 245 Livestock Production
3 semester credits
A course that correlates and applies the art and science of production of the four-footed meat animals - beef, sheep, and swine. Topics include breeding and selection, reproduction and physiology, disease, sanitation and pollution control, housing and confinement production, and marketing and processing. Prerequisite: AG 101 or consent of instructor.

AG 254 Forage and Range Management
4 semester credits
A study of the ecology and physiology of forage and range plants. Response of vegetation to grazing, climate and other environmental forces are explored. Range utilization, plant identification and stocking rate exercises are components of this class. Both range and pasture crops are discussed. Prerequisite: AG 102 or BIOL 221.

AG 279 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Two semesters of attendance at Montana State University-Northern, approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

AG 305 AG Commodity Marketing
3 semester credits
An examination of marketing tools available to farmers and ranchers, including futures and options. The course addresses costs of production, storage and transportation, risk management, financial planning, and means of securing market information. Prerequisite: AG 105 or AG 150.

AG 350 AG Computer Management
3 semester credits
A course designed to allow students to further develop agricultural computing skills in the areas of AG financial management, AG production, and agricultural accounting. Students will become familiar with various software packages related to enterprise accounting and analysis and financial management. Prerequisites: AG 150 or CIS 110 and ACCT 261.

AG 440 Trends and Issues in Agriculture
3 semester credits
An examination of past and contemporary agricultural issues as they affect the producer, agribusiness, and the consumer.

AG 479 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience extending the student's learning experience in agricultural business, agricultural production, or government agencies related to agriculture.
Prerequisites: Junior standing and approval of minor advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

AGRICULTURAL MECHANICS

AGMT 110 Introduction to Agricultural Machines & Equipment
2 semester credits
This course is an introduction to agricultural machines and equipment. Agricultural machine uses, terminology, components, efficiencies, characteristics, and maintenance will be studied. Topics relating to safety, power transfer principles (gears, belts, chains, and fluid drives), field operations, hitching, operator manuals, trends in machinery, and basic machinery management will be examined.

AGMT 114 Small Engines and RVs
3 semester credits
Basic theory and principles of two and four stroke engines. Service, repair, and reconditioning of small bore engines. Units include mechanical, lubrication, electrical, cooling, and recreation vehicle applications. Lab work includes engine overhaul and troubleshooting. *Course Fee: $15.00*

AGMT 120 Forage Implements
3 semester credits
Introduction to maintenance, repair, and adjustment of balers, swathers, rakes, and other forage harvesting equipment.

AGMT 130 Introduction to Agricultural Tractors
3 semester credits
Introduction of AG tractors covering sizes, types, efficiencies, preventative and minor maintenance of tractor components and applications of AG tractors. *Course Fee: $10.00*

AGMT 205 Introduction of Grain Harvesting Equipment
3 semester credits
Introduction to theory, preventative maintenance, repair, and adjustment of conventional and rotary combines. *Course Fee: $10.00*

AGMT 210 Tillage, Planting, and Spraying Implements
3 semester credits
This course will cover the repair, maintenance, adjustments, and calibrations of tillage, seeding and spraying equipment. Electronic control systems will be examined on all systems.

AGMT 279 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Two semesters of attendance at Montana State University-Northern, approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

AGMT 350 AG-Tractor and Equipment Applied Technology
4 semester credits
This is an applied technology course designed to measure tractors and equipment efficiencies, which will include: Ballasting, weight ratios, fuel consumption and PTO horsepower. Prerequisites: DIES 262 and 272. *Course Fee: $15.00*

AGMT 370 Advanced Grain Harvesting Equipment
4 semester credits
This is an advanced combine class designed to cover the following: diagnosis and repair of hydraulic and electronic components; a study of the application of hydraulics and electronic components; diagnosis and repair of major internal combine components. Prerequisites: AGMT 205, DIES 114, and DIES 214. *Course Fee: $15.00*

AGMT 410 Agricultural Machinery Management
3 semester credits
This course is designed to evaluate equipment from a management perspective. Topics will cover machinery maintenance, leasing and purchasing equipment, depreciation, new and used equipment management factors, machine cost analysis, machinery specifications for selected applications and the factors involved in machinery operation.

AGMT 479 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience extending the student's learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Cooperative Education 279 or Junior standing and approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

AGRICULTURAL OPERATIONS TECHNOLOGY

AOT 300 Economic Development in Rural Areas
2 semester credits
This course is an exploration of issues facing rural areas and the impacts of those issues on conducting business. The focus will include agriculturally dependent cooperatives with particular emphasis given to issues most relevant to Montana. The course will incorporate the NARFI clearinghouse to conduct environmental scans and predict potential scenarios. Prerequisite: Junior standing.

AOT 301 Global Positioning Systems
2 semester credits
This course will allow students to acquire an understanding of global positioning systems (GPS) technology and how it used in agriculture, outdoor activities, orienteering, and in managing land resources. Class participants will use handheld and mapping grade GPS receivers and become familiar with GPS data collection, differential correction, processing of spatial data, map types, coordinate grinds, map datum, and waypoints. Students will learn how to link GPS receivers with computers and machinery, manage GPS data with software, upload and download coordinate information and create printouts of spatial data, locations and routes.
AOT 310 Soil & Water Management  
2 semester credits  
This course is a study of soil and water and plant relationships. Emphasis will be on dry land soil practices, irrigation principles and practices, point source pollution, and measurement and methods of control.

AOT 315 Geographic Information Systems  
3 semester credits  
This course will involve the study of Geographic Information Systems (GIS) for natural resource and land management. Students will develop an understanding of spatial reasoning and methods used to visually inventory and analyze land based resources. GIS software, images and data sources commonly used for natural resource management by industry and government agencies will be featured in this class.

ART 100 Introduction to Art  
3 semester credits  
A slide-lecture survey of the visual arts and architecture. Analytical study of specific works and techniques, and consideration of broad contexts and principles.

ART 101 Studio Foundation  
3 semester credits  
Introduction to studio process and concepts of two and three dimensional media processes.

ART 115 Ceramics  
3 semester credits  
Elementary studio practice involving hand building and wheel techniques of forming functional and nonfunctional stoneware.  
Course Fee: $25.00

ART 120 Drawing I  
3 semester credits  
Study and supervised practice in observational drawing focusing on accurate representation of observed subject matter.

ART 150 Two-Dimensional Design I  
3 semester credits  
A lecture/studio course in investigating basic design elements: line, shape, texture, and value. The elements considered in the context of compositional principles.  
Course Fee: $15.00

ART 151 Two-Dimensional Design II  
3 semester credits  
A lecture/studio course investigating the elements of color: hue, value, and intensity. Color harmony and contrasts studied in compositional context.

ART 204 Printmaking  
3 semester credits  
An introduction to the fundamental graphic techniques of relief and intaglio printmaking including: woodcut, linocut, dry point, etching, and collograph.  
Course Fee: $10.00

ART 220 Drawing II  
3 semester credits  
Studio exercise in observational and imaginative drawing including rendering of the human figure. A variety of expressive techniques and media will be explored.  
Prerequisite: ART 120.

ART 254 Painting I  
3 semester credits  
A beginning studio course in still life painting in oil or acrylic. Drawing, color, and design emphasized.  
Prerequisite: ART 120.

ART 256 Watercolor Painting I  
3 semester credits  
A beginning studio course in watercolor painting. Research of the medium and observed material toward appropriate use of the transparent medium.  
Prerequisite: ART 120.

ART/METL 353 Metal Sculpture*  
3 semester credits  
Metal sculpture is a lecture/studio course which is team taught by art and welding faculty. The course examines all phases of the creative process from concept to criticism of the finished form. Both abstract and representational sculpture will be examined with emphasis on welding fabrication.  
Course Fee: $30.00

ART 355 Painting II  
3 semester credits  
Development of individual technique and expression in chosen painting medium/media. The student will continue to work with the painting medium taken as prerequisite for this course. Emphasis will be on composition as a means of expression.  
Prerequisite: ART 254 or ART 256.

ART 361 Art History of Western Civilization I  
3 semester credits  
A survey of the development of the visual arts of the Western World from Prehistoric through Gothic Art.

ART 362 Art History of Western Civilization II  
3 semester credits  
A survey of the development of the visual arts of the Western World from the Renaissance through Post-Modernism.

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*Restricting, see “Dual Prefix Listed Courses” in “Graduation and General Education Requirements” section.
AUTOMOTIVE/DIESEL

ATDI 134 Auto/Diesel Electrical/Electronic Systems I
4 semester credits
A beginning course in the study of electrical/electronic fundamentals applied to automotive and commercial vehicle systems. Includes theory, design, diagnosis, and repair of wiring and circuits, batteries, alternators, and starters. The use of test instruments and electrical troubleshooting manuals currently recommended by industry will be emphasized. Course Fee: $20.00

ATDI 257 Automatics
4 semester credits
A course in automatic transmissions including lecture, demonstration, and student participation in disassembling and reassembling of selected transmissions for the purpose of understanding the function, construction, operation, servicing, and troubleshooting procedures. Prerequisite: AUTO 117 or DIES 216. Course Fee: $20.00

ATDI 264 Auto/Diesel Electrical/Electronic Systems II
4 semester credits
This course is a continuation of the study of electrical/electronic systems in use on current automotive and commercial vehicles. With emphasis on industry recommended diagnostic and repair procedures, topics include charging and cranking systems, ignition systems, power accessories, and an introduction to microprocessor-based engine, power trains, and brake/suspension control systems. Prerequisite: ATDI 134. Course Fee: $20.00

ATDI 265 Heating and Air Conditioning
4 semester credits
Theory of heating and basic air conditioning equipment in automotive, heavy truck, and farm applications; servicing and repairing of these units. Prerequisite: ATDI 134. Course Fee: $20.00

ATDI 383 Alternative Automotive Power Systems
4 semester credits
This course examines a variety of alternative power sources used in the automotive transportation industry. Topics covered in the class are compression ignition engine systems, propane & CNG systems, hybrid electric systems, and electric propulsion systems. Prerequisites: AUTO 128 and ATDI 264.

ATDI 384 Auto/Diesel Electrical/Electronic Systems III
4 semester credits
This course provides an in-depth study of microprocessor-based vehicle control systems, diagnostic systems, and development/testing systems. Students will experience oral and written reporting on current applications. Topics include multiplexed communications, bi-directional scanners, data structures and PC-based service bay systems, and test cells. Prerequisite: ATDI 134 and ATDI 264. Course Fee: $20.00

ATDI 400 Shop Procedures
2 semester credits
The student will deal with training procedures, including establishing preventative maintenance programs, cost per hour operations and investment analysis. Selected computer programs will also be used. This is a course that deals with:
1. The organization of a shop
2. Service procedure
3. Shop layout and organization for diesel, automotive and auto body shops to give the best advantage to management, employees and customers.

1) AUTOMOTIVE

AUTO 105 Consumer Mechanics
2 semester credits
An awareness course for the passenger car owner-operator. A study of the operation and minor maintenance and repair techniques used in service stations and garages. Also a study of the cost of repair, purchasing, financing, and insuring an automobile. Course Fee: $4.00

AUTO 115 Introduction to Automotive Service
1 semester credit
An introductory course designed to assist the novice automotive technician in adjusting to the demands of an automotive service facility. This course will expose the student to the flat rate method of shop pay as well as focus on many customer concerns. The student will experience the most effective method when dealing with customer service while demonstrating correct dealer etiquette.

AUTO 117 Automotive Manual Power Trains
4 semester credits
This course examines automotive manual power trains. It includes the construction, maintenance, diagnosis, and repair of manual transmissions and transaxles, transfer cases, rear axles, drive shafts, and clutches. Driveline angles and Noise, Vibration & Harshness (NVH) will be discussed. Lab application of service procedures is included. Course Fee: $20.00

AUTO 119 Automotive Braking Systems
4 semester credits
This course examines automotive braking systems, including hydraulic and friction theory. The construction, maintenance, diagnosis, and repair of disc, drum and antilock braking systems are studied. Use of off-the-car and on-the-car-brake lathes are included in lab. Lab application of service procedures is included. Course Fee: $20.00

AUTO 128 Engines
4 semester credits
Overview of the design, operation, diagnosis, and service procedures of modern automotive engines. Students participate in the disassembly and the reassembly of engine units. Service and technical engine data are presented to prepare the students for practical experience in engine servicing. Course Fee: $20.00
AUTO 151 Diagnosis and Tune Up
3 semester credits
A theory course pertaining to fuel systems, emission control systems, ignition systems, engine mechanical tests, and General Motors Computer Command Control. Proper testing with modern diagnosis equipment will also be discussed. Must be taken with AUTO 152 Lab.

AUTO 152 Diagnosis and Tune Up Lab
3 semester credits
A lab course pertaining to diagnosis, testing, and repair of fuel systems, emission control systems, ignition systems, engine mechanical tests, and General Motors Computer Command Control. Provides training on the proper use of modern diagnosis equipment. Must be taken with AUTO 151.

Course Fee: $20.00

AUTO 220 Automotive Steering and Suspension
4 semester credits
This course examines automotive suspension and steering systems. The theory of operation, construction, maintenance, diagnosis, and repair of steering and suspension systems is examined. Alignment procedures, wheel balancing, steering, suspension, headlight aiming, and structural damage diagnosis will be discussed. Lab application of service procedures is included.

Course Fee: $20.00

AUTO 251 Computerized Engine Control Systems
3 semester credits
Computerized fuel injection and carburetor systems will be covered. Theory of operating and testing General Motors, Ford, Chrysler, Toyota, and Bosch computerized systems will be discussed. Must be taken with AUTO 252 Lab.
Prerequisite: AUTO 128, AUTO 151, and ATDI 134.

AUTO 252 Computerized Engine Control Systems Lab
3 semester credits
A practical course dealing with the diagnosis and repair of computerized engine control systems. A student will obtain the necessary hands on training required to use the specialized test equipment to diagnose and repair domestic and foreign systems. Must be taken with AUTO 251.

Course Fee: $20.00

AUTO 255 Applied Service Technology
3 semester credits
A practical course dealing with the removal and installation of engines and automatic transmissions on both front and rear wheel drive vehicles. Some live work may be performed regarding tune-up, brakes, electrical, power trains and chassis systems.
Prerequisite: ATDI 134, AUTO 117, AUTO 119, AUTO 128, AUTO 151, and AUTO 152.

AUTO 279 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to the University program of study.
Prerequisites: Two semesters of attendance at Montana State University-Northern, approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

AUTO 355 Automotive Service Operations
3 semester credits
A practical course dealing with the removal and installation of engines on front and rear wheel drive vehicles. Students will also gain experience in shop management by figuring efficiency, productivity, estimating, pay scales, and quality control.
Prerequisite: Junior standing, ATDI 134, ATDI 257.

AUTO 408 Current Trends in Mobility Technology
2 semester credits
This course presents an examination of current model year design and trends in the mobility industries. Extensive undergraduate research and the latest techniques for presenting material will be employed.

AUTO 450 Dynamometer Testing and Computer System Data Analysis
3 semester credits
Dynamic testing, analysis and evaluation of internal combustion engines from both, the mechanical and computer system application. Prerequisites: AUTO 251, AUTO 252, ATDI 384, ENGL 112 (can be taken concurrently), SPCH 141, and Senior Standing.

Course Fee: $20.00

AUTO 457 Advanced Power Trains
4 semester credits
This course examines advanced component operation and diagnosis in automotive power trains. Topics covered in the class are automatic transmissions, automatic transaxles, all wheel drive systems, CVT (constant variable transmissions), power train electronic control systems and NVH (noise, vibration & harshness) diagnosis.
Prerequisite: AUTO 117 and ATDI 257.

Course Fee: $20.00

AUTO 479 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to the University program of study.
Prerequisites: Cooperative Education 279 or Junior standing and approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

AUTO 488 Automotive Practicum
3 semester credits
Individualized research practicum selected by the student and an automotive instructor. Survey of literature available, testing and evaluation of project with an oral defense of the resulting paper.
Prerequisites: ENGL 112, SPCH 141, all required AUTO courses, and Senior Standing.

BIOLOGY

BIOL 110 Introduction to Environmental Health
3 semester credits
An orientation to the field of environmental health and human interactions with the environment, including a survey of topics of environmental protection, food and water, waste water processes, solid waste disposal, living and working environments, epidemiology of environmentally associated diseases, and pollution control policy. Current federal and
state regulations are reviewed. This course does not meet the laboratory science requirement.

**BIOL 140 Cell Biology**
4 semester credits
The structure and function of plant and animal cells, including respiration, photosynthesis, reproduction, genetics, and protein synthesis. Other topics considered are tissues, embryology, and unicellular organisms. Must be taken concurrently with BIOL 140. This course taken in conjunction with the lecture portion of the course (BIOL 140) meets the laboratory science requirement. **Course Fee: $12.00**

**BIOL 141 Cell Biology Laboratory**
1 semester credit
Laboratory studies in cell structure and function, respiration, photosynthesis, reproduction, genetics, tissues, embryology, and unicellular organisms. Must be taken concurrently with BIOL 140. This course taken in conjunction with the lecture portion of the course (BIOL 140) meets the laboratory science requirement. **Course Fee: $10.00**

**BIOL 151 Essentials of Biology**
4 semester credits
An introduction to biology, including chemical principles, cell structure and function, classification and characteristics of bacteria, protists, fungi, plants, and animals, and such ecological concepts as ecosystems, energy relationships, cycles, succession, and populations. Includes lecture and laboratory hours. This course does meet the laboratory science requirement. **Course Fee: $8.00**

**BIOL 204 Essentials of Anatomy and Physiology**
4 semester credits
An introduction to the organ systems of the human body, including chemical principles, cell structure and function, classification and characteristics of bacteria, protists, fungi, plants, and animals, and such ecological concepts as ecosystems, energy relationships, cycles, succession, and populations. Includes lecture and laboratory hours. This course does meet the laboratory science requirement. **Course Fee: $8.00**

**BIOL 217 Microbiology**
4 semester credits
A survey of the microbial world including bacteria, viruses, protozoa, algae and fungi, relationships of microorganisms to man and to the environment including health and disease, cultivation, isolation, microbial metabolism and genetics, with emphasis on antisepsis and medical microbiology for students entering health related fields as well as applied microbiology related to water quality. Appropriate for students in general education and science and health related programs. Includes lecture and laboratory hours. Recommended: high school biology or BIOL 140. This course does meet the laboratory science requirement. **Course Fee: $25.00**

**BIOL 221 Botany I**
3 semester credits
Introduction to the plant kingdom that primarily focuses upon the cytology, anatomy, morphology, and general physiology of the flowering plants. Concurrent enrollment in BIOL 222 is required. Prerequisite: Basic college biology course.

**BIOL 222 Botany I Laboratory**
2 semester credits
Laboratory activities that primarily focus upon the cytology, anatomy, morphology, taxonomy of the flowering plants. Concurrent enrollment in BIOL 221 is required. This course taken in conjunction with the lecture portion of the course (BIOL 221) meets the laboratory science requirement. **Course Fee: $5.00**

**BIOL 241 Anatomy and Physiology I**
4 semester credits
An introduction to the form and function of the parts of the human body, with studies on the tissues, bones, muscles, respiration, and circulation. Includes lecture and laboratory hours. Prerequisite: High School Biology or BIOL 140 are strongly recommended. Placement exam will be administered. This course does meet the laboratory science requirement. **Course Fee: $13.00**

**BIOL 242 Anatomy and Physiology II**
4 semester credits
Emphasis on the regulations of the energy supply and the internal environment. Units covered are nerves, endocrines, digestion, cell metabolism, excretion, and reproduction. Includes lecture and laboratory hours. Prerequisites: BIOL 241; or BIOL 140 and CHEM 111 or equivalent. This course does meet the laboratory science requirement. **Course Fee: $13.00**

**BIOL 250 Undergraduate Research**
3 semester credits
Opportunity to perform undergraduate research under the counsel and guidance of departmental staff. Students will summarize research results in scientific papers and oral presentations. Prerequisite: consent of instructor. This course does meet the laboratory science requirement.

**BIOL 279 Cooperative Education**
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Two semesters of attendance at Montana State University-Northern, approval of advisor, Dean of the College of Education, Arts and Sciences, Nursing, and cooperative education coordinator. Pass/Fail only. This course does not meet the laboratory science requirement.

**BIOL 314 General Ecology**
4 semester credits
Integrated principles of ecology with special emphasis on terrestrial ecosystems. Some attention directed to selected ecological methods and statistical evaluations via laboratory activities. Offered alternate years. Prerequisites: BIOL 140 or BIOL 151 or BIOL 221. This course does meet the laboratory science requirement.
BIOL 322 Botany II
4 semester credits
A general survey of the plant kingdom and plant classification with special emphasis on bryophytes, and the non-flowering tracheophytes and their reproductive processes, together with an introduction to algae and the fungi. Offered alternate years. Prerequisite: Basic college biology course. This course does meet the laboratory science requirement.

BIOL 324 Entomology
3 semester credits
An introduction to the anatomy, characteristics and classification of insects including methods of collecting, preserving, identifying, and displaying insects. Preparation of an insect collection is required. Offered alternate years. Prerequisite: BIOL 348 or consent of instructor. This course does meet the laboratory science requirement. Course Fee: $9.00

BIOL 334 Ornithology
3 semester credits
The biology of birds, including their morphology, physiology, behavior, ecology, and classification. Emphasis on the recognition of Montana species, developed through the use of photos, preserved skins, and local field trips. Offered alternate years. Prerequisite: BIOL 348 or consent of instructor. This course does meet the laboratory science requirement. Course Fee: $13.00

BIOL 348 Zoology
3 semester credits
A survey of invertebrate and vertebrate animal phyla including classification, morphology, physiology, characteristics, and natural history. Concurrent enrollment in BIOL 350 required. Prerequisite: BIOL 140 or equivalent.

BIOL 350 Zoology Laboratory
2 semester credits
The laboratory component of BIOL 348. Microscopic and macroscopic studies of animals. Dissection of squid, earthworms, crayfish, sea stars, dogfish sharks, frogs, fetal pigs, and others. Concurrent enrollment in BIOL 348 required. This course taken in conjunction with the lecture portion of the course (BIOL 348) meets the laboratory science requirement. Course Fee: $13.00

BIOL 406 Molecular Biology Techniques
3 semester credits
Introduction to such techniques of molecular biology as electrophoresis and chromatography as these methodologies are employed in the fields of cytology, molecular genetics, and physiology. Graduate credit requirements are described in the course syllabus. This course does meet the laboratory science requirement.

BIOL 407 Freshwater Biology
4 semester credits
This course will demonstrate and provide an opportunity for students to develop skills in selected techniques used in the examination, identification and classification of a wide variety of the freshwater organisms that live in Montana’s aquatic systems. Extensive laboratory work and field trips are required. Prerequisites: BIOL 140 or BIOL 151 or approval of instructor. This course does meet the laboratory science requirement.

BIOL 408 Flowering Plants of the Plains and Mountains
3 semester credits
Study of flowering plants found in prairie, foothill, mountain, riparian, and aquatic habitats. Methods of collection, general identification, and preservation of a series of plant specimens, including development of a herbarium, are included. Graduate credit requirements are described in the syllabus. This course does meet the laboratory science requirement.

BIOL 410 Field Biology Methods
3 semester credits
This course provides experience in using various ecological techniques to measure certain parameters of populations of organisms found in Montana. The course emphasizes careful observation and measurement and allows students to develop an understanding of using statistical methods and demographic data to interpret biological processes and population trends. The course will include such topics as using taxonomic keys, reviewing and evaluating technical literature, habitat surveys, population census methods and others. Prerequisite: BIOL 151 or BIOL 314 or BIOL 348, or consent of the instructor.

BIOL 415 Ecological Methods
3 semester credits
Study of methodologies used by ecologists to examine the environment. Laboratory and field procedures are stressed, together with review of associated ecological concepts. Graduate credit requirements are described in the syllabus. Prerequisite: Basic ecology course. This course does meet the laboratory science requirement.

BIOL 425/EDUC 425 Methods of Teaching Secondary Science *
3 semester credits
This course is a study of the practical and hands-on approaches that illustrate the techniques and materials for teaching at the secondary level in physical and biological sciences. Prerequisites include: Level I Admission to Teacher Education, EDUC 300 and EDUC 376. Co-requisite: EDUC 339 Secondary Field Experience

BIOL 460 Advanced Microbiology
3 semester credits
Review of the microbial world involving bacteria and viruses and their impact on human immune function, disease prevention, environmental and industrial applications, and microbial ecology. Designed for students interested in continuing in science, particularly in pharmacy and pre-med. Prerequisite: BIOL 140 and BIOL 217. This course does meet the laboratory science requirement.

*Restricting, see “Dual Prefix Listed Courses” in “Graduation and General Education Requirements” section.
BIOL 468 Molecular Biology and Genetics
4 semester credits
Structure and function of cells emphasizing molecular aspects at cellular, organellar, and physiological levels. Molecular composition of cell organelles, structure of eukaryotic genomes including chromosomes, recombination, gene structure and transcription, gene control during development, hormonal influence on gene expression, chemical synthesis, and factors influencing inheritance patterns. Emphasis is on animal cells. Includes lecture and laboratory hours. Prerequisite: BIOL 140 or equivalent; one semester of college chemistry. This course does meet the laboratory science requirement.

BIOL 479 Cooperative Education
1, 3, 6 or 12 credits
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Cooperative Education 279 or Junior standing and approval of advisor, Dean of the College of Education, Arts and Sciences, Nursing, and cooperative education coordinator. Pass/Fail only. This course does not meet the laboratory science requirement.

BIOL 506 Molecular Biology Techniques
3 semester credits
Introduction to such techniques of molecular biology as electrophoresis and chromatography as these methodologies are employed in the fields of cytology, molecular genetics, and physiology. Graduate credit requirements are described in the course syllabus. This course does meet the laboratory science requirement.

BIOL 507 Freshwater Biology
3 semester credits
Examination, identification, and classification of a wide variety of freshwater organisms abundant in Montana's aquatic systems. Extensive laboratory work and field trips are required. Graduate credit requirements are described in the syllabus. Prerequisites: basic biology course. This course does meet the laboratory science requirement.

BIOL 508 Flowering Plants of the Plains and Mountains
3 semester credits
Study of flowering plants found in prairie, foothill, mountain, riparian, and aquatic habitats. Methods of collection, general identification, and preservation of a series of plant specimens, including development of a herbarium, are included. Graduate credit requirements are described in the syllabus. This course does meet the laboratory science requirement.

BIOL 515 Ecological Methods
3 semester credits
Review of the various methodologies that are used by ecologists to examine the environment. Stresses laboratory and field procedures that are applicable to a classroom situation. They will be presented in conjunction with a review of the associated ecological concepts. Graduate credit requirements are described in the course syllabus. Prerequisite: Basic ecology course. This course does meet the laboratory science requirement.

BIOL 525/EDUC 525 Methods of Teaching Secondary Science *
3 semester credits
This course is a study of the practical and hands-on approaches that illustrate the techniques and materials for teaching at the secondary level in physical and biological sciences. Prerequisites include: Level I Admission to Teacher Education, EDUC 500 and EDUC 576. Co-requisite: EDUC 339 Secondary Field Experience

Because this is a graduate course, expectations for student performance are at an advanced level. Evaluation of course requirements is more rigorous than at the lower division section of this course.

BIOL 568 Molecular Biology and Genetics
4 semester credits
Structure and function of cells emphasizing molecular aspects at cellular, organellar, and physiological levels. Molecular composition of cell organelles, structure of eukaryotic genomes including chromosomes, recombination, gene structure and transcription, gene control during development, hormonal influence on gene expression, and chemical synthesis. Factors influencing the inheritance patterns. Emphasis on animal cells. Includes lecture and laboratory hours. Graduate credit requirements are described in the course syllabus. Prerequisite: BIOL 140 and equivalent college chemistry. This course does meet the laboratory science requirement.

BIOL 635 Advanced Zoology
3 semester credits
Characteristics, classification, identification, life history, and ecological distribution of North American mammals and freshwater fish. Laboratory hours are devoted largely to the recognition and identification of representative species. Prerequisite: Vertebrate Zoology course. This course does meet the laboratory science requirement.

BODY
BODY 140 Panel Adjustment and Glass
2 semester credits
By the end of the class the students will understand the box theory of automobile design and current trends in construction. They will be able to adjust door, hood, fender and bumper, properly install doors and windshields to factory specification. Shop safety is emphasized.

BODY 141 Introduction to Metal Refinishing
3 semester credits
The students will be in a classroom setting where they will learn the principles of auto body repair and safe personal and tool practices. They will be able to identify the types of dents and proper sequences for dent removal. They will also be able to identify three types of primer and the proper use and properties of each. Safety is emphasized.

*Restricting, see “Dual Prefix Listed Courses” in “Graduation and General Education Requirements” section.
BODY 142 Metal Repair Lab
3 semester credits
Students will learn shop safety, proper safe painting and priming techniques, and three methods of dent removal. By the end of the semester they will have repaired a prescribed dent in five minutes and painted a body part on a vehicle, door, fender, hood, etc. They will learn proper sanding and painting using three different materials used by the industry today and the safe handling of each one. Course Fee: $20.00

BODY 143 Refinishing
3 semester credits
The students will continue skills learned in BODY 141 Introduction to Metal Refinishing, and be able to remove dents and complete repairs to a vehicle including complete refinishing. They will use fresh air supplied paint suits and safely use and dispose of excess products.

BODY 144 Refinishing Lab
3 semester credits
The students will paint a minimum of one car and spot repair six cars to match original finish. They will also learn the skill of proper sanding and feathering so the repaired area cannot be determined. Course Fee: $20.00

BODY 215 Principles of Unibody Repair Fundamentals
3 semester credits
The students will be able to read and understand frame specification books. They will also understand the structural design of unibody and the characteristics of the metal used in auto construction.

BODY 216 Unibody Repair Technology
3 semester credits
The students will straighten one independent frame, one unibody, and remove and replace a transaxle engine. They will also measure additional cars beside the ones they repair. They will correctly complete three types of MIG weld used in auto body repair process using proper safety equipment as the job requires. Course Fee: $20.00

BODY 241 Estimating
4 semester credits
The students learn the proper use of industry estimating guide. By the completion of the course they will understand how to write an estimate in good form as accepted by the insurance industry and have good skills in estimating areas to be repaired.

BODY 243 Shop Production
3 semester credits
The students will learn to identify plastics used in current automotive manufacturers and how to repair them correctly. They will also learn the steps in door repair panels and quarter panel replacement. They will also learn acceptable shop procedures by keeping track of time and materials spent on live work plus safety shop practices.

BODY 244 Shop Production Lab
3 semester credits
The students will work on live projects completing required projects in one and one half times the estimate. They will learn how to weld on doors and quarter panels as well as keep track of materials and the time spent on each job. Course Fee: $20.00

BODY 279 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Three semesters of attendance at MSU-Northern, approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

BODY 354 Auto Body Shop Management Lab
3 semester credits
The students will manage the shop as a shop foreman would do, scheduling and writing estimates as well as keeping track of the BODY 243 Shop Production students' material and time cards. Course Fee: $5.00

BUSINESS EDUCATION

BUED 100 Keyboarding
2 semester credits
For beginners in keyboarding. Emphasis will be on developing proper techniques for keying alphabetic and number keys and applying this skill in the production of simple business correspondence. This course is designed for students with no prior instruction/experience in keyboarding. This course will not be required for Business Education students who successfully pass the BUED 142 pretest.

BUED 110 Introduction to Business Education
1 semester credit
Provides the prospective educator with an overview of the field of education in general and business education, in particular. The process of becoming a certified teacher will be discussed, as well as requirements and expectations of business education students. Note-taking skills will be addressed and OPI/NCATE and National Standards will be covered. Additionally, the teaching portfolio and teaching journal and resources will be addressed.

BUED 142 Introduction to Word Processing
2 semester credits
A class on word processing concepts, terminology and machine manipulation. Prerequisite: 30 Net WPM on Pretest or Consent of Instructor.

BUED 230 Office Skills
2 semester credits
Application of procedures in the modern office including office communications technology, filing systems, organizational skills, time management, and professional conduct. The course will also cover a number of clerical operations including calculators, Dictaphones/transcription, telephone skills, and reprographics. Prerequisite: BUED 142 or instructor consent.
BUED 238 Automated Office
3 semester credits
Tasks, activities, and conditions found in a modern business office. Students will use an integrated computer simulation to perform a variety of office tasks. Prerequisites: BUED 142 and BUED 230.

BUED 245 Personal Finance
3 semester credits
Provides the student with the tools to make them better financial consumers. Class will examine the techniques of budgeting, investing, using credit, and purchasing capital goods. Additionally, students will be provided with the option of investigating retirement programs and estate planning as well as tax preparation. A number of projects are required to help students apply information from the class to their own real-life situation.

BUED 279 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience in industry, business, government or community service agencies related to the University program of study. Prerequisites: Two semesters of attendance at MSU-Northern, approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

BUED 280 The Internet, Web Page Design, and On-line Course Supplements for Educators
2 semester credits
Students will learn to use effective search strategies with a variety of browsers. Students will learn to design web pages, both personal and course-related, and will begin preparing on-line supplements for the courses typically taught in the high schools (these web pages will be completed during the methods courses). Prerequisite: CIS 111.

BUED 302 Introduction to E-Commerce and Internet Marketing
3 semester credits
Students will develop an Internet marketing plan and subsequent Internet marketing tools. Students will conduct market research, photograph products, layout pages, develop customer service strategies, and perform the technical aspects of web catalog production. Prerequisite: BUED 280 or consent of instructor.

BUED 305 Video Editing and Production
3 semester credits
This course will provide students with a basic foundation in the concepts of video production and editing. Students will tap into their higher level thinking skills by translating an idea into effective video utilizing digital hardware and computer editing software. They will also learn the use of video technology to bridge the printed word with visuals. A number of projects will be required including techniques of creating school news broadcasts, video resumes, video yearbooks and the use of video technology in marketing and promotion. Students will also research equipment that would be needed to equip a school television studio.

BUED 315, 316, 317, 318, & 319
Each methods course will emphasize the special methods and materials necessary to teach the associated course in the public schools. Included are techniques for planning, organizing, evaluating, and measuring learner performance. Students will practice selecting, designing, developing and utilizing objectives, and designing learning/teaching strategies suitable for the course and the audience. Students will develop syllabi, unit plans, and lesson plans, and will present multi-media teaching demonstrations to both peers and Master teachers. Students will complete the development of Internet supplementary material for each subject area begun in BUED 280. Each course will additionally discuss the philosophy and objectives of vocational education and occupational technology as they apply to the specific subject area. Each methods course will require a period of observation of a high school class in the subject area as well as participation in on-line discussions.

BUED 315 Methods of Teaching Accounting
1 semester credit
Prerequisites: Completion of ACCT 261, ACCT 262, and ACCT 285, and Admission to Teacher Education.

BUED 316 Methods of Teaching Keyboarding and Word Processing
1 semester credit
Prerequisites: Completion of BUED 142 and Admission to Teacher Education

BUED 317 Methods of Teaching Office Skills
1 semester credit
Prerequisites: Completion of BUED 230 and Admission to Teacher Education.

BUED 318 Methods of Teaching Personal Finance
1 semester credit
Prerequisites: Completion of BUED 245 and Admission to Teacher Education.

BUED 319 Methods of Teaching Business Law
1 semester credit
Prerequisites: Completion of BUS 271 and Admission to Teacher Education.

BUED 348 Business Communications
3 semester credits
This course presents a comprehensive view of the scope and importance of communications for business, emphasizing the composition of letters and memos typically utilized by business, sales and claims correspondence, and special situation letters. Employment applications and resume writing will be reviewed. Preparation of business reports and proposals, along with oral, multi-media presentations covering a wide range of business situations, is also included. This course meets the University requirements for a “capstone course”. Prerequisites: completion of fundamental skills English and speech requirements.
BUED 421, 422, 423, & 424
Each methods course will emphasize the special methods and materials necessary to teach the associated course in the public schools. Included are techniques for planning, organizing, evaluating, and measuring learner performance. Students will practice selecting, designing, developing and utilizing objectives, and designing learning/teaching strategies suitable for the course and the audience. Students will develop syllabi, unit plans, and lesson plans, and will present multi-media teaching demonstrations to both peers and Master teachers. Students will complete the development of Internet supplementary material for each subject area begun in BUED 280. Each course will additionally discuss the philosophy and objectives of vocational education and occupational technology as they apply to the specific subject area. Each methods course will require a period of observation of a high school class in the subject area as well as participation in on-line discussions.

BUED 421 Methods of Teaching Marketing
1 semester credit
Prerequisites: Completion of BUED 305, BUS 335, and Admission to Teacher Education

BUED 422 Methods of Teaching Entrepreneurship
1 semester credit
Prerequisites: Completion of BUS 300, BUED 302, SBM 416, and Admission to Teacher Education

BUED 423 Methods of Teaching Computer Applications
1 semester credit
Prerequisites: Completion of CIS 111, BUED 280, BUED 348, CIS 320, and Admission to Teacher Education

BUED 424 Methods of Teaching Business to Special Learners
1 semester credit
Students will learn how to adapt the classroom and their teaching methods for the special/exceptional learner. Classroom management skills will also be emphasized.
Prerequisites: All 300 level methods courses and Admission to Teacher Education. This course may be taken concurrently with 400 level methods courses.

BUED 455 Pre-Practicum Seminar
1 semester credit
This course will emphasize the details, student teaching etiquette, the things that students never seem to be told before they embark on their student teaching adventure - areas such as who do you talk to, when do you talk to them, and what do you say. Grading, time management, extra-curricular activities, dress, demeanor, and test writing will be covered. Expect information on student vocational organizations, school-to-work, tech prep, and credit-to-work programs as well. The class is to be taken the semester immediately prior to the student teaching experience. A portion of the class will be held prior to student teaching and the remainder of the class will be taken during and immediately after the student teaching experience.

BUED 479 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience extending the student's learning experience in industry, business, government or community service agencies related to the University program of study. Prerequisites: Cooperative Education 279 or Junior standing and approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

BUSINESS

BUS 100 Introduction to Business
3 semester credits
Fundamental concepts of terminology in the business administration field; covers such areas as management, marketing, accounting, production, purchasing, data systems, personnel, and finance with practical application of fundamental principles.

BUS 110 Creative Problem Solving
3 semester credits
The course teaches the application of the basic elements of reasoning to common business scenarios. The student will identify reasoning abilities that are necessary for developing management skills. The student will be introduced to the standards used in evaluating their reasoning and a variety of case studies will be used to apply the concepts of the course.

BUS 120 Leadership
3 semester credits
Leadership for First Line Management. Study of the practices, roles, attributes, challenges, and principles of leadership. The implementation of the qualities of leadership - kindness, justice, self-control, and energy.

BUS 215 Managerial Planning in Not-For-Profit Enterprises
3 semester credits
This course examines the basic managerial planning functions for a Not-For-Profit enterprise. Emphasis is placed on the identification and development of annual organizational activities and the preparation of a working budget for those activities. The course also examines the difference between capital campaigns and fundraising activities. An introduction to writing proposals for both activities is also part of the course as is an introduction to Microsoft Excel as a tool to assist in financial analysis and reporting.

BUS 250 Business Statistics
3 semester credits
This course builds on the basic mathematical skills learned in MATH 112 and adapts them for statistical analysis used by business and industry to aid decision making. Topics covered include data gathering, descriptive statistics, probability, inferential statistics, analysis of variance and regression analysis. Autocorrelation analysis, nonparametric statistics, decision making under uncertainty and business forecasting are introduced. Prerequisite: MATH 110 or 112 or consent of instructor.
BUS 271 Legal Environment of Business
3 semester credits
The course serves as both a basic introduction to the legal system and a general overview of specific legal topics. In the introductory phase of the class, students will study the different kinds of law that make up our legal system, the courts, and the steps in a court case. The class will cover traditional legal topics like contract law, property law, torts, and business organizations. Students will also study newer areas of law like sales contracts, product liability law, and consumer protection law.

BUS 279 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience in industry, business, government or community service agencies related to the University of study. Prerequisites: Two semesters of attendance at Montana State University-Northern, approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

BUS 300 Management in Organizations
3 semester credits
A study of the basic management and organizational principles within business entities. Direct application of management theory is examined with consideration of the functional aspects of decision making, planning, application of ethics, implementation of change and corporate culture. Course will examine and evaluate organizational change with particular interest in individuals, groups and team processes as applied in the domestic business operations and international business.

BUS 332 Human Resource Management
3 semester credits
An analysis and description of present-day personnel practices; stresses labor supply sources, equal employment opportunity, employee selection processes, management and employee training, collective bargaining, grievances, job description and job evaluation analysis, and judging effectiveness of the labor force in the public and private sector. Prerequisite: BUS 300.

BUS 335 Principles of Marketing
3 semester credits
Study and analysis of the elements of marketing and marketing strategy, stressing product-development, policies, pricing strategies, promotion, distribution strategies, and market and institution structures and middlemen according to the functions they perform and other marketing information systems.

BUS 337 Consumer Behavior
3 semester credits
Basic perspectives of consumer behavior; interdisciplinary approach using the fields of economics, psychology, sociology, and anthropology as they relate to marketing; emphasizes the fundamental process of motivation, perception and learning, as well as analysis of individual and group behaviors and influences in marketing. Prerequisite: BUS 335.

BUS 341 Advanced Marketing Application
3 semester credits
This course is a marketing applications course that adds depth to student understanding of marketing concepts. The course uses the case study approach, a comprehensive marketing project, and a marketing simulation that requires the application of concepts learned in the Principles of Marketing class. Case studies that apply directly to the four P’s of Marketing (Product, Price, Place, Promotion) will be used to emphasize pertinent concepts and procedures used in the marketing of products and services. The project and the simulation require the synthesis of all marketing knowledge to application situations. Prerequisite: BUS 335.

BUS 350 Financial Management
3 semester credits
This course teaches broad analytical skills to future managers to help them make financial decisions. The student learns basic skills like break-even analysis, budgeting, time-value of money, risk and financial statement analysis. They will apply those concepts to more sophisticated problems like capital budgeting projects, working capital management, and choosing sources of capital. Prerequisites: ACCT 261 and ACCT 262.

BUS 355 Investments
3 semester credits
This course is devoted to the study of various types of investments including stocks, bonds, real estate, insurance, IRAs, commodities, collectibles, and limited partnerships. The course will also examine tax implications of investments, investment analysis, and investment strategies. Prerequisites: Junior standing or consent of instructor, and BUS 350.

BUS 360 Project Management
3 semester credits
This course will teach students the essential skills they need to make effective contributions to projects in which they are involved. Thinking critically about project management principles and applying them within the context of the real world is stressed. Project management software programs will be evaluated and utilized by students.

BUS 380 Operations Management
3 semester credits
Management processes applied to design and operation of a production or service system. This course includes various methods of forecasting sales, linear programming, inventory and material management, physical facilities design, critical path and PERT scheduling, and quality control. Prerequisite: BUS 250.

BUS 405 Ethics in Management and Technology
3 semester credits
An analysis of the technical, social, and environmental forces which influence business activities and decision-making. The impact of business decisions on society and the influence and impact of society on business, social responsibility, business and society in the role of business decision making are discussed. The role of personal and organizational values and beliefs on business ethics.
BUS 406 Management Information Systems
3 semester credits
Concepts of MIS from a user's perspective. Explores the questions of analysis design, selection and implementation of MIS. How do I use information as a manager? How do I organize the MIS department's information in a form I can use and understand (methods and procedures)? This is a non-technical computer course which includes forecasting, PERT/CPM, inventory models, and written and oral communications. Prerequisites: CIS 110 or 111 and BUS 250.

BUS 410 International Business
3 semester credits
The course draws on the basic management skills developed in the basic business courses and applies those skills to the international arena. The functional, economic, political, and financial aspects of international business are explored. Two specific areas which are addressed in the second half of the course are corporate strategy techniques for analyzing an international market and human resource management techniques for addressing cultural differences. Prerequisites: BUS 300.

BUS 430 Senior Project
3 or 6 semester credits
The student will work on an approved project, under the supervision of a faculty member. The project will include goals and objectives appropriate to a senior-level course, and must include some device for evaluating completion of those goals. Development, approval and evaluation of the project will be done by a panel of three business faculty. May be repeated for credit. Prerequisite: Senior standing.

BUS 436 Sales and Sales Management
3 semester credits
The course will provide a strong foundation in professional selling and sales management. The course will introduce such topics as: Developing a Personal Sales Philosophy, Developing a Product Strategy, Developing a Customer Strategy, and Developing a Professional Presentation. The course will also introduce the concepts of sales management and address such topics as management of the sales force, personal productivity, and the ethical aspects of personal selling.

BUS 440 Internship
6 or 12 semester credits
A planned and supervised work-learning experience extending the student's learning experience in industry, business, government or community service agencies related to the University program of study. The internship is an alternative to cooperative education, and will only be used in situations where the employer is unable to pay for the student's employment. Prerequisite: see section on cooperative education in this catalog.

BUS 450 Business Senior Seminar
3 semester credits
The Business Program’s capstone course is the culmination of the courses building up to the bachelor’s degree. In the course, students will demonstrate their knowledge of the program learning outcomes through testing, evidence, and case analysis. Prerequisite: Senior standing Course Fee: $30.00

BUS 479 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience extending the student's learning experience in industry, business, government or community service agencies related to the University program of study. Prerequisites: Cooperative Education 279 or Junior standing and approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

ENGINEERING TECHNOLOGY: CIVIL ENGINEERING TECHNOLOGY

CET 173 Architectural Construction and Materials
3 semester credits
Introduction to construction materials and methods. Building systems and construction details. Emphasis is placed on selection of materials and methods. Laboratory section performs site investigations observing materials and their properties. Course Fee: $12.00

CET 181 Surveying
3 semester credits
Students involved with this subject will learn to perform the most common survey work required on a construction project, which is layout, topographical leveling, differential leveling, and transfer of elevations from one benchmark or location to another. Students will learn linear measuring with tapes, and with electronic distance meters. They will also develop the skills in using standard and automatic levels, in measuring distances and angles with the EDM, transit, and modern instruments. Fundamental computations will be emphasized. Co requisite: MATH 125 or higher. Course Fee: $25.00

CET 220 Construction Management & Bid Estimation
3 semester credits
Preparing cost estimates of construction projects. Introduction to construction contracts. Construction planning and scheduling. Using software for estimating and scheduling. Prerequisite: CET 173. Course Fee: $15.00

CET 221 Engineering Mechanics
3 semester credits
Applied mechanics with analytical and graphical application of physical principles to engineering related problems. Newton's Laws of motion, vectors, equilibrium, friction, properties of areas and solids, trusses, beams, and fluid pressures. Introduction to dynamics of particles and strength of materials. Co requisites: PHYS 231, and MATH 125 or higher. Course Fee: $10.00

CET 232 Strength of Materials
3 semester credits
Mechanics of materials and material properties. Study of stresses, strains, and deformation in different materials. Beam deflections, buckling, torsion, and mechanics of structural elements are introduced. Prerequisite: CET 221. Course Fee: $10.00
CET 279 Cooperative Education
1 or 3 semester credits
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Two semesters of attendance at Montana State University-Northern, approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

CET 305 Engineering Economics
3 semester credits
The role of engineering economy in the decision making process. Cash flow and interest. Taxes and after-tax economy studies. Measure of worth and economic risk analysis. Prerequisite: Instructor approval.

CET 307 Structural Analysis
3 semester credits

CET 315 Soil Mechanics & Foundations
4 semester credits
Engineering properties of soil. Laboratory testing to determine soil characteristics. Shallow foundations and retaining structures. Prerequisite: CET 232. Course Fee: $25.00

CET 361 Design and Details of Steel Buildings
4 semester credits
Design of steel members according to American Institute of Steel Construction Code. Both calculations and construction details are emphasized. Prerequisite: CET 232. Course Fee: $10.00

CET 375 Applied Mechanics of Fluids
3 semester credits
Introduction to fluids, fluid properties, hydrostatic forces, fluid flow, pipeline systems, open channels, and fluid machinery. Prerequisite: CET 232. Course Fee: $10.00

CET 385 Highway Design and Construction
4 semester credits
Intended as a first course in highway engineering. It is inclusive of surveying topics pertinent to the design and layout of highways. The transportation engineering profession, geometry, pavement selection, highway soil mechanics and characteristics of the vehicle, driver, pedestrian, and the road will be discussed. A semester design project based on fieldwork will be completed as part of the laboratory section. Prerequisite: CET 181 or consent of instructor. Course Fee: $25.00

CET 411 Reinforced Concrete Design & Details
4 semester credits
Design of reinforced concrete members according to American Concrete Institute (ACI) code. Both calculations and details of reinforcing steel are emphasized. Prerequisite: CET 232. Course Fee: $15.00

CHEM 111 General Chemistry
3 semester credits
General chemistry dealing primarily with physical states of matter, including nomenclature, atomic structure, chemical reactions, and acid-base theory. First of a two-semester sequence for majors that do not require a strong background in chemistry. Includes lecture and laboratory hours. This course does meet the laboratory science requirement. Course Fee: $20.00

CHEM 112 Physiological Chemistry
3 semester credits
Basic topics in organic chemistry and biochemistry; chemistry as it relates to the human body--functional groups, nomenclature, categories of compounds, and reactions, metabolism, cellular processes, nutrition, and foods. Prerequisite: High School Chemistry or CHEM 111. Second of a two-semester sequence for majors that do not require a strong background in chemistry. Includes lecture and laboratory hours. This course does meet the laboratory science requirement. Course Fee: $20.00

CHEM 121 General Inorganic Chemistry I
3 semester credits
Fundamental principles of inorganic chemistry: nomenclature, theoretical concepts of bonding, periodic trends, chemical reactions, state of matter, heat of reactions, gaseous nature, and free energy. Primarily for students planning to continue in chemistry and other fields requiring knowledge of chemical principles. Concurrent enrollment in CHEM 123 laboratory is required. Prerequisite: High School Algebra.

CHEM 122 General Inorganic Chemistry II
3 semester credits
Fundamental principles of inorganic chemistry: equilibria processes, acid-base theories, pH, Ka, neutralization, buffers, precipitation, kps, family and row periodic element characteristics, nuclear processes, and environmental problems. Primarily for students planning to continue chemistry and related fields requiring knowledge of chemical principles. Concurrent enrollment in CHEM 124 laboratory is required. Prerequisites: CHEM 121 and CHEM 123.
CHEM 123 General Inorganic Chemistry I Lab
2 semester credits
The laboratory portion of CHEM 121 dealing with experiments in nature of matter, gaseous state, heat of reactions, and other general principles of matter. Concurrent enrollment in CHEM 121 lecture is required. This course taken in conjunction with the lecture portion of the course (CHEM 121) meets the laboratory science requirement. Course Fee: $22.00

CHEM 124 General Inorganic Chemistry II Lab
2 semester credits
The laboratory portion of CHEM 122 dealing with experiments in acid-base, pH, neutralization, and qualitative analysis. Laboratory techniques in the qual scheme are examined. Concurrent enrollment in CHEM 122 lecture is required. Prerequisite: CHEM 123. This course taken in conjunction with the lecture portion of the course (CHEM 122) meets the laboratory science requirement. Course Fee: $25.00

CHEM 279 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Two semesters of attendance at Montana State University-Northern, approval of advisor, Dean of the College of Education, Arts and Sciences, Nursing, and cooperative education coordinator. Pass/Fail only. This course does not meet the laboratory science requirement.

CHEM 311 Quantitative Analysis
4 semester credits
Introduction to the theory and laboratory techniques of volumetric, gravimetric, and spectrophotometer methods of analysis. Prerequisite: CHEM 122 and CHEM 124. This course does meet the laboratory science requirement. Course Fee: $20.00

CHEM 312 Quantitative and Instrumental Analysis
4 semester credits
Continuation of CHEM 311. Further examination of the theory and laboratory techniques of volumetric, gravimetric, and spectrophotometric methods of analysis. Examines the chemical principles dealing with nonaqueous processes, electrochemical principles, and instrumental techniques. Offered alternate years. Prerequisite: CHEM 311. This course does meet the laboratory science requirement. Course Fee: $20.00

CHEM 330 Biochemistry
3 semester credits
Principles of modern biochemistry. Prerequisite: CHEM 341 or consent of instructor. This course does not meet the laboratory science requirement.

CHEM 331 Biochemistry II
3 semester credits
Continuation of Biochemistry 330. Prerequisite: CHEM 330. This course does not meet the laboratory science requirement.

CHEM 341 Organic Chemistry I
3 semester credits
Organic chemistry for science and related majors with emphasis on the structure of molecules, chemical and physical properties, and reactions mechanisms of hydrocarbons, alkyl halides, and alcohols. Examines the nature of alkanes, alkenes, alkynes, cyclic alkanes, and aromatic hydrocarbon compounds. Concurrent enrollment in CHEM 343 Organic Laboratory I is required. Prerequisites: CHEM 122 and CHEM 124.

CHEM 342 Organic Chemistry II
3 semester credits
Examination of molecules, their chemical and physical properties, reactions mechanisms of ether, carboxylic acids and their derivatives, aldehydes, ketones, amines, aryl halides, phenolic compounds, and introduction into biochemistry. Concurrent enrollment in CHEM 344 Organic Laboratory II is required. Prerequisite: CHEM 341.

CHEM 343 Organic Chemistry I Lab
2 semester credits
Laboratory portion of Organic Chemistry I. Experiments in organic techniques of distillation, extraction, and recrystallization, preparation and identification of hydrocarbons, alcohol, cyclic alkanes, and alkyl halides compounds. Concurrent enrollment in CHEM 341 is required. Prerequisite: CHEM 124. This course taken in conjunction with the lecture portion of the course (CHEM 341) meets the laboratory science requirement. Course Fee: $25.00

CHEM 344 Organic Chemistry II Lab
2 semester credits
Laboratory portion of Organic Chemistry II. Preparation and identification of ether, carboxylic acid, esters, amines, aldehydes, ketone, other compounds, and reaction mechanisms. Concurrent enrollment in CHEM 342 is required. Prerequisite: CHEM 343. This course taken in conjunction with the lecture portion of the course (CHEM 342) meets the laboratory science requirement. Course Fee: $25.00

CHEM 345 Instrumental Analysis
3 semester credits
Modern methods of chemical analysis with emphasis on spectrometric, electrometric, and chromatographic techniques of analytical chemistry. Offered alternate years. Prerequisite: CHEM 311. This course does meet the laboratory science requirement.

CHEM 356 Physical Chemistry
3 semester credits
An introduction to Physical chemistry emphasizing the quantitative aspects of thermodynamics, kinetic processes, equilibrium situations, and electrochemical phenomena. Prerequisite: CHEM 311. This course does meet the laboratory science requirement.

CHEM 479 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience in industry, business, government, or community service
agencies related to the University program of study. Prerequisites: Cooperative Education 279 or Junior standing and approval of advisor, Dean of the College of Education, Arts and Sciences, Nursing, and cooperative education coordinator. Pass/Fail only. This course does not meet the laboratory science requirement.

COMPUTER INFORMATION SYSTEMS

CIS 110 Introduction to Computers
3 semester credits
A literacy-based approach is used to survey the computer and the computer industry. Topics covered include: Microcomputer applications, input, processor, output, auxiliary storage, file and database management, communications, information system life cycle, program development and systems software, and trends, issues and career opportunities in the computer industry. An opportunity for hands-on work with standard software packages including word processors, electronic spreadsheets, database systems, and graphics packages is presented in lab sections. **Course Fee: $5.00**

CIS 111 Integrated Business Applications
3 semester credits
An in-depth integrated application using the case method will be developed. Students will learn to use the integrated tools in modern applications programs to save time and increase the accuracy and integrity of the overall information used in building reports. OLE and file linking will be used extensively. Visual BASIC scripting will be used to increase application cohesion. **Course Fee: $5.00**

CIS 112 Web Site Development
3 semester credits
This class covers essential Internet Web Site skills for students. Topics covered include: web page construction, Photo editing, and file transfer protocol (FTP). Students will create a working Web site. **Prerequisite: Basic Computer Skills**

CIS 115 Visual Basic Programming
3 semester credits
This course is an introduction to computer programming and problem solving techniques. Stresses modularity and structured techniques. Structured program design using design tools is heavily stressed. Programming structures including looping, sequence, and decision are thoroughly examined. Students will be exposed to the BASIC programming language with an overview of the language and specific implementation examples. **Prerequisite: Basic Computer Skills**

CIS 155 Java Programming
3 semester credits
This course focuses on intermediate computer program design and development using structured techniques. Includes small project development. Stresses modularity, program design, implementation, and testing. Object oriented programming/object oriented design (OOP/OOD) techniques will be utilized. **Prerequisites Basic Computer Skills**

CIS 171 Desktop/Small Business Databases using MS Access
3 semester credits
This course addresses the fundamental concepts of computerized database management and database design, with emphasis on the relational model. It includes hands-on experience using MS Access in creating databases, forms, reports, and queries. **Prerequisite: Basic Computer Skills**

CIS 270 Systems Analysis and Design
3 semester credits
This is a study of the systematic analysis and design of computer software using case tools, data flow analysis, culminating in a complete system design. **Prerequisites: CIS 110 or equivalent competencies, CIS 171.**

CIS 279 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: two semesters of attendance at Montana State University-Northern, approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

CIS 285 Spreadsheet
3 semester credits
This class includes theory and applications of spreadsheet software. Also included are advanced features such as, programming, web linking, scripting, goal seeking, solver, application integration, list management, complex models, macro implementation, graph creation, and graphic presentation of analyzed data will be covered. **Prerequisite: CIS 110 or higher, MATH 110 or higher.**

CIS 320 Computers in Education
3 semester credits
This class presents strategies that enable a teacher to integrate computers into their educational environment to enhance their capabilities and productivity. Topics covered include multi-media, telecommunications, and classroom management. **Prerequisite: CIS 110 or equivalent competencies.**

CIS 325 Information Resource Management
3 semester credits
This class will cover information management areas including BPM, collaborative and work-group software, version control software, help desk software and collaborative networking in LAN and WAN environments.

CIS 420 Computer Teaching Methods
2 semester credits
Appropriate techniques for teaching Computer Science and Computer Information Systems at the secondary level. Includes topics for teaching computer software. Recommend completion of all computer courses prior to or during attendance in CIS 420. **Prerequisite: CIS 110 or equivalent competencies, CIS 115, CIS 155, CIS 320, and ISET 350.**
CIS 479 Cooperative Education  
1, 3, 6 or 12 semester credits 
A planned and supervised work-learning experience extending the student's learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Cooperative Education 279 or Junior standing and approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

COMMUNITY SERVICE  
CMSV 101 Introduction to Community Service  
3 semester credits 
This course serves as an introduction to community service, focusing on the dynamics of civic engagement, and understanding the role and function of governmental and not-for-profit organizations in a community.

CMSV 201 Volunteer Services Practicum  
1 semester credit 
This course provides volunteer experience in the context of community service and service learning. The students will perform activities that equal at least 30 hours of volunteer service, keep a reflective journal or portfolio, and write a final paper discussing what they have learned from the experience. It is repeatable for up to 8 credits and offered on a pass/fail basis only.

CMSV 260 Foundations of Non Profit Service  
3 semester credits 
This course provides a theoretical and historical base to non profit service and the organizational structure of non profit services in rural areas. The course emphasizes the development of skills related to service in non profit agencies and community building, and explores the dynamics of professional careers in non profit agencies. Prerequisite: CMSV 101

CMSV 301 Community Service Readings  
3 semester credits 
Close, critical, analytical reading of community service texts including general topics and specific themes. Prerequisite: Junior standing or permission of instructor

CMSV 302 Community Service Research  
3 semester credits 
Research and writing in community service, including research methods and resources applicable to community service. Prerequisite: CMSV 301.

CMSV 310 Grants  
3 semester credits 
Identification of funding needs and priorities, researching grant-giving organizations, identification of potential funding agencies, development of proposals, preparation and submission of grant applications, techniques for approaching grant-giving organizations, responses to decisions made by granting organizations, and management of grants. Prerequisite: Junior standing or permission of instructor. Requirements for graduate credit are defined in the course syllabus.

CMSV 350 Conflict Management  
3 semester credits 
Designed to explore research and practice about conflict as a process of social interaction. This course focuses on communication-oriented perspectives, key properties of conflict interaction, strategies and tactics for moving through conflict, self-regulation and third-party intervention.

CMSV 401 Seminar in Community Service  
3 semester credits 
Examination of the professional, ethical, economic, cultural and social issues in community service. Capstone course for community service majors.

CMSV 479 Cooperative Education  
3, 6 or 12 semester credits 
A planned and supervised work-learning experience extending the student’s paraprofessional experience in non-profit and/or governmental environments. Prerequisites: Junior standing and approval of advisor and cooperative education coordinator. Pass/Fail only.

COMPUTER ENGINEERING TECHNOLOGY  
CPET 201 Computer Hardware I  
3 semester credits 
An introduction to current computer hardware leading to the students’ ability to successfully pass the COMP/TIAA+ Certification exam.

CPET 260 Networking I  
3 semester credits 
Coverage includes the basic concepts of networking including LAN & WAN hardware and software, OSI network model and the protocol services approach to networking.

CPET 301 Discrete Mathematics  
3 semester credits 
This is an introductory course in mathematics and logical processes used in computer programming and design.

CPET 410 Senior Seminar-Computer Systems  
3 semester credits 
A seminar based course on the current developments and directions in the computer industry. The course will consist of intense research into hardware developments that will affect the ‘state of the art’ definition of computer systems.

COUNSELOR EDUCATION  
CNSL 610 K-12 Counseling Program Development and Administration  
3 semester credits 
In this course the student will examine all the elements involved in planning, developing, implementing, administering, supervising and evaluating (including placement and follow-up data) a comprehensive K-12 guidance and counseling program, especially in view of educational philosophies, school curriculum patterns, and federal/state rules and regulations. Effective consultation skills with student (clients), parents, families, teachers, school administrators, and other allied professionals will be
emphasized as an integral component of the comprehensive guidance and counseling program.

CNSL 620 Educational and Psychological Appraisal
3 semester credits
A course designed to provide the counselor with the necessary background to administer and interpret a variety of instruments used to assist clients with regard to educational, vocational, and personal issues. Intelligence, aptitude, interest, achievement, and personality assessment are discussed. Course Fee: $25.00

CNSL 625 Theories of Counseling and Development
3 semester credits
An examination of personality theories, which have major implications for counseling. Application of these theories to counseling is discussed. An understanding of individual growth and development, including the dynamics of human behavior is emphasized.

CNSL 635 Counseling Skills and Practice
3 semester credits
In this course the student will develop basic counseling skills through a combination of didactic and experiential activities. Students will demonstrate the skills through role playing exercises and the making of Audio/Video Counseling Tapes. Counseling skills will be examined in light of such topics as suicide, child abuse, teenage pregnancy, family relations, separation/loss/grief, and eating disorders. Counseling skills will also be examined with regard to counseling theory as well as cross-cultural considerations. Prerequisite: CNSL 625.

CNSL 638 Counseling Practicum
3 semester credits
In this practicum course, counselor-interns/students will develop skills necessary to apply basic competencies to the establishment of therapeutic relationships, the use of therapeutic communications, and use of influencing skills in helping clients to set goals and implement action strategies. The course demands 100 hours of practicum experiences (in and out of class) including 40 hours of direct client contact. Counselor-interns/students will be supervised a minimum of one hour per week in individual sessions and one and one-half hours per week in a group sessions. Prerequisites include: CNSL 620, CNSL 625, CNSL 635, or permission of instructor. This course is a prerequisite for CNSL 680.

CNSL 643 Child and Adolescent Counseling
3 semester credits
The application of counseling theories and techniques to preschool and school age (K-12) children with an emphasis on the family dynamics and within the educational and sociopolitical environment is investigated. Processes to integrate these issues into practice will be demonstrated and mastered by the students.

CNSL 644 Marriage & Family Counseling
3 semester credits
This course will acquaint students with a range of theories used in the diagnosis and treatment of couples and families with an emphasis on approaching clients from a system’s based approach. Therapeutic interventions and appropriate treatment applications relative to premarital and marital couples with and without children with an emphasis on families of origin will be explored. Approaches to effective case management and consultation with families, school systems, and other professionals will also be presented.

CNSL 648 Professional Ethics
2 semester credits
This course will provide the student with an introduction to the ethical issues presently facing professionals in the fields of counseling and education. Mental health providers are working in an environment where professionals who are not trained in the human services arena review their activities and these third parties have significant impact on the therapeutic relationship. Counselor effectiveness is contingent on sound ethical practices that provide proactive, effective strategies that are not subject to adverse legal action. A sound knowledge of ethical standards ensures that providers avoid ethical traps that compromise professional integrity.

CNSL 651 Ethnicity and Family Counseling
3 semester credits
In this course the student will examine the contribution of ethnic heritage to family makeup and functioning. The major ethnic groups of the U.S. population will be studied along with the various counseling approaches that would be appropriate for each. Prerequisite: EDUC 644.

CNSL 652 Multi-Cultural Counseling
2 semester credits
Application of counseling theories and techniques as they apply to the unique concerns and issues of diverse groups such as racial, ethnic, cultural minorities, and special populations will be examined. A focus on individual and cultural characteristics requiring specific skills necessary for the effective practice of counseling when working with diverse populations will be explored.

CNSL 654 Crisis Intervention Counseling
2 semester credits
This course represents an examination of crisis situations and viable counseling interventions based on the application of theoretical and ethical implications. An understanding of crisis (recognizing and defining crisis), crisis intervention models and implementation of specific crisis intervention techniques and strategies will be explored.

CNSL 657 Community & Agency Consultation
2 semester credits
This course will provide an overview of the theory and practice of counseling in human services agencies and other community settings. Emphasis will be placed on the role, function, and professional identity of the community counselor. Principles and practices of community outreach, intervention, education consultation, and client advocacy will be examined.

CNSL 658 Diagnosis & Treatment in Counseling
3 semester credits
This course will explore the diagnostic and treatment processes employed by mental health professionals functioning within clinical settings. Students will develop specific skills in assessment, diagnosis, and the development of treatment plans. The course will explore the paradigms of
mental and emotional dysfunction, with an emphasis on clinical techniques and professional practices used in the evaluation and treatment of individual psychological disturbances.

**CNSL 660 Counseling & Medications**  
2 semester credits  
This course will familiarize students with the behavioral descriptors and diagnostic issues, test correlates and intervention options associated with the pharmacological dimensions of counseling and psychotherapy. This course is grounded on the basic assumption that a multi-modal treatment model is usually the optimal approach towards case management and that a holistic appreciation of the client’s physiological, cognitive, emotional and behavioral dimensions is crucial to successful intervention.

**CNSL 661 Group Dynamics/Counseling**  
3 semester credits  
In this course the student will examine the theory and techniques of group counseling. Course topic areas will include: group dynamics, the types of groups, the stages of the group process, therapeutic forces within the group, etc. Prerequisite: CNSL 625.

**CNSL 671 Career Information System**  
2 semester credits  
Students will become familiar with the theories and techniques of career counseling. Course topic areas will include: theories of career development, techniques of career counseling, and assessment instruments utilized in career counseling.  
Course Fee: $15.00

**CNSL 679 Graduate Seminar**  
1-3 semester credits  
An investigation of topics of current concern and interest in counseling and development.

**CNSL 680 Counseling Internship**  
6 semester credits  
An extended practical experience in public schools or private enterprise where the counselor trainee acquires 300 hours of knowledge and skills under professional supervision. The trainees will acquire knowledge of referral agencies and community services as well as observation and practice in the field of counseling. Prerequisites: CNSL 620, CNSL 625, CNSL 635, and CNSL 638.

**CNSL 682 Advanced Counseling Practicum**  
6 semester credits  
A continuation of the counseling internship where the student gains additional practical experience in the application of knowledge, skills, techniques and supervision in the area of counseling. Prerequisite: CNSL 680.

**CNSL 684 Internship: Supervision and Administration in Counseling**  
3 semester credits  
The course is designed to enable students to design, implement, administer, supervise, and evaluate comprehensive counseling programs.

**CNSL 698 Graduate Research**  
3 or 6 semester credits  
Research and investigation into approved topics and problems. The student's Graduate Program Committee must approve the research plan and final product. May be repeated. A limit of 6 credits may be applied to your program.

**DIESEL**

**DIES 104 Introduction to Diesel Engines**  
3 semester credits  
Construction, operation, and repair of diesel engines; logical steps of procedure for engine reconditioning; installing and timing of fuel injection components. Emphasis will be placed on diesel engine component reconditioning, engine tune-ups, and use of special diagnostic tools. To be taken concurrently with DIES 114.

**DIES 114 Introduction to Diesel Engines Lab**  
3 semester credits  
This course will give the student hands-on experience rebuilding diesel engines and components. The student will learn manufacturer's procedures on engine rebuilding and special tool usage. To be taken concurrently with DIES 104.  
Course Fee: $20.00

**DIES 115 Introduction to Diesel Fuel Systems**  
4 semester credits  
This is an introductory lab in diesel fuel injection systems. This lab will include the identification, disassembly, assembly, troubleshooting, repair, and adjustment of the following fuel systems components: Inline pumps, distributor pumps, Cummins fuel system, unit injectors, and injectors.  
Course Fee: $6.00

**DIES 179 Cooperative Education**  
1, 2, or 3 semester credits  
This is a planned and supervised work-learning experience in business or industry related to the Diesel program at MSU-Northern. Prerequisite: Students must be a high school graduate with a cumulative grade point average of 2.00; have been involved in a high school work-based learning program (Tech Prep); be registered at MSU-Northern; recommended by the high school coordinator; and have signatures from their university advisor, Dean of the College of Technical Sciences, and work-based (Tech Prep) learning coordinator. Pass/Fail only.

**DIES 204 Introduction to Hydraulics and Pneumatics**  
2 semester credits  
Theory and application of hydraulics and pneumatics used in automotive, agriculture, heavy equipment, and construction industries; to be taken concurrently with DIES 214.

**DIES 214 Introduction to Hydraulics and Pneumatics Lab**  
2 semester credits  
Application of hydraulics and pneumatics. Students will demonstrate hydraulic principles on live work stations. They will work with, tear down, and assemble equipment. They will also work on open and closed center systems, fixed and
variable displacement pumps, linear and rotary actuators, pressure and flow controls, and directional valves. To be taken concurrently with DIES 204. **Course Fee: $15.00**

**DIES 216 Heavy Duty Power Trains**  
4 semester credits  
This course will give the students hands-on experience working on heavy duty power train components. Emphasis will be placed on calculating gear ratios and power flow on industry's common transmissions, final drives, and clutches. The student will measure drive line angles and diagnose vibration complaints. **Course Fee: $12.00**

**DIES 219 Heavy Duty Chassis**  
4 semester credits  
A course dealing with braking systems, suspensions, and alignment of medium and heavy duty vehicles. The major emphasis will be on air brakes, methods used to check and adjust alignment, and inspection and repair methods for suspension systems. **Course Fee: $6.00**

**DIES 262 Diesel Engine Diagnosis and Repair**  
2 semester credits  
This course will include engine assembly and engine start-up after assembly. The course will also coordinate set-up, testing, and diagnosis of engine problems using test instruments and engine dynometer. To be taken concurrently with DIES 272. Prerequisites: DIES 104 and DIES 114  
**Course Fee: $20.00**

**DIES 272 Diagnosis of Diesel Engine Repair Lab**  
4 semester credits  
This course will give the student hands-on experience on diagnosing diesel engines using the proper test equipment. Diesel engine repair and assembly are addressed. To be taken concurrently with DIES 262. **Course Fee: $20.00**

**DIES 273 Diesel Shop Practices**  
4 semester credits  
A course emphasizing actual shop operations: Long- and short-term jobs covering all aspects of a vehicle. It also includes vehicle maintenance, shop flat-rate procedures, work order and warranty claim procedures. Prerequisites: DIES 262 and DIES 272. **Course Fee: $20.00**

**DIES 279 Cooperative Education**  
1, 3, 6 or 12 semester credits  
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Two semesters of attendance at Montana State University-Northern, approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.  
**Course Fee: $15.00**

**DIES 420 Diesel Shop Management**  
2 semester credits  
This course will cover management of equipment including establishing preventative maintenance programs, cost per hour operation, and investment analysis. Selected computer programs will be used.  
**Course Fee: $15.00**

**DIES 434 Current Model Year Technology (Capstone Course)**  
3 semester credits  
Current topics to bring Seniors up to date on changes in heavy duty technology, to include current model year. Provides latest information on equipment, systems components, troubleshooting and repair. Course will also review major diesel topics to enhance Senior students experience. Prerequisite: Senior standing.  
**Course Fee: $15.00**

**DIES 440 Advanced Fuel Systems**  
4 semester credits  
A course dealing with the diagnosis and repair of fuel systems using the proper test equipment and test stands. Prerequisites: DIES 115 and Senior standing. **Course Fee: $15.00**

**DIES 450 Diagnosis of Power Shifts and Heavy Duty Automatics**  
4 semester credits  
This is a course in Heavy Duty Power Shifts and Automatic Transmissions 6000 GVW and larger. This course consists of lab and lecture time covering the components, theory of operation; diagnosis; using proper instrumentation and manuals; and repair; with emphasis on troubleshooting and failure analysis. Prerequisites: DIES 216 and ATDI 257. **Course Fee: $15.00**

**DIES 479 Cooperative Education**  
1, 3, 6 or 12 semester credits  
A planned and supervised work-learning experience extending the student's learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Cooperative Education 279 or Junior standing and approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.  
**Course Fee: $15.00**

**DRAFTING**

**DRFT 131 Technical Graphics I**  
3 semester credits  
The student will gain knowledge and skills needed to produce drawings and understand basic drafting theory. Topics developed on the board will include sketching, lettering, instruments, scaling, applied geometry, orthographic projection, dimensioning, applied technical mathematical relations, primary auxiliary views, sections, threads, and weld symbols. **Course Fee: $15.00**

**DRFT 132 Descriptive Geometry**  
3 semester credits  
Advanced theory and practices in descriptive geometry construction and pattern development in preparation for
advanced courses in Design Drafting. Prerequisite: DRFT 131, or permission of instructor. Course Fee: $10.00

**DRFT 156 Introduction to CAD**
3 semester credits
This is a systems oriented course designed to introduce students to the concepts, techniques, and applications of PC-based computer aided drafting. It is the intent of the course to provide students with competencies that will allow them to use the system to create drawing files and download files for hard copies. Command structure, coordinate systems, text dimensions, and plotting will be covered. Course Fee: $15.00

**DRFT 201 Residential Drafting**
3 semester credits
The development of the principles in construction drawings of an average wood frame residential structure. A complete set of working drawings with blue line prints will be developed on the drawing board. Prerequisite: DRFT 132. Course Fee: $10.00

**DRFT 205 Machine Drafting**
3 semester credits
The study and application of standards used for producing working drawings, including the fundamentals of geometric dimensioning and tolerancing. Both detail and assembly drawings will be mechanically produced. Prerequisite: DRFT 131. Course Fee: $15.00

**DRFT 244 Topographic Mapping and GIS Applications**
3 semester credits
Fundamentals of mapping and geographic information systems (GIS). Includes applications of mapping projections, presentation of surveying information, and GIS methods. Mapping and GIS computer applications will be used and developed throughout the course. Prerequisite: DRFT 156 and CIS 171. Course Fee: $15.00

**DRFT 256 3D CAD**
3 semester credits
This is a study in advanced CAD concepts and procedures to develop three-dimensional wire frame models. Emphasis will be on the creation and use of 3D primitives, surface modeling, basic solids modeling, shading techniques, and the use of animation software. Exercises will include rendered output to paint type printers. Prerequisite: DRFT 156. Course Fee: $15.00

**DRFT 279 Cooperative Education**
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Two semesters of attendance at Montana State University-Northern, approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

**DRFT 316 Industrial CAD Modeling**
3 semester credits
The student will explore advanced computer modeling techniques used in industrial design. Students will experiment with various applications in solving assigned problems. Prerequisite: DRFT 256, DRFT 356, or consent of instructor. Course Fee: $10.00

**DRFT 336 Process Piping**
3 semester credits
The fundamentals of process piping design and the calculation of isometric offset distances. Symbols and terminology associated with the profession will be applied in solving selected drawing assignments. CAD programs will be introduced. Prerequisites: DRFT 132 and DRFT 156. Course Fee: $10.00

**DRFT 356 CAD Presentation**
4 semester credits
A study in the effects of using CAD images, animation, and video for professional presentations. Students will explore a variety of software and techniques. A final project will be required. Prerequisite: DRFT 256 or instructor permission. Course Fee: $15.00

**DRFT 409 Industrial Product Design**
3 semester credits
An advanced course designed to prepare the student for the basics of mechanical design. Techniques and procedures used in the design process, geometric tolerancing and dimensioning, and the application of CAD will be studied. This course meets the general education requirements for a capstone course. Prerequisites: DRFT 205 and DRFT 256. Course Fee: $15.00

**DRFT 428 Technical Illustration**
3 semester credits
The application of pictorial representations to describe external and internal design features of manufactured components, subassemblies, and completed products; and construction projects. Prerequisite: DRFT 132. Course Fee: $10.00

**DRFT 456 CAD Presentation II**
3 semester credits
A continuation in the study of CAD presentation and simulation techniques that builds on the skills learned in DRFT 356. Advanced multimedia and 3D studio concepts and methods will be explored to create still and animated images. Prerequisite: DRFT 356. Course Fee: $15.00

**DRFT 457 Architectural CAD**
3 semester credits
This is a system oriented course designed to introduce students to the concepts and techniques involved with AEC-CAD applications software. Applications relating to residential drawing and small commercial design will be explored. A plot plan, foundation plan, floor plan, electrical plan, elevations, and a 3D pictorial will be developed. Prerequisites: DRFT 201 and DRFT 256. Course Fee: $15.00
DRFT 479 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience
extending the student's learning experience in industry,
business, government, or community service agencies related
to the University program of study. Prerequisites:
Cooperative Education 279 or Junior standing and approval
of advisor, chairperson of the department, and cooperative
education coordinator. Pass/Fail only.

DRAMA

DRMA 109 Drama Participation
3 semester credits
Classroom study, research and practical experience in the
technical production aspects of presenting a play, including
scenery design and construction, props, lighting, sound,
promotion, crew, stage and house management. Includes
practicum in technical production and the study of historical
and artistic concerns in technical design. (May be repeated
once for additional 3 credits.) Course Fee: $10.00

DRMA 110 Drama Practicum
1 semester credits
This course provides experiences in any of the range of
activities required to produce and stage a theatrical
presentation. The experiences may include, but are not
limited to: set design and construction, lighting, costuming,
sound, publicity, box office, acting, stage management, and
directing. By arrangement with the instructor, each student
will undertake an individualized project. The complexity of
these projects will reflect the credit level fulfilled. This
course may be repeated once for credit, for a total of two (2)
credits on a student’s MSU-Northern transcript. Pre-
requisite: None.

DRMA 123 Introduction to Theatre
3 semester credits
Study of development of theatre and dramatic literature.
Reading of plays representative of theatrical styles and
genres. Overview of elements of theatrical production.

DRMA 210 Studies in Drama
3 semester credits
The intensive study of one or more subjects from dramatic
literature and theatre history. Reading will include the works
of one or more major dramatists. The subject(s) to be studied,
which may include women playwrights, will vary at the
discretion of the instructor. May be repeated once for credit.

DRMA 220 Acting
3 semester credits
Study of realistic approach to stage acting. Mastery of basic
stage terminology. Improvisation and scene work.

DRMA 300 History of Theatre
3 semester credits
A chronological study of the development of the Western
theatrical tradition from theories of origins and Greek and
Roman theatre, through the development of the modern
theatre in Europe and America. Focuses on theatre
architecture, production methods, significant dramatists,
directors, actors and designers, and the relationship of theatre
to society.

DRMA 325 Methods of Teaching Elementary and
Secondary Drama
3 semester credits
A study of approaches to incorporating dramatic activities
into elementary and secondary school curricula, including
ideas for equipping and operating an educational theatre
plant, ways of dealing with extracurricular dramatic
activities, and issues surrounding theatrical endeavors related
to school programs and the community at large.

DRMA 331 Theatre Practicum
3 semester credits
Supervised advanced projects in performance and/or
production for theatre students. Prerequisite: DRMA 109.

DRMA 360 Directing
3 semester credits
Study of basic stage directing techniques, the history of
directing, and the role of the director in the contemporary
theatre. Direction of a one-act play or substantial scene from
a full-length play, along with written work and examinations.
Prerequisite: Consent of instructor.

ECONOMICS

ECON 241 Microeconomic Principles
3 semester credits
Principles of rational choice, price determination, market
resource allocation, competition, and the role of government
in the economy. Prerequisite: University competency in math
or permission of instructor.

ECON 242 Macroeconomic Principles
3 semester credits
This is a course in the principles of national income and
product accounting, aggregate demand and supply,
employment, monetary theory, macroeconomic stabilization,
and basic principles of international trade and finance.
Prerequisite: University competency in math.

ECON/HIST 346 Business and Economic History of
the United States*
3 semester credits
Students will study the growth and development of the U.S.
Economy and business transformation from colonial times to
the mid-20th century. The central organizing focus concerns
the economic, cultural, and constitutional incentive structures
in America that have motivated entrepreneurship and
efficient resource use. A background in basic economics or
business theory is useful but not required.

*Restricting, see “Dual Prefix Listed Courses” in “Graduation and General Education Requirements” section.
ECON/POL 348 Public Choice and the Public Interest*
3 semester credits
This is a study of political economy focusing on what modern public choice and public interest models say about the proper boundaries of the public and private sectors. It analyzes the rent-seeking activities of special interest groups and the relative impacts of altruism and self-interest in explaining political behavior and governmental policies in democratic systems. The material focuses on the nature of public goods, market failures, government regulation, and wealth redistribution, among other topics. Theoretical, historical, and empirical forms of evidence are brought to bear on the issues.

EDUCATIONAL PSYCHOLOGY
EDPY 215 Introduction to Education Psychology
3 semester credits
This course will focus on concepts of educational psychology with an emphasis on learning theories. Topics relating to diversity, including special needs students, and the impact of culture within the classroom’s learning and teaching environment plays a central part in the curriculum.
Prerequisite: EDUC 100.

EDPY 350/550 The Education and Psychology of Exceptional Children
3 semester credits
In this course the student will examine the various categories of exceptionality (gifted, mentally retarded, learning disabled, visual/hearing/health impaired, physically disabled, and emotionally disturbed) by analyzing each category utilizing the following format: History, definition, prevalence, causes, characteristics, assessment, intervention, curriculum implications, mainstreaming, and future considerations. In-class learning activities will be supplemented by having the student participate in a laboratory experience that involves a 20-hour field placement in a special education setting.
Graduate credit requirements are described in the course syllabus.

EDPY 425/525 Learning Disabilities
3 semester credits
In this course the student will examine learning disabilities by studying the following: Theory of etiology, assessment, and teaching strategies utilized to remediate the disabilities. The course will also focus on other related topics such as the various types of assessment reports, the planning of individualized educational programs, the different systems for delivering special educational services, and future issues in the field of learning disabilities. Graduate credit requirements are described in the course syllabus.

EDPY 604 Applied Classroom Psychology
3 semester credits
This course will examine the theories of learning and the principles of psychology as a way of enhancing the understanding of student cognitive/psychological functioning.

EDUCATION
EDUC 100 Foundations of Education
3 semester credits
This course will focus on the history, purpose, role and scope of education in the U.S. Topics will include curriculum development, state and national standards, current trends in education and professional development. A field observation at the elementary and secondary levels will focus primarily on the role of the teacher, parents, and student, and purpose of education.

EDUC 259 Field Experience
1-3 semester credits
Supervised experience in community institutions and organizations. Investigation and competency development as related to a student's major and/or minor area. May be repeated for credit.

EDUC 300/500 Introduction to Curriculum Planning and Practice
3 semester credits
This course is an introduction to curriculum planning and practice. An overview of curriculum development, unit planning with an emphasis on lesson planning is the focus. How lesson design affects classroom management, how to meet state and national curriculum and practice standards, and how to integrate instructional technology in lesson and unit development are topics. Secondary education candidates will focus on reading/writing across the curriculum; elementary education candidates will focus on content curriculum. Students will participate in a practicum experience (45 hours arranged with the instructor, school, and candidate) which will provide an opportunity to obtain classroom experience in curriculum and planning.
Prerequisite: Level I Admission. Co-Requisite: EDUC 376 Course Fee: $25.00 Graduate credit requirements are described in the course syllabus.

EDUC 302/502 Methods of Teaching Elementary Mathematics
2 semester credits
This course is a "hands-on" course that includes the study of the nature of mathematics instruction and theory, its implications for teaching elementary mathematics, and information on resources/materials for the classroom. Teacher education candidates will prepare and present lesson plans that take into consideration the development of mathematical abilities and attitudes following NCTM standards. A variety of formal and informal assessment techniques appropriate in assessing mathematical attitudes/ability will be discussed. Prerequisites: Level I Admission to Teacher Education, MATH general education requirements, EDUC 300 and EDUC 376. Graduate credit requirements are described in the course syllabus.

*Restricting, see “Dual Prefix Listed Courses” in “Graduation and General Education Requirements” section.
EDUC 304/504 Methods of Teaching Elementary Science
2 semester credits
This is a "hands-on" course that includes the study of how to teach the nature of science, instructional theory and its implications for teaching elementary science, and information on resources/materials for the classroom. Each student will prepare and present lesson plans according to three models for teaching elementary science; experimental, discovery and inquiry. A variety of formal and informal assessment techniques appropriate in science instruction will be discussed. Prerequisite: Level I Admission to Teacher Education, Science requirements for elementary education majors, EDUC 300 and EDUC 376. Graduate credit requirements are described in the course syllabus.

EDUC 306/506 Methods of Teaching Elementary Social Studies
2 semester credits
This course is a "hands-on" course that includes the study of the social science instruction and theory, its implications for teaching social sciences, and information on resources/materials for the classroom. Teacher education candidates will prepare and present lesson plans that take into consideration the development of instructional abilities for social sciences. A variety of formal and informal assessment techniques appropriate in assessing student achievement will be discussed. Prerequisites: Level I Admission to Teacher Education, Social Sciences and History general education requirements, EDUC 300 and EDUC 376. Graduate credit requirements are described in the course syllabus.

EDUC 307/507 Methods of Teaching Elementary Integrated Mathematics and Science
3 semester credits
A methods course presenting an integrated approach to teaching mathematics and science in the elementary grades. Students will examine a variety of instructional techniques for both mathematics and science with a focus on integrated instruction. This course serves as an alternate to EDUC 302 and EDUC 304. Prerequisites: Level I Admission to Teacher Education, EDUC 300, EDUC 321, EDUC 376, and EDUC 380. Graduate credit requirements are described in the course syllabus.

EDUC 308/508 Methods of Teaching Elementary Integrated Creative Arts
3 semester credits
This course is a “hands-on” course that teaches strategies and methodology to integrate the creative arts (e.g., art, music, and drama) into the elementary classroom to enhance learning for all students. Emphasis will be placed upon developing the candidates’ creative abilities. Instruction and theory, implications for creative art instruction, and information on resources/materials for the classroom will be covered. Teacher education candidates will prepare and present lesson plans that take into consideration the development of strategies for integrating creative arts into the curriculum. A variety of formal and informal assessment techniques appropriate in assessing student achievement will be discussed. Prerequisites: Level I Admission to Teacher Education, HUM 210, EDUC 300, and EDUC 376. Course Fee: $25.00 Graduate credit requirements are described in the course syllabus.

EDUC 310/510 Methods of Teaching Elementary Language Arts
3 semester credits
This course is a “hands-on” course that teaches strategies and methodology to integrate the communicative arts (e.g., art, music, and drama) into the elementary classroom to enhance learning for all students. Emphasis will be placed upon developing the candidates’ creative abilities. Instruction and theory, implications for creative art instruction, and information on resources/materials for the classroom will be covered. Teacher education candidates will prepare and present lesson plans that take into consideration the development of strategies for integrating creative arts into the curriculum. A variety of formal and informal assessment techniques appropriate in assessing student achievement will be discussed. Prerequisites: Level I Admission to Teacher Education, HUM 210, EDUC 300, and EDUC 376. Course Fee: $25.00 Graduate credit requirements are described in the course syllabus.

EDUC 313/513 ENGL 313/513 Methods of Teaching English*
3 semester credits
This course is a study of the theories and methods of teaching English, including study of the theories and methods of teaching creative writing and composition. Theory and practice concentrates on teaching English at the junior high and senior high school level. Prerequisites: Level I Admission to Teacher Education, EDUC 300 and EDUC 376. Co-requisite: EDUC 339. Graduate credit requirements are described in the course syllabus.

EDUC 321/521 Integrating Technology into Education
1-3 semester credits
This experiential course will assist the candidate in developing competencies in the integration of instructional technology into education and in developing skills to create an electronic portfolio. This course may be repeated for up to 3 credits. Prerequisite: CIS 320. Graduate credit requirements are described in the course syllabus.

EDUC 325/SOSC 325 Methods of Teaching History and Social Sciences*
3 semester credits
This course is a study of the theories and practices employed in teaching history and the social sciences on the secondary level. Prerequisites include: A minimum of 15 semester hours in history and the social sciences and Junior standing, Level I Admission to Teacher Education, EDUC 300 and EDUC 376. Co-requisite: EDUC 339 Secondary Field Experience. Graduate credit requirements are described in the course syllabus.

EDUC 334/534 Methods of Teaching the Integrated Language Arts
3 semester credits
An introduction to the development of the communicative skills in the elementary grades. Both expressive and receptive skills will be studied. Emphasis will be placed upon the communicative arts as taught in the schools as well as the developmental aspects of language growth in the child. Attention will be placed upon the role of the communicative skills in the school curriculum with particular emphasis on the school reading program. Students will participate in a lab experience, which will provide an opportunity to obtain classroom-teaching experience in language arts. Prerequisite: Level I Admission to Teacher Education, EDUC 300, EDUC 376, and EDUC 380. Co-requisite: EDUC 336. Graduate credit requirements are described in the course syllabus.

*Restricting, see “Dual Prefix Listed Courses” in “Graduation and General Education Requirements” section.
EDUC 335/535 Fundamental and Corrective Strategies in the Elementary Reading Program
3 semester credits
This course is designed to investigate reading instruction in the elementary grades. This will include a study of the reading process, methods of instruction, materials available, and reading skills. Methods, procedures, and techniques of identifying, analyzing, and correcting reading difficulties will be explored. Students will participate in a lab experience, which will provide an opportunity to obtain classroom teaching experience in language arts. Prerequisite: Level I Admission to Teacher Education, EDUC 300, EDUC 376, and EDUC 380. Graduate credit requirements are described in the course syllabus.

EDUC 336/536 Integrated Field Experiences
1-3 semester credits
This course is taken by candidates in conjunction with their “methods and reading methods” of the program. Candidates will be placed in field experiences with the express purpose of practicing the methodology of teaching in various areas in a classroom setting. This course may be repeated for up to 3 credits. Prerequisite: Level I Admission to Teacher Education. Co-requisite: EDUC 334. Graduate credit requirements are described in the course syllabus.

EDUC 339 Secondary Field Experience
1 semester credit
This course is taken by candidates in conjunction with their methods course(s). Candidates will be placed in field experiences with the express purpose of practicing the methodology of teaching in a classroom setting. This course may be repeated for up to 3 credits. Prerequisite: Admission to the Teacher Education Program.

EDUC 347/547 Speech, Hearing, & Language Development of the Pre-School Child
3 semester credits
An introduction to the area of hearing, speech, and language development of the pre-school child with opportunities for the student to explore the area of disorders due to developmental problems. Prerequisite: Level I Admission to Teacher Education. Graduate credit requirements are described in the course syllabus.

EDUC 351/551 Diversity and Technology in the Classroom
3 semester credits
Diversity issues include, but are not limited to, cultural and individual differences, gender, ethnicity, low social-economic background, and students with special needs. This course is designed to investigate ways in which technology may be used to support the learning needs of diverse students and expand the practices of community within the classroom. Graduate credit requirements are described in the course syllabus.

EDUC 353 Health Enhancement for Elementary Education
2 semester credits
Elementary education teachers must be able to help students meet OPI benchmark requirements in health enhancement. This course will provide candidates with knowledge of a variety of topics within health enhancement for the elementary school child as well as strategies to teach these topics in a K-8 setting. Prerequisite: HPE 235 and Level I Admission to Teacher Education.

EDUC 361/561 Traffic Safety Education I
3 semester credits
Basic course for the preparation of teachers in the field of traffic safety. Introduction to the history and philosophy of traffic safety. Emphasis on the behind-the-wheel phase of traffic safety in the high school program. University students will give behind-the-wheel lessons to high school students. Graduate credit requirements are described in the course syllabus.

EDUC 362/562 Traffic Safety Education II
3 semester credits
A continuation of EDUC 361 with emphasis on materials, organization, and content of the classroom phase of traffic safety. University students will give additional behind-the-wheel lessons and also give classroom theory lessons to their peers. EDUC 361/562 may be taken concurrently. Graduate credit requirements are described in the course syllabus.

EDUC 363/563 Motorcycle Safety
2 semester credits
Analysis of the motorcycle accident problem and the role of the high school traffic safety program in motorcycle safety. Emphasis on classroom and laboratory content, organization, and instruction techniques. Graduate credit requirements are described in the course syllabus.

EDUC 365/565 Motor Vehicle Law and Enforcement
2 semester credits
A course designed to give driver education teachers and other interested individuals a more complete understanding of motor vehicle code and ordinances and the basic principles of their enforcement. Graduate credit requirements are described in the course syllabus.

EDUC 376/576 Assessment in Education
3 semester credits
This course is designed to provide candidates the foundation in assessment measures used in the K-12 classrooms that aid education decision-making. Fundamental assessment and evaluation topics include validity, reliability, item construction, test interpretation, norm-referenced, criterion-referenced and alternative methods of assessment. HPE Majors/Minors will substitute HPE 376 for this course. Prerequisite: Level I Admission to Teacher Education, MATH general education requirements for Teacher Education major. Co-requisite: EDUC 300. Graduate credit requirements are described in the course syllabus.

*Restricting, see “Dual Prefix Listed Courses” in “Graduation and General Education Requirements” section.
EDUC 380/580 Classroom Environment and Management
3 semester credits
A methodological course introducing basic principles and procedures for managing the behavior and academic time of children in the classroom and school environment. Students will explore topics related to teacher and student communication, teaching and learning styles, discipline models and procedures, records management (including electronic management systems) and the impact of facilities on the learner. Various development and counseling theories will be examined in light of enhancing the learning and acceptance of all students. Students will also examine the various applications of counseling issues (e.g. substance abuse, cross-cultural, crisis management) as they apply to K-12 classroom practice. Prerequisite: Level I Admission to Teacher Education, EDUC 300 and EDUC 376. Graduate credit requirements are described in the course syllabus.

EDUC 400 Elementary Teaching Practicum and Seminar
6 or 12 semester credits
This is a supervised student teaching experience in an accredited elementary or middle school. Experiences will include typical responsibilities of an elementary or middle school first year teacher. Seminar will be held on campus. This course provides theory-based practice at an elementary level for Student Teacher Candidates seeking Montana K-8 teacher certification. Prerequisites: Level II Admission to Teacher Education, all methods courses, EDUC 455, and cumulative GPA of 2.50. Course Fee: $100.00

EDUC 425/BIOL 425 Methods of Teaching Secondary Science*
3 semester credits
This course is a study of the practical and hands-on approaches that illustrate the techniques and materials for teaching at the secondary level in physical and biological sciences. Prerequisites include: Level I Admission to Teacher Education, EDUC 300 and EDUC 376. Co-requisite: EDUC 339 Secondary Field Experience

EDUC 430/530 Integrating Content Across the Curriculum
2 semester credits
This course will follow theory into practice philosophy where candidates build upon the instructional strategies for specific content areas in the elementary classroom. Candidates will explore, develop, and use advanced instructional strategies, materials, technologies, and activities to promote interdisciplinary and multidisciplinary instruction across the K-8 curriculum. Prerequisites: Level I Admission to Teacher Education, completion of all methods courses with a “C” or better. Graduate credit requirements are described in the course syllabus.

EDUC 440/540 Assessment in the Remedial Reading Program
2 semester credits
The purpose of this course will be to examine a variety of assessment tools used to evaluate the strengths and weaknesses of individual students experiencing difficulty with reading. Both formal and informal tools will be discussed. Students will administer, score, and interpret the results of the assessment instruments in light of relevant research in reading education. Prerequisite: Level I Admission to Teacher Education, EDUC 335 and EDUC 336 or concurrent enrollment. Graduate credit requirements are described in the course syllabus.

EDUC 445/545 Teaching Reading, Writing, and Critical Thinking Skills Across the Curriculum
2 semester credits
This course is designed to provide teacher education candidates with an understanding of reading, writing, and critical thinking processes, knowledge of the skills a teacher may use to help K-12 student deal more effectively with specific content materials, and implementation of those skills in the elementary, middle and secondary school setting. Prerequisite: Level I Admission to Teacher Education, EDUC 300 and EDUC 376. Graduate credit requirements are described in the course syllabus.

EDUC 448/548 Reading Materials for the Elementary Child
2 semester credits
An examination of the variety of reading materials available for use in the teaching of reading and the application of those materials to the learning needs of children of differing reading competencies. Students will explore the role of reading and the communication arts in the elementary curriculum and the integration of literature in the elementary curriculum. Prerequisite: Level I Admission to Teacher Education. Graduate credit requirements are described in the course syllabus.

EDUC 450 Secondary Teaching Practicum and Seminar
6 or 12 semester credits
This is a supervised student teaching experience in a Student Teacher Candidate’s major and minor fields in an accredited secondary school. Experiences will include typical responsibilities of a first year teacher. Seminars will be held on campus. This course provides theory-based practice at a secondary level for Student Teacher Candidates seeking Montana 5-12 teacher certification. Prerequisite: Level II Admission to Teacher Education, all methods courses, EDUC 455, and cumulative GPA of 2.50. Course Fee: $100.00

EDUC 455 Advanced Practicum in Education
3 semester credits
This course is designed to assist candidates in their final preparations prior to their student teaching practicum. Polishing of professional skills, development of a portfolio, exploration of personal teaching styles, and discussions of
field practicum experiences are the focus of this course. This intensive practicum focuses on application of theory and practice, assessment, the integration of technology in instruction, and teaching for diversity in the classroom. Prerequisites: Level I Admission to Teacher Education, completion of all methods courses with a C or better. Course Fee: $25.00

EDUC 475 Elementary and Secondary Teaching Practicum and Seminar 6 or 12 semester credits
This supervised student teaching experience in an accredited elementary and secondary school to be taken by all students seeking a K-12 endorsement. Experiences will include typical responsibilities of a first year teacher. Seminars will be held on campus. This course provides theory-based practice at K-12 level for Student Teacher Candidates seeking Montana K-12 teacher certification. Prerequisite: Level II Admission, all methods courses, EDUC 455, and cumulative GPA of 2.50. Course Fee: $100.00

EDUC 523 Teaching and Technology I-Standards 3 semester credits
This course will examine technology standards and the ways in which they can be used to enhance and improve educational practices. Students will examine district level, state level, and national level standards for technology education. A particular focus of national standards will be on the International Society for Technology in Education’s National Education Technology Standards (ISTE-NETS) for students and teachers, as well as ISTE’s Technology Facilitation Standards and Technology Leadership Standards. Students will examine alignment of local, state, and national technology standards. They will also focus upon ways in which technology standards can be combined with content area standards to improve teaching practices. Finally, students will examine lesson planning models, such as the ASSURE model, that support technology integration.

EDUC 524 Methods of Teaching History and Social Sciences* 3 semester credits
This course is a study of the theories and practices employed in teaching history and the social sciences on the secondary level. Prerequisites include: A minimum of 15 semester hours in history and the social sciences and Junior standing, Level I Admission, EDUC 500 and EDUC 576. Co-requisite: EDUC 339 Secondary Field Experience. Because this is a graduate course, expectations for student performance is at an advanced level. Evaluation of course requirements is more rigorous than at the lower division section of this course.

EDUC 530 Integrating Content Across the Curriculum 2 semester credits
This course will follow theory into practice philosophy where candidates build upon the instructional strategies for specific content areas in the elementary classroom. Candidates will explore, develop, and use advanced instructional strategies, materials, technologies, and activities to promote interdisciplinary and multidisciplinary instruction across the K-8 curriculum. Prerequisites: Level I Admission to Teacher Education, completion of all methods courses with a “C” or better.

EDUC 540 Assessment in Remedial Reading 2 semester credits
The purpose of this course will be to examine a variety of assessment tools used to evaluate the strengths and weaknesses of individual students experiencing difficulty with reading. Both formal and informal tools will be discussed. Students will administer, score, and interpret the results of the assessment instruments in light of relevant research in reading education. Graduate credit requirements are described in the course syllabus. Prerequisite: Admission to Teacher Education., EDUC 535 and 536 or concurrent enrollment.

EDUC 545 Teaching Reading, Writing, and Critical Thinking Skills Across the Curriculum 2 semester credits
This course is designed to provide teacher education candidates with an understanding of reading, writing, and critical thinking processes, knowledge of the skills a teacher may use to help K-12 student deal more effectively with specific content materials, and implementation of those skills in the elementary, middle and secondary school setting. Prerequisite: Level I Admission to Teacher Education; EDUC 500 and EDUC 576.

EDUC 548 Reading Materials for the Elementary Child 2 semester credits
This course is an examination of the variety of reading materials available for use in the teaching of reading and the application of those materials to the learning needs of children of differing reading competencies. Students will explore the role of reading and the communication arts in the elementary curriculum and the integration of literature in the elementary curriculum. Prerequisite: Level I Admission to Teacher Education.

Because this is an upper division course, expectations for student performance is at an advanced level. Evaluation of course requirements is more rigorous than at the lower division section of this course.

EDUC 553 Health Enhancement for Elementary Education Diversity and Technology in the Classroom Integrating Content Across the Curriculum 2 semester credits
Elementary education teachers must be able to help students meet OPI benchmark requirements in health enhancement. This course will provide candidates with knowledge of a variety of topics within health enhancement for the elementary school child as well as strategies to teach these topics in a K-8 setting. Prerequisite: HPE 235 and Level I Admission to Teacher Education.

Because this is a graduate course, expectations for student performance are at an advanced level. Evaluation of course requirements is more rigorous than at the lower division section of this course.
EDUC 557 Safety Education
2 semester credits
This course is a study of the basic principles of safety education and their application to the schools. Assigned work and examinations for graduate students are more extensive and will probe more deeply than those for undergraduate students.

EDUC 573 Learning Technologies Assessments
3 semester credits
This course is an inquiry into the evaluation of the appropriateness and potential of technologies to enhance learning objectives and learning environments – as well as the practice of using technologies to improve the assessment and evaluation of students within those environments. Students will be able to articulate the contexts, conditions, and values of utilizing particular assessments across a range of learning situations. Particular emphasis will be paid to the use of assessment strategies in meeting local, state, and national standards.

EDUC 603 Curriculum Foundations and Design
3 semester credits
Examination of the historical, philosophical, sociological, economic, political, and legal foundational impacts on American school curriculum. Focus will include an analysis of these impacts in the identification of curriculum problems and the generation of curriculum designs.

EDUC 606 Research Methods
3 semester credits
The course is designed to assist teachers to develop the desire and the skills to read, interpret, evaluate, and utilize the results of systematic inquiry and empirically developed knowledge in their educational planning and decision-making. This implies a positive value orientation toward research-generated information as well as an understanding of the strengths and limitations of research methodology when compared to other approaches to developing knowledge.

EDUC 607 Educational Measurement and Statistics
3 semester credits
A course designed to enable students to understand and apply basic principles of educational and psychological measurement and evaluation emphasizing those statistical concepts used in the construction, implementation and interpretation of standardized and teacher generated measuring instruments.

EDUC 608 Multimedia Communications in Education
3 semester credits
Applies basic concepts and principles of communication to problems in teaching and learning with school and adult audiences; includes various systems approaches to instruction, multimedia presentation techniques, graphic images, Power Point, distance learning, telecommunications, and student experiences in programming materials for a specific curriculum.

EDUC 623 Learning Technologies
3 semester credits
This course is an introduction to the theory and practice of both integrating technologies into the learner-centered K-16 classroom and to the learning technologies encountered throughout the graduate education courses at MSU-Northern. Students will explore the use of technologies to enhance learning environments, actively engage students, and to develop professional teaching practices. The development of standards-based electronic portfolios co-designed by the instructor and the individual student are a major outcome and learning project for this course.

EDUC 625 Assessment & Evaluation
3 semester credits
This course is designed to provide candidates the foundation in assessment measures used in the K-12 classrooms that aid education decision-making. Fundamental assessment and evaluation topics include validity, reliability, item construction, test interpretation, norm-referenced, criterion referenced and alternative methods of assessment.

EDUC 627 Supervision of Student Teachers and Field Practicum Students
3 semester credits
This course is designed to provide training and support to public school personnel who will be working directly with a student teacher or a field practicum student.

EDUC 628 Teaching and Technology II - Activities
3 semester credits
This course engages students in an outline discovery process about the integration of core curriculum and technology through guided practice, dialogue, and instructor presentations. This course is designed to illustrate the connection between teaching specific disciplines and implementing technology. This course will provide a series of instructional ideas that tap into many curriculum areas in support of teaching to a specific content topic. This course also provides a lens for examining traditional lessons and ways to infuse technology to enrich teaching and learning.

EDUC 630 General School Administration and Finance
3 semester credits
The student will examine the functions, duties and responsibilities of public school administrators in relationship to community expectations, school board policies and accreditation standards. School funding sources, the Montana foundation program and the fiscal responsibilities of public school administrators are addressed.

EDUC 633 Supervision of Instruction
2 semester credits
The course is designed to enable selected graduate degree candidates to be recommended for a Class III supervisor’s endorsement. Competencies in diagnosing, designing, implementing, and evaluating instructional programs and personnel will be developed.
EDUC 636 Foundations of Early Childhood Education
2 semester credits
Study of the historical and philosophical aspects of early childhood education, teaching specific subject to pre-school and primary children.

EDUC 638 Evaluation and Assessment of the Pre-School Child
2 semester credits
An in-depth study of formal and informal methods of assessment of the pre-school child's development and methods for early intervention.

EDUC 640 School Law
3 semester credits
School law is designed to provide those students who are seeking a graduate degree or supervisor's endorsement with a basic background in legal principles and school law. This course meets the requirement for a Class III supervisor's endorsement in Montana.

EDUC 648 Advanced Learning Theory
3 semester credits
This course will look at developing knowledge of learning theory and skills necessary to create classrooms where theory is applied to empower students as learners. The course will develop an understanding of learning theory; the ways in which application can transform teaching and learning practices; and how you can adapt your practices to apply learning theory to your goals and the context of your classroom. Prerequisite: Admission to graduate program or permission of instructor.

EDUC 650 Critical and Creative Thinking in Learning
3 semester credits
This course will provide an examination of the epistemological and environmental elements underlying critical, creative and futures thinking to the educational setting. Students will develop an understanding of the application of theory and technique to various content fields and learning environments. A group project proposing an application to an educational setting will be completed. Prerequisite: Admission to graduate program or permission of instructor.

EDUC 652 Learning Systems: Theory and Design
3 semester credits
A study of systems theory and applications in human development and learning environments. Emphasis is upon the understanding of cause and effect in the design and implementation of outcome oriented applications within diverse systems. A major component is the design of a learning system approach to a situation identified by the student.

EDUC 654 Graduate Seminar
1-3 semester credits
Investigation into topics of current concern and interest in education.

EDUC 658 Enhancing Learning Through Content
3 semester credits
This course provides the student the opportunity to engage in the process of exploring specific content areas and developing teaching strategies that will improve learning outcomes. Included in the course will be a review of literature that reflects research-based practices and content expert characteristics. Prerequisite: Admission to graduate program or permission of instructor.

EDUC 660 Developmental and Remedial Reading
3 semester credits
Utilizing the unique development of the individual child, this course will focus on the classroom appraisal of appropriate reading skills, reading difficulties, teaching procedures, assessment and evaluation procedures, and remediation activities appropriate for the elementary school child. Students will be engaged in an examination of current trends and research in the field of reading education.

EDUC 661 Supervision and Teaching Language Arts in the Elementary School
3 semester credits
Appraisal of the elementary school language arts program in terms of principles, practices, and problems involved in the instructional program. Students will also investigate designing, implementing and evaluating the language arts program in the elementary school. Implications of research focusing on language arts and the education of the whole child will be examined.

EDUC 662 Advanced Strategies in Reading
3 semester credits
This course is designed to examine the current approaches and recent trends in the teaching of reading; present practices and implications of research in reading. Each approach will be examined in the light of present knowledge of child development and learning theory. Home and school reading partnerships will be examined.

EDUC 663 Supervision and Teaching of Elementary School Mathematics
3 semester credits
Students will investigate curriculum trends, instructional materials, and research relevant to the elementary mathematics program. Emphasis will be placed upon problem solving, critical thinking skills, and technology in the classroom. Appraisal of the elementary mathematics program with regard to designing, implementing, supervising and evaluating will be examined.

EDUC 665 K-12 Principal Internship Seminar
1 semester credit
An investigation into topics of current concern and interest to students working towards their K-12 Principal endorsement. Pre-requisites: Master’s Degree, Completion of all endorsement coursework, 3 years teaching experience, 2 letters of recommendation from peers, 1 letter of recommendation from immediate school administrator, 1 letter of recommendation from school superintendent/school board allowing student to enroll in EDUC 680.
EDUC 670 K-12 Curriculum
3 semester credits
This course focuses on the broad spectrum of content in the elementary school. Students will investigate the organization of the elementary school in respect to grade divisions, the middle school concept, and evaluation of the curriculum. Content will also include an investigation of curriculum trends, instructional materials, and research relevant to a modern elementary school.

EDUC 671 Instructional Materials for the Elementary Child
3 semester credits
An examination of the variety of instructional materials available for use in the teaching of the elementary school child and the application of those materials to the learning needs of children of differing competencies. Students will develop and create a variety of materials, explore current trends and research concerning classroom materials, and examine resources available for the elementary school child. Students will also examine the role of technology in the elementary classroom.

EDUC 672 K-12 School Administration & Supervision
3 semester credits
This course will provide an exploration of the philosophy, goals, objectives, organizational structure, current research, key issues, and problems associated with the elementary and secondary school. Topics include administrative and supervisory duties regarding supervision of students, staff, student teachers, faculty, home/school public relations, public community relations, and leadership styles.

EDUC 673 Management of Learning Technologies
3 semester credits
This course is a hands-and-minds-on inquiry into the strategic processes and practical requirements necessary for the development and maintenance of technologies within schools of the 21st Century. Students will develop both strategic scenarios and management plans particular to a specific educational setting of their own choosing. Particular attention will be paid to ensuring that all students are capable of meeting and exceeding the technology management standards outlined by the International Society for Technology in Education.

EDUC 674 Problem Solving Strategies
3 semester credits
This course will introduce the student to strategies that support effective classroom management. The course will engage the learner in self-assessment and student assessment to develop a professional implementation plan for enhancing student achievement through intervention and prevention strategies involved in the classroom environment. Prerequisites: Admission to graduate program or permission of instructor.

EDUC 675 Achieving Student Outcomes Through Cooperative Learning
3 semester credits
Achieving Student Outcomes Through Cooperative learning is designed to train educators to effectively set-up, manage and debrief group work so that students learn academics and interpersonal skills. Educators become proficient in group set-up, monitoring and debriefing. They learn how to prevent typical classroom problems that often occur during group work and manage effectively those problems that do occur. They learn to manage collaborative processes so that students learn academics and interpersonal skills simultaneously.

EDUC 677 Purposeful Learning Through Multiple Intelligences
3 semester credits
Purposeful Learning Through Multiple Intelligences will enable educators to understand in depth the characteristics of each of the intelligences, to create diverse strategies for teaching through the intelligences, and to develop various entry points for integrating the intelligences into a school wide program.

EDUC 678 Teaching Through Learning Channels
3 semester credits
Teaching Through Learning Channels is designed to give educators information about how each person learns based on current brain research and to train them to create and deliver lessons that work through these natural channels of learning.

EDUC 680 Internship
2-6 semester credits
An MSU-Northern directed practical experience through a responsible appointment wherein the student is provided the opportunity to acquire professional experience in a program directly related to his/her field of specialization. May be repeated. A limit of 12 credits may be applied to your program. Each credit requires 100 hours of professional experience. Prerequisite: EDUC 665.

EDUC 698 Graduate Research
3 or 6 semester credits
Research and investigation into approved topics and problems. The student's Graduate Program Committee must approve the research plan and final product. May be repeated. A limit of 6 credits may be applied to your program.

ENGINEERING TECHNOLOGY: ELECTRONICS ENGINEERING TECHNOLOGY

EET 101 Introduction to Electricity/Electronics
5 semester credits
This is a lecture/lab course that provides the foundation for major and minor courses in the Engineering Technology: Electronics Engineering Technology program. Topics include basic electrical and electronic concepts, circuit testing, troubleshooting, and the use of test equipment. Course Fee: $10.00
EET 103 Electronic Fundamentals I
5 semester credits
This lecture/lab course provides an introduction to solid state devices. Topics covered include PN diode characteristics, rectifier circuits, bipolar transistors, field-effect transistors, and amplifier circuits. Prerequisite EET 101 or equivalent. Course Fee: $10.00

EET 110 Electronics Survey I
3 semester credits
An introduction to basic concepts and terminology of electronics for the non-electronics major. Topics start with electricity and continue through everyday commercial and home applications. Course Fee: $10.00

EET 204 Electronic Fundamentals II
4 semester credits
A study of field-effect transistors and circuits, thyristors and circuits, frequency effects on amplifier circuits, and the fundamentals of the operational amplifier and applications circuits. Course Fee: $6.00

EET 205 Communications Fundamentals
4 semester credits
Study of electronic telecommunication systems including radio communications, amplitude modulation and sideband systems and application circuits, frequency and phase modulation systems and circuits. Prerequisites: EET 101 and EET 103. Course Fee: $9.00

EET 206 Electronics Equipment Design & Fabrication
4 semester credits
A hands-on course focusing on the construction of electronics equipment. The course will include the principles of circuit and chassis fabrication of packaging for electronic equipment, the techniques of layout, construction, finishing, assembly, wiring and harnessing, and the proper use of tools and hardware. The student will be introduced to several different types of shop tools and hand tools. Printed circuit board layout and design using computer aided design software will be included. A number of direct and photographic circuit board fabrication techniques will be presented. A project is used by each student to develop skills for each process. Prerequisite: DRFT 156. Course Fee: $25.00

EET 207 Digital Fundamentals
5 semester credits
A course designed for electronic majors covering digital system basics. Topics covered include: number systems and codes, logic gates, Boolean algebra, digital IC’s, multivibrators, combinatorial logic, registers and counters, memories, and microprocessor fundamentals. Course Fee: $10.00

EET 279 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to University program of study. Prerequisites: Two semesters of attendance at Montana State University-Northern, approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

EET 304 Network Circuit Analysis
3 semester credits
A study of DC and AC circuits using mesh and nodal analysis, source free RL and RC, RLC circuits, unit step forcing function, sinusoidal forcing function, phasors, sinusoidal steady state response, complex frequency, frequency response, Fourier analysis, Fourier transforms, and LaPlace transforms. Prerequisites: EET 204 and MATH 133.

EET 307 Communications Circuits
4 semester credits
This course provides a study of electronic telecommunication circuits, which includes communications techniques, digital communication theory, circuits, and transmission and network communications. Prerequisite: EET 205. Course Fee: $10.00

EET 311 Analog IC’s
4 semester credits
This course provides a study of integrated circuits in the applications of voltage amplifiers, Norton amplifiers, instrumentation amplifiers, voltage and current regulation, active filters and phase locked loops. Course Fee: $6.00

EET 450 Advanced Digital Systems
3 semester credits
This course provides an advanced study of selected digital systems. Topics include mass storage devices, memory systems, bus architecture, and local area networks. Course Fee: $25.00

EET 479 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience extending the student's experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: two semesters of attendance at Montana State University-Northern, approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

ENGLISH

ENGL 111 Written Communication I
3 semester credits
Writing from observation, personal experience, and research, for narrative, descriptive, expository, and persuasive purposes. Emphasizes strategies for development of ideas, organization, revision, and editing applicable to any writing task. Six or more completed papers will be required.

ENGL 112 Written Communication II
3 semester credits
Emphasizes argumentation and research writing. Students will write at least six essays and a significant research paper including a thorough bibliography. Students will be introduced to library research methods, the avoidance of
plagiarism, and formal documentation. Prerequisite: ENGL 111 or HON 111.

**ENGL 114 Introduction to Literature**  
3 semester credits  
Study of three of the major literary forms (fiction, poetry, and drama), including examples of each from several periods. Selections will include works by and about minorities and women.

**HON 115 Honors Written Communication I**  
3 semester credits  
This course will typically seek a thematic focus different from the standard ENGL 111. This focus will be developed by the instructor and approved by the honors committee. Work in this class typically includes writing from observation, personal experience, and research, for narrative, descriptive, expository, and persuasive purposes. This course emphasizes strategies for development of ideas, organization, revision, and editing applicable to any writing task. Six or more completed papers will be required. Prerequisite: Acceptance in the honors sequence.

**ENGL 201 American Literature I**  
3 semester credits  
A survey of American literature from the colonial period to 1870.

**ENGL 202 American Literature II**  
3 semester credits  
A survey of American literature from 1870 to the present.

**HON 212 Honors Written Communication II**  
3 semester credits  
This course will typically seek a thematic focus different from the standard ENGL 112. This focus will be developed by the instructor and approved by the honors committee. The course continues the study of the modes of composition introduced in ENGL 111. The course emphasizes argumentation and research writing. Students will write at least six essays and a bibliography. Students will be introduced to library research methods, the avoidance of plagiarism, and formal documentation. Prerequisite: Acceptance in the honors sequence.

**ENGL 214 Introduction to World Literature**  
3 semester credits  
An historical and thematic study of world literature in translation that may include Babylonian, Hebrew, Indian, Chinese, Persian, and other literature.

**ENGL 218 Journalism**  
3 semester credits  
Analysis of the print news media, including introduction to reporting and writing the news and to newspaper production; practice in writing news, editorials, and features.

**ENGL 221 English Literature I**  
3 semester credits  
A survey of English literature from the Old English Period to 1700.

**ENGL 222 English Literature II**  
3 semester credits  
A survey of English literature of the eighteenth, nineteenth, and twentieth centuries. Readings include works by the Augustans, the Romantics, the Victorians, the moderns, and the contemporary writers of Great Britain.

**ENGL 305 Advanced Essay Writing**  
3 semester credits  
Practice in expository writing for advanced students. Prerequisite: ENGL 112.

**ENGL 309 Popular Genres**  
3 semester credits  
An historical and critical approach to popular genres within the discipline that have been defined as including topics of significant aesthetic and sociological value outside the traditional canons of mainstream tradition. Material to be considered will be determined by the instructor and may include such genres as fantasy literature, science fiction, detective fiction, Gothic literature, movies, popular culture, and so on. May be repeated for credit.

**ENGL 310/510 Literature for Children and Adolescents**  
3 semester credits  
A study of the literature designed for and available to the pre-adult audience, from pre-school materials for reading preparation and reading aloud, through elementary school literature, to literature for the adolescent audience of the middle school and secondary school levels. Includes poetry, fairy tales, myths, fables, informational and nonfiction works, biographies, popular fiction, and fantasy literature.

**ENGL 311 Creative Writing**  
3 semester credits  
Writing poetry and fiction. Study of the techniques of poetry-the creation and use of metre, rhyme, line, stanza, tone and figurative language--and of fiction--development of action, character, and narrative voice.

**ENGL 313/EDUC 313 Methods of Teaching English**  
3 semester credits  
This course is a study of the theories and methods of teaching English, including study of the theories and methods of teaching creative writing and composition. Theory and practice concentrates on teaching English at the junior high and senior high school level. Prerequisites: Level I Admission to Teacher Education, EDUC 300 and EDUC 376. Co-requisite: EDUC 339.

**ENGL 318 Feature Writing**  
3 semester credits  
Analysis and practice of writing feature news stories.

**ENGL 330 Modern Poetry**  
3 semester credits  
A study of the major trends and significant theories of poetry from 1800 to 1945; the Romantic period, the Victorian period, American Poetry and the Modern period.

*Restricting, see “Dual Prefix Listed Courses” in “Graduation and General Education Requirements” section.*
ENGL 331/NAS 331 Literature by and About Native Americans*
3 semester credits
A critical examination of a representative number of major works by non-Native Americans about Native Americans and major works by Native Americans. Topics include stereotyping, segregation, prejudice, and the roles of Native Americans in American society. Readings include mythology, poetry, essays, novels, and non-fiction.

ENGL 337 English Grammar
3 semester credits
A general study of word construction, form, and usage and word groups within sentences.

ENGL 338 Public Relations Writing
3 semester credits
Practice in writing public relations materials such as brochures, background pieces, speeches, newsletters and press releases.

ENGL 349/549 Montana Literature
3 semester credits
A study of the works of major Montana authors as these reflect upon regional experience including works appropriate for a pre-adult audience.

ENGL 360 Survey of Dramatic Literature
3 semester credits
A study of representative plays from Greek, Roman, Medieval, Renaissance, Restoration periods; the 18th, 19th, and 20th centuries, with attention to the cultural and historical factors contributing to the development of these works and analysis of significant ideas, themes, and production techniques.

ENGL 366 Technical Writing and Editing
3 semester credits
Guided practice in the writing and editing of documented technical communications, focusing on the composition, revision, and interpersonal communication skills needed by effective writers and editors. Prerequisite: ENGL 112.

ENGL 368 Writing for Grants
3 semester credits
Guided practice in writing of grant proposals to private foundations or public agencies, with particular attention to the researching of funding sources, program planning, and the appropriate conventions of technical and business writing associated with proposals and progress reports.

ENGL 380/580 Linguistics
3 semester credits
A survey of the scientific developments and major theoretical approaches to the science of oral and written languages.

ENGL 385 Shakespeare
3 semester credits
Introduction to the poetic and dramatic works of Shakespeare. Reading and analysis of representative plays from the comedies, histories, and tragedies and critical assessment of Shakespeare's historical importance in literature and culture from the 16th century to the present.

ENGL 401 Contemporary Literature
3 semester credits
A study of the development of the forms and themes of poetry and fiction in the period since World War II.

ENGL 402 Literary Criticism
3 semester credits
A study of the theories and methods of literary analysis from ancient times to the present, as represented in the works of selected literary theorists and critics.

ENGL 409 Major Writers
3 semester credits
An intensive study of the works of one or more major English or American writers or literary genres from the periods of literary history. The writer or writers to be studied vary at the discretion of the instructor. Prerequisite: Junior standing. May be repeated for credit.

ENGL 435 Development of the Novel
3 semester credits
A study of the development of the novel in England, Europe and the United States from the eighteenth century to the present.

ENGL 513/EDUC 513 Methods of Teaching English*
3 semester credits
This course is a study of the theories and methods of teaching English, including study of the theories and methods of teaching creative writing and composition. Theory and practice concentrates on teaching English at the junior high and senior high school level. Prerequisites: Level I Admission to Teacher Education, EDUC 500 and EDUC 576. Co-requisite: EDUC 339.

Because this is a graduate course, expectations for student performance are at an advanced level. Evaluation of course requirements is more rigorous than at the lower division section of this course.

EARTH SCIENCE
ESCI 115 Foundations of Earth Science
4 semester credits
This course introduces basic concepts of geology, astronomy, meteorology, and physical geography including identification of rocks, minerals, and common geological formations. The course includes both lecture and laboratory hours. This course does meet the laboratory science requirement. Course Fee: $5.00

*Restricting, see “Dual Prefix Listed Courses” in “Graduation and General Education Requirements” section.
ESCI 204 Physical Geology
4 semester credits
Introductory geology emphasizing the physical constitution of the Earth’s interior and surface. Prerequisites: MATH 120 or placement into MATH 112 or MATH 130. This course does meet the laboratory science requirement. Course Fee: $5.00

ESCI 206 Historical Geology
4 semester credits
Introductory geology emphasizing the evolution of the Earth and life through geological time. ESCI 204 is recommended. Prerequisites: MATH 120 or placement into MATH 112 or MATH 130. This course does meet the laboratory science requirement. Course Fee: $5.00

ESCI 208 Environmental Geology
4 semester credits
An introduction to such geological phenomena as earthquakes, volcanism, and flooding which influence humans and human civilization. Lecture and laboratory hours are included. Prerequisites: MATH 120 or placement into MATH 112 or MATH 130. This course does meet the laboratory science requirement.

ESCI 307 Astronomy
4 semester credits
Introduction to astronomical observation and measurement and features of the Solar System and phenomena found outside the Solar System. Includes lecture and laboratory hours. Offered alternate years. Prerequisite: PHYS 231. This course does meet the laboratory science requirement.

ESCI 310 Introduction to Paleontology
3 semester credits
This course will provide an introduction to paleontology and the various procedures in the field with special emphasis on Montana and Alberta Fossils. Prerequisite: ESCI 115 or ESCI 204 or consent of instructor. This course does meet the laboratory science requirement. Course Fee: $10.00

ESCI 315 General Hydrology
3 semester credits
An overview of the water cycle with special emphasis on flowing and standing water systems. Offered alternate years. This course does not meet the laboratory science requirement.

ESCI 405/505 Earth Science Investigations for Teachers
3 semester credits
Astronomy, geology, and meteorology for science teachers. Graduate credit requirements are described in the course syllabus. This course does meet the laboratory science requirement. Course Fee: $10.00 Graduate credit requirements are described in the course syllabus.

FRENCH
FREN 105 Elementary French
4 semester credits
Introduction to French, emphasizing conversational ability but including reading comprehension and written expression. Extensive use of spoken French in the classroom, small group practice sessions, and individual conferences with the instructor. Students desiring further French study may register for additional credits of French 105. Two semesters of French 105 (8 credits) constitute the first-year University French sequence. Students with prior French study should consult the instructor for placement. No prerequisite for the first semester.

FREN 205 Intermediate French
4 semester credits
Continued and progressive development of the skills acquired in Elementary French and special emphasis on conversational ability, vocabulary building, and the grammar necessary for correct oral and written expression. Extensive pronunciation practice to develop proper syllable division, stress, linking, and intonation. Students desiring further study may register for additional credits of FREN 205. Two semesters of FREN 205 (8 credits) constitute the second-year University French sequence. Prerequisites: Two semesters of elementary French (8 credits) or the equivalent and permission of the Instructor.

FREN 305 Advanced Composition and Conversation
4 semester credits
Advanced work in spoken and written French through compositions and conversations covering the modern French speaking world and the historical development of art, music, literature, philosophy, politics, science, and social institutions in France. Class conducted in French. Students desiring further French study may register for additional credits of French 305. Two semesters of French 305 constitute a third-year University French sequence. Prerequisite: two semesters of Intermediate French (8 credits) or the equivalent. Prerequisite: Permission of the Instructor.

FRESHMAN SEMINAR
FRSH 100 Freshman Seminar
1 semester credit
The freshman seminar course is designed to provide students with an early introduction to the expectations and challenges of University life, to the procedural, geographic and academic maps of the University, and to the learning strategies and life skills necessary for success. The freshman seminar provides opportunities for students to interact with faculty and administrators as well as peers. Programming includes social events and activities designed to integrate the student into the University environment.

GEOGRAPHY
GEOG 119 World Regional Geography
3 semester credits
An introduction to the geography of the major regions of the world, the human communities of those regions, and their relationships to geographic locations, physical environment, population, economic resources, and international politics.

GERMAN
GER 105 Elementary German
4 semester credits
Introduction to German, emphasizing conversational ability but paying appropriate attention to reading comprehension and correct written expression. Extensive use of spoken German in the classroom, small group practice sessions, and individual conferences with the instructor. Students desiring
further German study may register for additional credits of German. Two semesters of German 105 (8 credits) constitute the first-year University German sequence. Students with prior German study should consult the instructor for placement. No prerequisite for the first semester.

**GRAPHIC DESIGN**

**GDSN 220 Illustration I**
3 semester credits
Studio exercise in observational and imaginative drawing and painting. A variety of media and expressive, narrative, and descriptive techniques are explored in the creation of artwork for commercial reproduction. Prerequisite: ART 120.

**GDSN 231 Graphic Design Applications**
3 semester credits
This course is an introduction to software applications used by today’s graphic design industry. A workbook-guided approach is employed and the course is self-paced. Photoshop, Illustrator, and QuarkXPress are covered in the course. This course is prerequisite to GDSN 320, GDSN 350 and GDSN 450.

**GDSN 240 Electronic Design I**
3 semester credits
This course is an introduction to software applications used by today’s graphic design industry for electronic media. The course will focus on site architecture, design, and software implementation. Flash MX, Adobe Photoshop/ImageReady, and Dreamweaver are covered in the course. This course is a prerequisite to GDNS 340 and GDSN 450. Prerequisite: GDSN 231.

**GDSN 250 Graphic Design I**
3 semester credits
Lecture/Studio course incorporating visual design concepts and techniques in problem-solving of commercial graphic arts assignments. Emphasis on individual creativity in realistic problem-solving situations. Prerequisite: ART 150.

**GDSN 270 Introduction to Photography**
3 semester credits
Basic introduction to photography. Use of the camera, film, compositional techniques, and fundamental darkroom procedures. **Course Fee: $40.00**

**GDSN 320 Illustration II**
3 semester credits
This course covers illustration based in current imaging software with the goal of developing individual methods and style. Prerequisite: GDSN 220 and GDSN 231. **Course Fee: $10.00**

**GDSN 340 Electronic Design II**
3 semester credits
This course covers web site design using page creation applications and image editing applications. Additionally, animation and multimedia will be incorporated into the design process. Prerequisite: GDSN 240.

**GDSN 350 Graphic Design II**
3 semester credits
Lecture/studio course utilizing visual design concepts and principles in problem-solving of realistic commercial graphic arts assignments. The computer is incorporated as the primary tool for generating images, typography and composition. Prerequisites: CIS 110, GDSN 250, GDSN 231 or permission of instructor. **Course Fee: $15.00**

**GDSN 370 Photography II**
3 semester credits
This is a lecture/studio course utilizing visual design concepts and principles in problem-solving of realistic commercial graphic arts assignments. The computer is incorporated as the primary tool for generating images, typography and composition. Prerequisites: CIS 110, GDSN 231, GDSN 250, or permission of instructor. Course Fee: $40.00

**GDSN 450 Graphic Design III**
4 semester credits
Lecture/studio course utilizing visual design concepts and principles in problem-solving of realistic commercial graphic arts assignments. The computer is incorporated as the primary tool for generating images, typography, and composition. A portfolio will be constructed and presented at the conclusion of the course. Prerequisites: GDSN 231, GDSN 240, GDSN 250, GDSN 350, GDSN 320. **Course Fee: $25.00**

**GENERAL SCIENCE**

**GSCI 412/512 Environmental Problems**
3 semester credits
Review of major environmental problems facing civilization with the thought that the general awareness of these problems by the citizenry provides an important educational commitment. Such evaluations will be made in the context of basic ecological concepts and principles and will involve integration of various scientific and non-scientific disciplines. **Graduate credit requirements are described in the course syllabus.**

**GSCI 602 History and Philosophy of Science**
3 semester credits
Study of prominent scientists in all areas of scientific inquiry, specifically their temperaments and idiosyncrasies, their backgrounds, and their interrelationships with the environmental, social, and political conditions that existed during their lifetimes.

**GSCI 621 Integrated Life Science**
3 semester credits
Integration of basic concepts from the various physical sciences into the life science discipline using photosynthesis and light as the main focal points. Prerequisites: basic botany and chemistry courses.

**GSCI 622 Integrated Physical Science**
3 semester credits
Integration of chemistry and physics together with a supplemental integration of the biological and earth sciences

*Restricting, see “Dual Prefix Listed Courses” in “Graduation and General Education Requirements” section.
in order to achieve better understanding of how the world functions. Computer based laboratory materials and experiments will be developed to assist in understanding the requirements and techniques of scientific pursuit. Prerequisites: basic chemistry and physics courses.

GSCI 631 Integrated Science Principles for Teachers
3 semester credits
A course for science teachers that focuses upon integrating scientific concepts and utilizing available equipment and reagents to produce worthwhile laboratory activities and demonstrations from an integrated perspective. Computers will be used as convenient tools for measuring and calculating experimental data. Prerequisites: basic chemistry, physics, and biology courses.

GSCI 693 Assessment Seminar
2 semester credits
Study of how students learn, emphasizing various evaluation methodologies (e.g., outcome-based assessments) in science education. A review of science education concepts is provided together with considerations of the value that modern insights will ultimately have in improving future science education endeavors.

GSCI 698 Graduate Research
3 or 6 semester credits
Research and investigation into approved topics and problems. The student's Graduate Program Committee must approve the research plan and final product. May be repeated. A limit of 6 credits may be applied to your program.

HISTORY
HIST 101 The History of Railroading
3 semester credits
The history and traditions of railroading and the industry's role in North American economic development.

HIST 131 American History I
3 semester credits
A general survey of the fundamental political, social, economic, cultural, and diplomatic developments that have contributed to the formation of American civilization from the colonial period to 1877.

HIST 132 American History II
3 semester credits
A general survey of the fundamental political, social, economic, cultural, and diplomatic developments that have contributed to the formation of American civilization from 1877 to the present.

HIST 141 History of Civilization I
3 semester credits
This course is a survey of the various civilizations of the world from their ancient origins to 1500. European, Asian, American and African societies will be examined, compared and contrasted at the various stages of their development throughout this period. The course deals with the encounters and interactions among the various civilizations, and examines the political, social, economic, cultural, ideological and technological developments that have shaped the world.

HIST 142 History of Civilization II
3 semester credits
This course is a survey of the various world civilizations from 1500 to the present. The civilizations of Europe, Asia, America and Africa will be examined, compared and contrasted at the various stages of their development throughout this period. The course deals with the encounters and interactions among the various civilizations, and examines the political, social, economic, cultural, ideological and technological developments that have shaped the civilizations of the world.

HIST 216 Montana History
3 semester credits
A study of the major political, social, cultural, and economic developments that have contributed to the formation of Montana and to Montana's place within the region, the nation, and the world, from prehistoric times to the present.

HIST 301 Colonial America to Jackson
3 semester credits
An examination of the political, economic, social, and cultural conditions of America from 1600 through 1828, concentrating on the factors that led to the American Revolution and the establishment of the nation as a democratic republic.

HIST 302 Ante-Bellum America Through Reconstruction
3 semester credits
An examination of the economic, social, political, and cultural conditions that from 1828 through 1877 led to economic disaster, massive expansion, the Civil War, the abolition of slavery, and Reconstruction.

HIST 303 Populist/Progressive Era through the Depression
3 semester credits
An examination of the period between the official end of Reconstruction (1877) and the outbreak of World War II (1941), the most dynamic period of American development and disaster, concentrating on social, economic, and cultural changes.

HIST 305 World War II through the Present
3 semester credits
Study of the period between the outbreak of World War II (1941) and the present, concentrating on that war, the Korean conflict, the Cold War, Vietnam, the nuclear age, the space age, and the effects of those major events and developments on domestic politics, culture, and the American economy.

HIST 310 American Westward Expansion
3 semester credits
Examination of the social, political, economic, and cultural aspects of American westward expansion from the eastern seaboard to California and Alaska, with emphasis on the importance of the frontier in the development of the American character.
HIST/ECON 346 Business and Economic History of the United States*
3 semester credits
Students will study the growth and development of the U.S. Economy and business transformation from colonial times to the mid-20th century. The central organizing focus concerns the economic, cultural, and constitutional incentive structures in America that have motivated entrepreneurship and efficient resource use. A background in basic economics or business theory is useful but not required.

HIST 350 Modern Asia in the Global Environment
3 semester credits
This course examines the transformation of Asia from the “traditional age” of empires through European contact and colonialism ending in the modern period of nation states. While focusing on the distinctive culture of Asia, the wide diversity of ideas, technologies and religions of the region will be placed in their global context.

HIST 354 History of Technology and Transportation
3 semester credits
A study of the history of technology and transportation and their development from the early modern era to our contemporary world, stressing the interrelationships between technology and transportation. Attention is given to the interaction of economic, technological, and cultural factors as a stimulus to the development of technology and the transportation system.

HIST 364/NAS 364 History of American Indians*
3 semester credits
History of American Indians from Pre-Columbian times to the present, with special emphasis on demographic shifts caused by encroaching European and American westward expansion, and relationships between Native Americans and immigrants.

HIST 374 Intellectual History of Western Civilization
3 semester credits
This course offers a survey of the development of ideas from the ancient Hebrew and Greco-Roman cultures through the Middle Ages, Renaissance, Scientific Revolution, and Enlightenment to the Modern Era. Students will read, discuss, and write about primary sources authored by such thinkers as Aristotle, Cicero, Locke, Adam Smith, Burke, Wollstonecraft, Toqueville, Comte, Darwin, Marx, Spencer, Mill, Nietzsche, Freud, Rocco, and Sartre, and will explore concepts such as Humanism, Liberalism, Positivism, Socialism, Fascism, and Existentialism.

HIST 449 Historiography
3 semester credits (capstone course)
Students will examine and analyze the work of historians as examples of the technique and procedure of writing history. Capstone course for Broadfield Social Science majors. Prerequisite: Senior standing

HEALTH AND PHYSICAL EDUCATION ACTIVITIES
HPEA 10X Intercollegiate Varsity Participation
Courses in this series reflect participation in varsity athletics and may be repeated up to four times.

HPEA 100 Intercollegiate Men's Wrestling
1 semester credit

HPEA 101 Intercollegiate Men's Basketball
1 semester credit

HPEA 102 Intercollegiate Women's Basketball
1 semester credit

HPEA 104 Intercollegiate Men's Football
1 semester credit

HPEA 105 Intercollegiate Women's Volleyball
1 semester credit

HPEA 106 Intercollegiate Cheerleading
1 semester credit

HPEA 107 Intercollegiate Women's Golf
1 semester credit

HPEA 108 Intercollegiate Rodeo
1 semester credit

HPEA 109 Selected Topics in Intercollegiate Participation
1 semester credit

HPEA 13X Intercollegiate Recreational Skills
Courses contained in this area will be reflective of activities generally regarded as recreation and can be individual, dual, or group in nature.

HPEA 130 Tennis
1 semester credit

HPEA 131 Billiards
1 semester credit  Course Fee: $10.00

HPEA 132 Archery
1 semester credit  Course Fee: $15.00

HPEA 133 Racquetball
1 semester credit  Course Fee: $30.00

HPEA 134 Recreational Activities
1 semester credit

HPEA 135 Frisbee
1 semester credit

*Restricting, see “Dual Prefix Listed Courses” in “Graduation and General Education Requirements” section.
HPEA 136 Golf
1 semester credit  Course Fee: $20.00

HPEA 137 Badminton
1 semester credit

HPEA 138 Bowling
1 semester credit  Course Fee: $15.00

HPEA 139 Selected Topics in Recreational Skills
1 semester credit

HPEA 15X Aquatic Skills
These courses are designed to teach aquatic activities, which will provide lifetime skills, safety skills, and training skills for instructors of aquatic activities.

HPEA 150 Beginning Swimming
1 semester credit

HPEA 151 Intermediate Swimming
1 semester credit

HPEA 152 Skin and Scuba Diving
1 semester credit

HPEA 153 Canoeing
1 semester credit

HPEA 154 Aqua Exercise
1 semester credit

HPEA 159 Selected Topics in Aquatic Skills
1 semester credit

HPEA 16X Team Sports
Courses contained in this area will include those activities found to be reflective of what is generally considered team sports.

HPEA 160 Soccer
1 semester credit

HPEA 161 Volleyball
1 semester credit

HPEA 162 Floor Hockey
1 semester credit

HPEA 163 Basketball
1 semester credit

HPEA 164 Softball
1 semester credit

HPEA 165 Touch Football
1 semester credit

HPEA 166 Team Handball
1 semester credit

HPEA 167 Wallyball
1 semester credit  Course Fee: $30.00

HPEA 169 Selected Topics in Team Sports
1 semester credit

HPEA 17X Outdoor Skills
Courses contained in this area will include those activities which take place in the outdoors and can be given lifelong consideration.

HPEA 170 Alpine Skiing
1 semester credit  Course Fee: $50.00

HPEA 171 Cross Country Skiing
1 semester credit  Course Fee: $10.00

HPEA 172 Wilderness Camping
1 semester credit

HPEA 173 Rock Climbing
1 semester credit  Course Fee: $5.00

HPEA 179 Selected Topics in Outdoor Skills
1 semester credit

HPEA 18X Fitness and Wellness Skills
These courses are designed to teach lifetime activities which will promote fitness and wellness for a healthy lifestyle.

HPEA 180 Weight Control
1 semester credit

HPEA 181 Weight Training
1 semester credit

HPEA 182 Aerobic Dance
1 semester credit

HPEA 183 Personal Self Defense
1 semester credit

HPEA 184 Trimnastics
1 semester credit

HPEA 185 Conditioning Activities
1 semester credit

HPEA 186 Yoga
1 semester credit

HPEA 187 Advanced Weight Training
1 semester credit  Prerequisite: HPEA 181

HPEA 189 Selected Topics in Fitness and Wellness Skills
1 semester credit
HPEA 19X Rhythmics and Dance Skills
Courses in this series will provide the student an opportunity to develop skills in the areas of elementary dance, folk and social dance, square dance, modern dance, contemporary dance, and gymnastics and tumbling.

HPEA 191 Folk Dance
1 semester credit

HPEA 192 Social Dance
1 semester credit

HPEA 194 Square Dance
1 semester credit

HPEA 195 Modern Dance
1 semester credit

HPEA 197 Gymnastics and Tumbling
1 semester credit

HPEA 198 Selected Topics in Rhythmics and Dance
1 semester credit

HEALTH AND PHYSICAL EDUCATION
HPE 215 Basic Athletic Taping
1 semester credit
Practical experience in learning basic athletic taping techniques. Some injury evaluation and exercise rehabilitation included. Course Fee: $15.00

HPE 231 Individual and Team Sports
3 semester credits
This course is designed to give physical education majors and minors an opportunity to plan and teach a variety of individual and team sports, to be determined by the Health and Physical Education program faculty. Emphasis placed on skills development, skills progression, and evaluation of motor performance. Course Fee: $7.00

HPE 233 Foundations of Health and Physical Education
2 semester credits
Designed to acquaint the prospective physical education teacher with broad concepts of health, physical education, and recreation including the historical development of modern programs, philosophies, and their application to physical education.

HPE 234 First Aid and CPR
2 semester credits
A course designed to provide the student with the latest approved first aid and CPR procedures. Course Fee: $12.00

HPE 235 Principles of Health and Wellness
3 semester credits
This course is an introduction to the basic and new concepts of health. Topics included will be nutrition, physical fitness, stress management, substance abuse, HIV/AIDS, safety and risk management, as well as wellness components of emotional, physical, social, intellectual, and spiritual health. This course is required for all pre-education majors to fulfill OPI certification requirements, and is a program requirement for Health Promotion majors and minors. It is also appropriate for pre-nursing majors and those interested in taking a proactive approach to their lives and health.

HPE 236 Intramural and Recreational Activities
3 semester credits
A course designed to teach leadership, basic skills, rules, and techniques for various recreational games. Practical student experiences in directing all phases involved within an ongoing intramural program; scheduling, league organization, publicity, and team point computations.

HPE 247 Techniques of Officiating
2 semester credits
Students will learn the current rules/regulations of the major team sports offered by schools in Montana and proper techniques of officiating these sports. Sports included are football, basketball, volleyball and softball. Students will also learn the process/requirements of becoming an MOA official for these and other sports.

HPE 248 Foundations of Coaching
3 semester credits
An introductory course encompassing the general duties and responsibilities of coaches in all sports including philosophy, organization, administration, and supervision.

HPE 250 Life Guard Training
2 semester credits
This course includes the American Red Cross requirements for Life Guard Training and additional lifesaving techniques. Prerequisite skills include: Tread water for 2 minutes using legs only. Swim 500 meters continuously using each of 4 basic strokes and retrieve a submerged 10 lb. object from seven feet. Course Fee: $25.00

HPE 251 Water Safety Instruction
2 semester credits
This course includes the American Red Cross requirements for Water Safety Instruction and additional teaching and administrative techniques. Prerequisite skills include: Swim 50 yards using each of four basic strokes. Swim 10 meters of butterfly, perform a standing front dive, and perform a throwing assist with buoy. Course Fee: $7.00

HPE 274 Personal and Community Health
3 semester credits
Evaluation of personal health in relation to the services available throughout a community. Application to K-12 teachers for coordinating/utilizing community services in a health enhancement curriculum.

HPE 279 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Two semesters of attendance at Montana State University-Northern, approval of advisor, Dean of the College of Education, Arts and Sciences, Nursing, and cooperative education coordinator.
HPE 300 Physical Education in the Elementary School
3 semester credits
This is an exploration of teaching skills and strategies for elementary physical education. Topics covered include selection, practice, and application of games and activities to aid in developing skills, fitness, and attitudes and appreciation for physical activity by the elementary school age child (K-6). Personal and educational values for the teacher candidate will be incorporated throughout. Curriculum development and selections is also discussed. Prerequisite: Admission to Teacher Education, EDUC 300 and HPE 376. Co-requisite: EDUC 339 Secondary Field Experience (majors only).

HPE 302 Theory & Practice of Health Promotion
3 semester credits
Health Promotion is the art and science of assisting individuals in their progress toward a greater level of personal wellness. This course will introduce various theories of health promotion and allow for the exploration and practice of a variety techniques used in the field. Prerequisite: Junior Standing.

HPE 305 Methods and Materials in Health Education
3 semester credits
As health educators try to influence behavior change through cognitive education, methods to achieve this are unique. This course is designed to exposed teacher education candidates to those techniques. This course will cover, extensively, the Health Enhancement Curriculum Model and Health Enhancement Curriculum Standards released by OPI to familiarize students with the requirements of all K-12 teachers in the State of Montana. National health education curriculum standards as well as ethics in health education will also be addressed. Co-requisite: Registration in EDUC 339 Secondary Field Experience. Prerequisite: Admission to Teacher Education, EDUC 300 and HPE 376. Course Fee: $10.00

HPE 306 Adapted Physical Education
2 semester credits
This course is a study of the diverse and complex nature of disabilities and the role of physical education for the handicapped. Organizing and administering programs for students with special needs, selection of methods used in assessment and evaluation, lesson development, implementation and evaluation are covered. A 20-hour field experience is required, working with individuals with developmental and physical handicaps. Prerequisite: Admission to Teacher Education, EDUC 300 and HPE 376.

HPE 307 Community Recreation
3 semester credits
Study of community recreation programs with regard to their activities, organization, administration, leadership, planning, special problems, and evaluation. Practical student experiences within an ongoing intramural program may also be included. Offered alternate even years during Fall Semester.

HPE 325 Organization & Administration of Health & Physical Education
3 semester credits
Health & Physical Educators must be able to organize and administer a K-12 Health Enhancement program, including budget development, risk and safety management, program and personnel evaluation, equipment purchasing and storage, policy/procedure development, record keeping, and facility design, management and utilization.

HPE 330 Lifetime Activities
3 semester credits
This course is designed to give students exposure to a variety of fitness, sport and game activities that are utilized in the middle and high school health promotion programs of many Montana schools to promote lifetime fitness activities. Emphasis is placed on skills development, skills progression, and evaluation of motor performance as well as lifetime enjoyment. Safety and organization of units and curriculum are also discussed. Course Fee: $10.00

HPE 340 Coaching Football
2 semester credits
A study of training techniques, offensive and defensive strategy, selection of team, methods of conducting practice, and utilization of personnel.

HPE 341 Coaching Basketball
2 semester credits
A study of training techniques, offensive and defensive strategy, selection of team, methods of conducting practice, and utilization of personnel.

HPE 342 Coaching Track & Field
2 semester credits
A study of training techniques, strategy, selection of team, methods of conducting practice, and utilization of personnel. Offered alternate even years during Spring Semester.

HPE 343 Coaching Volleyball
2 semester credits
A study of training techniques, offensive and defensive strategy, selection of team, methods of conducting practice, and utilization of personnel.

HPE 344 Coaching Wrestling
2 semester credits
A study of training techniques, selection of team, methods of conducting practice, and utilization of personnel.

HPE 345 Coaching Baseball-Softball
2 semester credits
A study of training techniques, offensive and defensive strategy, selection of team, methods of conducting practice, and utilization of personnel. Offered alternate odd years during Spring Semester.

HPE 346 Coaching Gymnastics
2 semester credits
A study of training techniques, selection of team, methods of conducting practice, and utilization of personnel.
HPE 347 Coaching Swimming
2 semester credits
A study of training techniques, selection of team, methods of conducting practice, and utilization of personnel.

HPE 349 Coaching in Selected Sports
2 semester credits
For a MHSA approved sport, the course consists of a study of training techniques, offensive and defensive strategy (if appropriate), selection of team, methods of conducting practice, and utilization of personnel.

HPE 357 Kinesiology
3 semester credits
Kinesiology is the study of human movement: the action of muscles and muscle systems, the application of force to levers, and the evaluation of movement for improved performance and reduced risk of injury. These concepts are applied to teaching and coaching at all developmental levels through classroom experiences. Prerequisite: BIOL 204 or BIOL 241, MATH 110 or higher.

HPE 358 Physiology of Exercise
3 semester credits
The study of the effects of various exercises on the systems of the body, with implications for the improvement of health, physical fitness, and athletics. Applications of theory to actual situations. Prerequisite: BIOL 204 or BIOL 241. Course Fee: $30.00

HPE 359 Field Experience in Physical Education
1 semester credit
This course is a field experience in health and physical education. Candidates who have opportunities for work/volunteer experiences in health and physical education/health promotion outside of their coursework may register for this course to reflect these experiences. This course may be repeated for credit up to a total of three credits. Candidates working with children may be required to complete a background check; all candidates should have professional liability insurance. Prerequisite: Consent of instructor.

HPE 362 Biomechanics and Movement Education
4 semester credits
An exploration of movement beginning with developmental movements, progressing through the evaluation and correction of body mechanics. Students will develop an understanding of the principles of lever systems and muscle forces through applied anatomy. Application of theory to teaching and coaching at all developmental levels will be emphasized. Prerequisite: BIOL 204 or 241.

HPE 368 Safety Education
2 semester credits
Study of the basic principles of safety education and their application to the schools.

HPE 370 Prevention and Care of Athletic Injuries
3 semester credits
A study of conditioning and evaluation to prevent injuries; recognition and evaluation of injuries; treatment and rehabilitation of injuries. Additional topics of nutrition, ergogenic aids, and risk management are included. Lab will involve the application of evaluation and rehabilitation skills as well as the practice of basic taping techniques. Prerequisite: BIOL 240 or BIOL 241. Course Fee: $15.00

HPE 374 Current Issues in Health
3 semester credits
Study of current health issues that affect present populations: the environment, drug and alcohol, AIDS, diseases of lifestyle, health care and insurance, and birth control. To include prevention and/or control, solution, and implications. Offered alternate odd years during Spring Semester.

HPE 376 Tests & Measurements in Health and Physical Education
3 semester credits
This course is designed for candidates to learn the various ways to administer, analyze, interpret and utilize various tests in health and physical education. Basic statistical manipulation/analysis and test construction will be covered as well as test validity/reliability issues. Alternative and authentic testing issues will also be addressed. Prerequisites: MATH 110/112, junior standing, Admission to Teacher Education for HPE majors/minors.

HPE 378 Sex Education
3 semester credits
A study of the biological and behavioral values as it concerns human sexuality.

HPE 386 Drug and Alcohol Education
2 semester credits
Introductory information for prospective teachers on the nature and effects of drug and alcohol abuse, social and personal needs of users, rehabilitation techniques, and legal regulations of drug possession and use.

HPE 394 Outdoor Education
3 semester credits
Study of current health issues that affect present populations: the environment, drug and alcohol, AIDS, diseases of lifestyle, health care and insurance, and birth control. To include prevention and/or control, solution, and implications. Offered alternate odd years during Fall Semester. Course Fee: $8.00

HPE 407 Issues in Competitive Athletics
3 semester credits
A study of individual administrative, supervisory, and organizational problems directly related to athletics as they affect the coach, athletic director, or profession. Offered alternate even years during Spring Semester.

HPE 410 Internship in Athletic Training
3 semester credits
An internship in Athletic Training is available to those students interested in the prevention, recognition, treatment and rehabilitation of athletic injuries. This hands-on experience compliments those students interested in coaching, athletic training, or physical therapy. Prerequisites: Athletic training/ taping course (HS level accepted); First Aid/CPR certification. Restricted Entry: Consent of instructor required. May be repeated for credit up to three times. Course Fee: $20.00
HPE 423 Marriage and Family Relationships
3 semester credits
An in-depth study and discussion of courtship, love, marriage, problem solving, and family relationships. Human relations and values clarification are emphasized through the group process.

HPE 448 Psychology and Sociology in Sports
3 semester credits
A study of psychological and sociological implications of sports participation. Offered alternate even years during Spring Semester.

HPE 479 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience in education, business, government, or community service agencies related to the University program of study. Prerequisites: Junior standing and approval of advisor, Dean of the College of Education, Arts and Sciences, Nursing, and cooperative education coordinator. Pass/Fail only.

HONORS
HON 113 Honors College Algebra
3 semester credits
Properties and theorems of the real and complex number systems. Study of the function concept, including inverse functions, graphing techniques, linear, quadratic, polynomial, exponential, and logarithmic functions. Solving systems of equations in two or more variables using matrices, determinants, and matrix algebra. This course must satisfy the core requirements of MATH 112, as determined by the mathematics faculty. The course will have a focus beyond the standard MATH 112. That focus will be developed by the instructor and approved by the Honors Committee. Prerequisites: Placement by means of ACT scores or University placement examination or consent of instructor, and acceptance in Honors sequence.

HON 115 Honors Written Communication I
3 semester credits
This course will typically seek a thematic focus different from the standard ENGL 111. This focus will be developed by the instructor and approved by the honors committee. Work in this class typically includes writing from observation, personal experience, and research, for narrative, descriptive, expository, and persuasive purposes. This course emphasizes strategies for development of ideas, organization, revision, and editing applicable to any writing task. Six or more completed papers will be required. Prerequisite: Acceptance in the honors sequence.

HON 212 Honors Written Communication II
3 semester credits
This course will typically seek a thematic focus different from the standard ENGL 112. This focus will be developed by the instructor and approved by the honors committee. The course continues the study of the modes of composition introduced in ENGL 111. The course emphasizes argumentation and research writing. Students will write at least six essays and a bibliography. Students will be introduced to library research methods, the avoidance of plagiarism, and formal documentation. Prerequisite: Acceptance in the honors sequence.

HUMANITIES
HUM 201 Introduction to the Humanities
3 semester credits
A survey of the humanistic disciplines: literature, philosophy, music, art, architecture, and theater designed to help students identify those qualities that make each discipline unique and to discover commonalities among these disciplines.

HUM 279 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Two semesters of attendance at Montana State University-Northern, approval of advisor, Dean of the College of Education, Arts and Sciences, Nursing, and cooperative education coordinator.

HUM 479 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience extending the student's learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Cooperative Education 279 or Junior standing and approval of advisor, Dean of the College of Education, Arts and Sciences, Nursing, and cooperative education coordinator. Pass/Fail only.

INTERDISCIPLINARY STUDIES
IDST 401 Interdisciplinary Seminar
3 semester credits
A seminar in which students will investigate how forms of philosophical, literary, artistic, scientific, and technological achievements both reflect and shape our society. Subject matter may be drawn from intellectual and technical responses to a particular societal issue or problem. Prerequisites: HUM 201 and Senior standing.

INDUSTRIAL AND ENGINEERING TECHNOLOGY
IET 480 Senior Project I
1 semester credit
This course is the proposal phase for a program faculty-approved technical project. Emphasis is placed on library research, design, specification, cost analysis, and project management. The student will submit a formal written report and give a public explanation of the project. This course meets part of the general education requirements for a capstone course. Prerequisites: Senior standing and advisor consent. Course Fee: $2.00

IET 481 Senior Project II
2 semester credits
This course is the implementation phase for a program approved-technical project. Emphasis is placed on construction, design, testing, and formal presentation. The student will submit a formal written report and give a public explanation and demonstration of the project. The student
will furnish all necessary materials. This course completes
the general education requirements for a capstone course.
Prerequisites: Senior standing and advisor consent, IET 480.

INFORMATION SYSTEMS ENGINEERING
TECHNOLOGY

ISET 230 Computer Hardware Support
3 semester credits
An introduction to current computer hardware leading to the
students’ ability to successfully pass the COMP/TIAA+
Certification exam.

ISET 300 Operating Systems Introduction
3 semester credits
Introduction to the basic principles of how operating systems
function. Concepts cover single user operating systems and
multi-user operating systems including the programming
requirements and considerations under each. Prerequisites:
CIS 110 or equivalent competencies, CIS 115, CIS 155 and
ISET 350 Advanced Java.

ISET 305 Digital Systems
3 semester credits
This course involves an introduction to programmable logic
devices and an in-depth study of a selected micro controller
system. Course Fee: $15.00

ISET 308 Industrial Electronics
4 semester credits
This course focuses on basic power circuits and machines.
Topics include power distribution systems, DC and AC
motors, power control circuits, transducers, and industrial
process control. Course Fee: $9.00

ISET 335 Computer/Network Security
3 semester credits
The computer/network security course provides a basic
overview of security policy, common threats and attacks and
the technologies that can address network security issues. It
also covers installation, configuration and basic
troubleshooting of security solutions. Students will be
required to successfully install and configure equipment in a
pre-determined lab environment. Pre-requisites:
Junior/Senior in ISET, completion of ISET 300 or similar
operating systems course.

ISET 350 Advanced Java Programming
3 semester credits
This is an advanced object oriented programming and
application development course using Java, a continuation of
CIS 155, Java Programming. This course will expand the
student’s knowledge of object oriented programming to
include graphical user interface development utilizing
programming language libraries. Advanced computer
programming topics including arrays and mathematical topics
including matrix multiplication and basic trigonometric
functions used in graphics programming will be covered.
Prerequisite: CIS 155.

ISET 355 Data Structures
3 semester credits
This is an advanced programming techniques course and a
survey of fundamental data structures. It covers pointers,
arrays, user defined data structures, abstract data types, time-
space complexity, algorithm proofs, program testing, and
operating system interactions. Computability and intractable
problems are discussed. Object oriented programming and
object oriented design techniques will be utilized.
Prerequisite: CIS 155.

ISET 360 Business Telecommunications and
Networking
3 semester credits
This course is an overview of network and communications
using the internet and LAN, WAN and MAN configurations.
This class will stress TCP/IP in relation to the OSI model.
Hubs, switches, and NIC’s will be configured and tested.
Students will be required to perform both out-of-class and in-
class homework using Windows NT, Windows 2000 and
Unix computers. Students will be required to install and set-
up software on a network. Some work will be performed in
teams. Prerequisite: CIS 110 or higher, CIS 155, ISET 350.
Course Fee: $5.00

ISET 361 Assembly I & Computer Architecture
3 semester credits
This course provides an advanced study of selected digital
systems. Topics will include digital design and fabrication
using ASIC, CPLD, FPLD devices as well as other
programmable digital logic with emphasis on fabrication of a
complete digital system. Other topics will include sensors,
analog to digital conversion, digital to analog conversion,
data logging, and telemetry systems. Prerequisite: ISET 305
or equivalent. Course Fee: $12.00.

ISET 365 Software Engineering
3 semester credits
This course continues CIS 270. It entails program
implementation, testing, debugging, and documentation of a
complete system. It includes project management techniques
such as ISO 9000 standards, Visual Basic, Access, ODBC
connections and programming logic. Prerequisites: CIS 110
or higher, CIS 115, CIS 155, CIS 171, and CIS 270.

ISET 371 Enterprise Databases Using Oracle
3 semester credits
In this course, the Oracle database server will be used for
application creation including analysis, design,
implementation, and testing of large scale, enterprise
database oriented projects. It covers advanced database
concepts including relational databases, client-server
applications and Oracle Database Administration.
Prerequisites: CIS 115 and CIS 171.

ISET 401 Interfacing
3 semester credits
The course focuses on the student’s education and experience
on specific technical projects. Students will complete
individual projects and then integrate the individual projects
into a group project. Emphasis is placed on research,
construction, testing, and presentation of individual and
group projects based on developing interfacing circuits for a
selected micro controller system. During the course the student will submit formally written reports and give public explanations and demonstrations of the projects. This course meets the general education requirement for a capstone course. Prerequisites: ISET 305 and senior standing. **Course Fee: $12.00**

**ISET 410 Enterprise Resource Planning**  
3 semester credits  
This class covers the application of selected behavioral and quantitative decision support tools, emphasizing problem identification, technique selection, and results or computerized solution interpretations. Topics include: decision models, resource allocation models, project management models, and forecasting models including software contracts, proposals, data warehousing and data mining. Prerequisites: CIS 110 or higher competencies, MATH 110 or MATH 112.

**ISET 430 Advanced Communications Systems**  
3 semester credits  
This course provides an advanced study of communications systems and circuits. Topics include FM circuits, antennas, transmission lines, and cellular and microwave systems.  
**Course Fee: $12.00**

**ISET 435 Network Routing and Security**  
3 semester credits  
Today’s companies need security professionals to protect and maintain their vital information. Security Administration course that builds an understanding of hacking, authentication, encryption, prevention and deterrence, viruses, worms, “Denial of Service” attacks, auditing, and scanning. Students learn to establish solid security policies, implement Intrusion Detection Systems, determine security threats, build deterrence and prevention systems, and audit their network for potential threats. Prerequisite: Junior or Senior standing, completion of ISET 335 or similar operating systems course.

**ISET 455 E-Commerce Programming**  
3 semester credits  
This course applies WWW and internet presentation and programming techniques for providing quality information content on internet and in house networks, including dynamic information generation and dissemination through the use of interactive database links, client-server connections, and distributed software architectures. Prerequisites: CIS 155 and CIS 171.

**ISET 471 Information System Engineering**  
3 semester credits  
Intensive Capstone Project requiring integration of knowledge and skills learned. This course should be taken in the last semester of attendance and requires completion of most of the student’s degree program before entrance.

**INDUSTRIAL TECHNOLOGY**  
**IT 100 Introduction to Technology**  
3 semester credits  
This course is a survey course designed to familiarize students with the educational requirements, talents, and responsibilities for careers related to industrial and engineering technology. The content of this course should provide the framework for materials to be presented in future math, science, industrial, and engineering technology courses. **Course Fee: $10.00.**

**IT 109 Introduction to Woodworking**  
3 semester credits  
A study in the use of equipment and procedures used in wood construction. Areas of concentration will be wood and related materials, joint design, adhesives, fasteners, hand tools, machine tools, setup and procedures, and safety. Emphasis will be on dedicated objectives with a final project. **Course Fee: $35.00**

**IT 111 Industrial Safety/Waste Management**  
2 semester credits  
A course designed to familiarize the student with proper safety practices and procedures. Course content will include protective clothing, handling of hazardous materials, OSHA regulations, workman's compensation, and first aid. Also, safe practices in using hand and power tools, scaffolds and ladders, chains and cables, compressed gasses, proper storage of tools and chemicals, and handling of hazardous waste will also be addressed. **Course Fee: $5.00**

**IT 130 Construction Technology**  
3 semester credits  
This course provides a study of contemporary principles and practices used in the construction industry with emphasis on the techniques used for interior and exterior building construction. Civil construction is also covered. Activities may include construction of a scale model or a community construction project. **Course Fee: $50.00**

**IT 209 Furniture & Cabinetmaking**  
3 semester credits  
Students will be introduced to the principles and practices of furniture and cabinet making. **Course Fee: $35.00**

**LEARNING EXPERIENCE ASSESSMENT PROGRAM**  
**LEAP 289**  
1 semester credit  
Students will develop a portfolio documenting their work and life experiences for evaluation for possible college credit which may used to meet degree requirements. Detailed policies and procedures governing the LEAP program may be found in the university policies and procedures manual at www.msun.edu.

**MATH FOR APPLIED SCIENCE**  
**MAAS 106 Elementary Technical Math**  
3 semester credits  
This course is intended for AAS-degree students enrolled in vocational programs who are not planning to transfer to other degree programs or institutions. This course is a basic mathematics course for developing mathematics skills through introductory algebra as they relate to technical programs. This course includes measurement systems, use of measuring tools, as well as development of area and volume concepts with respect to technical applications.

This course can be used to satisfy degree and graduation requirements in an Associate of Applied Science (A.A.S.)
degree. It can also be used as ‘free’ or ‘elective’ credits in a Bachelor of Applied Science (B.A.S.) degree; but it cannot be used to satisfy any other requirements for a B.A.S. degree. It cannot be used to satisfy any degree or graduation requirements for an associate of science, an associate of arts, a Bachelor of Arts or a Bachelor of Science degree.

MONTANA ADMINISTRATION OF SCHOOLS

MAS 104 Student Activity Programs
1 semester credit
Student Activity Programs is a one (1) credit workshop covering school activities. This workshop will cover topics such as school policy for activities, extracurricular fund accounting, handling the money, bookkeeping responsibilities, and reporting functions. One of the guidebooks for this seminar is the Student Activities Fund Manual published by the Montana Association of School Business Officials.

MAS 105 Pupil Transportation
1 semester credit
Pupil transportation is a one (1)-credit workshop that addresses school bus policies and transportation. The course covers the basic rules as defined in Montana Code 20-10. The course presents the definition of terms as provided in the Code as well as bus requirements, driver requirements, penalties, bus contracts, bids, duties of various entities, service areas, mileage, and reimbursement.

MAS 106 Food Services
1 semester credit
Food Services is a one (1) credit workshop to acquaint students with the fundamental laws relating to a school food service. The workshop will cover definitions, administration, record keeping, Federal Funding and the Food Services Fund.

MAS 107 School Safety
1 semester credit
School Safety is a one (1) credit workshop designed to present the basic topics of a safety program for a school. It discusses the idea of an accident free, safe work/school environment for all people involved in school activities. It presents the topics of policy, management, awareness, hazard recognition, and reporting.

MAS 108 Retirement System
1 semester credit
This one (1) credit workshop is a quick overview of the Montana Public Employees Retirement System. The course uses the Montana Public Employees Retirement System Handbook as a guide for the course. Supplemental information and updates will be presented in the course as well. Topic headings as provided in the handbook provide the basis for class activities. The handbook is published by the Public Employees Retirement Board.

MAS 130 Public Sector Ethics
3 semester credits
This course examines the values in the public sector that lead to organizational ethics. The clarification of values, value consensus, and value compliance are some of the topics covered in the course. The course uses various examples from all levels of government to emphasize value principles. The presentation is from the viewpoint of the individual administrator and draws on both the cultural standpoint and the functional standpoint.

MAS 268 School Law I
3 semester credits
This course teaches the legal requirements for schools as outlined in Section 20 the Montana Code. The course brings awareness to the student of the legal forces affecting today’s schools. This understanding will allow the student to grasp many of the daily issues that influence decision making in the school. The major headings for the laws are: General Provisions, State Boards and Commissions, Elected Officials, Teachers, Superintendents, and Principals, Pupils, School Districts, and School Instruction and Special programs.

MAS 269 School Law II
3 semester credits
School Law II is an introductory course on school financing as presented in Montana Code 20-9. It is intended to bring a rudimentary understanding of the major topics in school finance to those who may be responsible for handling the paperwork required for state reporting. The course covers topics such as: budgets, bonds, special purpose funds, grants, special levies, fund accounting and the administration of the above topics.

MATHEMATICS

STUDENT ENROLLMENT IN MATH 110, 112, 120, AND 125 IS CONTINGENT UPON SUCCESSFUL COMPLETION OF THE NECESSARY PREREQUISITE(S).

MATH 093 Developmental Mathematics
This course is designed for the student not ready for general-education-core mathematics. The course will cover concepts and topics from basic arithmetic through intermediate algebra. The course will be guided by a computer-based, interactive curriculum in the areas of arithmetic, beginning algebra, and intermediate algebra. The spirit of the course is to allow the student to enter any level within (guidance given to placement as per the university-placement procedure) these areas and proceed to proficiency for entrance to the general-education-core mathematics course required in his/her major. Placement is by ACT mathematics score or university-placement examination.

PLEASE NOTE: Students who successfully complete this course will not receive credits toward graduation; the grade earned in the class is not included in the student's grade point average. Three (3) credits are included in determining fees and financial aid eligibility, however. For a more complete description of a class with a 0XX number, students should refer to page 190 of this catalog under the "course numbering system".

MATH 094 Developmental Math I
Basic math course for developing mathematics skills through introductory algebra. Placement is by means of ACT scores or university placement examination Pass/Fail only.
PLEASE NOTE: Students who successfully complete this course will not receive credits toward graduation; the grade earned in the class is not included in the student's grade point average. Three (3) credits are included in determining fees and financial aid eligibility, however. For a more complete description of a class with an OXX number, students should refer to page 190 of this catalog under the "course numbering system".

MATH 095 Developmental Math II
A basic mathematics course for developing and re-enforcing math skills through intermediate algebra. Prerequisite: MAAS 106 or MATH 094 or placement by means of ACT scores or university placement examination. Pass/Fail only.

PLEASE NOTE: Students who successfully complete this course will not receive credits toward graduation; the grade earned in the class is not included in the student's grade point average. Three (3) credits are included in determining fees and financial aid eligibility, however. For a more complete description of a class with an OXX number, students should refer to page 190 of this catalog under the "course numbering system".

MATH 110 Math for Liberal Arts
4 semester credits
This course surveys a wide variety of topics including sets and logic, mathematical patterns, number systems, number theory, algebra, geometry, probability and statistics. The development of problem-solving skills is emphasized. Prerequisite: MAAS 106, or MATH 094, or MATH 095, or placement by means of ACT scores or university placement examination.

MATH 112 College Algebra
3 semester credits
Properties and theorems of the real and complex number systems. Study of the function concept including inverse functions, graphing techniques, linear, quadratic, polynomial, exponential, and logarithmic functions. Solving systems of equations in two or more variables using matrices, determinants, and matrix algebra. Prerequisite: MATH 095 or placement by means of ACT scores or university placement examination.

HON 113 Honors College Algebra
3 semester credits
Properties and theorems of the real and complex number systems. Study of the function concept, including inverse functions, graphing techniques, linear, quadratic, polynomial, exponential, and logarithmic functions. Solving systems of equations in two or more variables using matrices, determinants, and matrix algebra. This course must satisfy the core requirements of MATH 112, as determined by the mathematics faculty. The course will have a focus beyond the standard MATH 112. That focus will be developed by the instructor and approved by the Honors Committee. Prerequisites: Placement by means of ACT scores or University placement examination or consent of instructor, and acceptance in Honors sequence.

MATH 116 Applied Statistics
3 semester credits
This course introduces the study of statistics from descriptive statistics through regression analysis, sampling, correlation, and analysis of variance. Topics are investigated as they apply to real world data. Computers and calculators are used extensively. Prerequisite: MATH 095 or placement by means of ACT scores or university placement exam.

MATH 120 Mathematics for Elementary Teachers I
3 semester credits
All topics included are related to elementary mathematics education. Number topics include numeral systems, problem solving, set theory foundation of the real number system, arithmetic algorithms, statistics, probability, and algebra notions. Geometry topics include plane and solid shape classification and properties, congruence, similarity, symmetry, trigonometry, measurement, and transformations. Prerequisite: MATH 095 or placement by means of ACT scores or university placement examination. Course Fee: $5.00

MATH 121 Mathematics for Elementary Teachers II
3 semester credits
Topics relevant to elementary mathematics education, including algebra, statistics, and number theory. Focuses primarily on geometric concepts. Prerequisite: MATH 120. Course Fee: $5.00

MATH 125 Trigonometry
2 semester credits
Analytic trigonometry including trigonometric and circular functions, solutions of triangles with law of sines/cosines, solutions of trigonometric equations, identities, graphs, inverse functions, and vectors. Prerequisite: MATH 112.

MATH 130 Pre-Calculus
5 semester credits
Analytic trigonometry including trigonometric and circular functions, solutions of triangles with the law of sines/cosines, trigonometric equations, identities, graphs, inverse functions, vectors; mathematical induction, complex numbers, sequences and series, linear equations, conics, polar coordinates, and parametric equations. Prerequisite: Placement by examination or MATH 112.

MATH 133 Introduction to Calculus
3 semester credits
An intuitive approach to calculus. Differentiation and integration and positive reinforcement of concepts in algebra, trigonometry, and analytic geometry. Prerequisite: MATH 130 or MATH 112.

MATH 137 Calculus for Technology I
3 semester credits
An introduction to differential and integral calculus with emphasis on practical engineering technology applications. Prerequisites: MATH 130, MATH 133, or consent of instructor.
MATH 138 Calculus for Technology II  
3 semester credits  
Calculus with emphasis on engineering technology applications. Includes integration, infinite series, and differential equations. Prerequisite: MATH 137

MATH 140 Probability and Statistics  
4 semester credits  
Introduction to probability and probability distributions including fundamental principles of descriptive statistics, statistical inference, correlation, regression analysis, and analysis of variance. Prerequisite: MATH 112.

MATH 220 Calculus & Analytic Geometry I  
5 semester credits  
Developing the concepts of calculus and analytic geometry including rates of change, limits, derivatives and anti-derivatives, concepts of integration, and the application of integration. Prerequisite: MATH 130 or both MATH 112 and MATH 125.

MATH 221 Calculus & Analytic Geometry II  
5 semester credits  
Further development of the concepts of integration and applications, work with infinite series, plane curves, and parametric vectors and vector valued functions, and partial differentiation. Prerequisite: MATH 220.

MATH 279 Cooperative Education  
1, 3, 6 or 12 semester credits  
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Two semesters of attendance at Montana State University-Northern, approval of advisor, Dean of the College of Education, Arts and Sciences, Nursing, and cooperative education coordinator. Pass/Fail only.

MATH 310 Linear Algebra  
3 semester credits  
Study of Vector spaces and linear transformations which act on vector spaces, focusing on linear transformations and their matrix representations. Prerequisite: MATH 221.

MATH 317 Methods of Teaching Secondary Mathematics  
2 semester credits  

MATH 320 Computers in Math Education  
3 semester credits  
Use of computers in the classroom focusing on software systems in current use in University and public school situations. The software systems studied are used primarily in science and mathematics but are also adapted for use in developing communication skills.

MATH 323 Calculus and Analytic Geometry III  
3 semester credits  
Introduction to the calculus of several variables including partial derivatives, extremes, tangent planes, multiple integrals, and applications, and vector analysis. Prerequisite: MATH 221.

MATH 326 Differential Equations  
3 semester credits  
Ordinary differential equations and LaPlace Transforms. Prerequisite: MATH 221.

MATH 330 Abstract Algebra  
3 semester credits  
Introduction to mathematical groups, rings, fields, and polynomial rings. Prerequisite: MATH 221.

MATH 334 Modern Geometry  
3 semester credits  
Study of Euclidean Geometry, selected topics from non-Euclidean Geometry. Prerequisite: MATH 221.

MATH 335 Elementary Number Theory  
3 semester credits  
Selected topics from real number theory and congruencies. Prerequisite: MATH 221.

MATH 410 Numerical Analysis  
3 semester credits  
Introduction to numerical analysis including error analysis, real roots of equations, numerical integration, and numerical solutions of ordinary differential equations. Prerequisites: MATH 326 and one higher-level computer programming language course.

MATH 430 Seminar in Mathematics  
3 semester credits  
Holistic view of the mathematics previously taken by the students. Includes exploration and research in their special interests.

MATH 479 Cooperative Education  
1, 3, 6 or 12 semester credits  
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Cooperative Education 279 or Junior standing, approval of advisor, Dean of the College of Education, Arts and Sciences, Nursing, and the director of cooperative education. Pass/Fail only.

METALS TECHNOLOGY

METL 140 Introduction to Welding and Cutting  
3 semester credits  
An introductory course covering care and use of arc and oxyfuel welding equipment, regulators, torches, cylinders, power sources, electrodes, characteristics of operation, welding of steels and special applications. Introduction to techniques of welding mild steel. Mechanical properties of metals and types of joints are also covered. Course Fee: $50.00
METL 150 Shielded Metal Arc Welding
3 semester credits
A continuation of METL 140, additional training in welding horizontal, vertical, and overhead positions of mild steel. Emphasis is placed on alloys and special applications. Prerequisite: METL 140 or consent of instructor. Course Fee: $50.00

METL 154 Gas Arc Welding Processing
3 semester credits
Setup and operation of equipment and control of welding variables, types of power sources, and characteristics of operation, shielding gases, filler materials, quality assurance, and weld defects in metal arc welding, gas tungsten arc elding and flux cored arc welding. Prerequisite: METL 140 or consent of instructor. Course Fee: $50.00

METL 155 Machining Processes
3 semester credits
An introduction to machining. The student will become familiar with basic theory and operations performed on various manual and automated machine tools. Instruction includes the selection of speeds and feeds and the identification and conditioning of associated cutting tools. Course Fee: $15.00

METL 156 Welding Practice
3 or 6 semester credits
Additional welding practice offered for student enrollment in welding courses. This course may be repeated for credit. It can be repeated for credit for up to a total of 12 credits. Course Fee: $30.00 or $60.00

METL 185 Metal Fabrication
3 semester credits
A study of equipment, metals, and procedures used to design, fabricate, and finish welded projects. Students combine skills of drafting, welding, and problem solving in developing functional projects. Prerequisite: METL 140 or consent of instructor. Course Fee: $20.00

METL 255 Foundry and Patternmaking
2 semester credits
This course is designed to explore accepted industrial foundry techniques. Laboratory learning experience and individually directed research will emphasize pattern design and construction, various mold-making processes, and other industrial manufacturing processes. Course Fee: $15.00

METL 260 Repair and Maintenance Welding
3 semester credits
Theory and practice in repair and maintenance of commonly used metals using oxygen fuel, shielded metal arc (SMAW), gas metal arc welding (GMAW), and gas tungsten arc (GTAW) welding processes. Students work on practice exercises and "live" projects. Prerequisites: METL 140 and consent of instructor. Course Fee: $30.00

METL 279 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience in industry, business, government or community service agencies related to the program of study. Prerequisites: Two semesters of attendance at University of Montana-Northern, approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

METL 285 Welding Certification Procedures I
3 semester credits
Procedures and development of manual skills necessary to perform welds acceptable under a structural welding code. Prerequisite: METL 150 or consent of instructor. Course Fee: $50.00

METL/ART 353 Metal Sculpture*
3 semester credits
Metal Sculpture is a lecture studio course which is team taught by art and welding faculty. The course examines phases of the creative process from concept to criticism of the finished form. Both abstract and representational sculpture will be examined with emphasis on welded fabrication. Course Fee: $30.00

METL 356 Welding Certification Procedures II
3 semester credits
Laboratory applications to be taken following METL 285. Prerequisite: METL 285. Course Fee: $50.00

METL 357 Welding Certification Procedures III
3 semester credits
Laboratory applications to be taken following METL 356. Prerequisite: METL 356. Course Fee: $50.00

PLEASE NOTE: Students enrolling in METL courses may pay between $8 - $30/class in course fees. Those fees are in addition to tuition and other fees.

MANUFACTURING
MFGT 200 Manufacturing Processes and Materials
3 semester credits
An introduction to the fundamentals of manufacturing. Capabilities, typical applications, advantages, and limitations of material and process selection for manufacturing. Course Fee: $10.00

MFGT 279 Cooperative Education
1, 3, 6 or 12 semester credits
A planned supervised work-learning experience in industry, government, or community service agencies related to the University program of study. Prerequisites: Two semesters of attendance at Montana State University-Northern, approval of advisor, chairperson of department, and cooperative education coordinator. Pass/Fail only.

MFGT 341 CAD/CAM Applications
3 semester credits
A course in the principles and application of CAD/CAM and CNC technology. Students will solve problems associated with coordinate geometry, data-base exchange, G and M codes. Prerequisites: DRFT 156 and METL 155. Course Fee: $10.00
MFGT 342 CAD/CAM II
3 semester credits
A continuation in the study of G and M codes from MFGT 341 with emphasis in 3-dimensional CAD/CAM tool path definition. Students will use 3-dimensional models to create sweep surfaces, ruled surfaces, projected surfaces, surface revolutions, and Coons surfaces. Prerequisite: MFGT 341.
Course Fee: $10.00

MFGT 427 Quality Assurance
3 semester credits
Industrial methods of insuring quality in manufacturing through application of codes and standards, sampling techniques, control charts and implementation of a documentable quality assurance program. Prerequisite: MATH 110 or higher.

MFGT 479 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience extending the student's learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Cooperative Education 279 or Junior standing and approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

MUSIC
MUS 101 Introduction to Music History
3 semester credits
Survey of the fundamental elements of the music of Western civilization. Examination of the history of music and musical styles from the Middle Ages through the Romantic period.

MUS 110 Introduction to Music Theory
3 semester credits
Basic theory providing background in the rudiments of music reading and notation. Includes note and rhythmic reading, scales, intervals and triads. No prior music experience is required.

MUS 210 Voice Ensemble
1 semester credit
Designated for students who wish to further their experience in music by participating in small group or ensemble singing. Repertoire will be based on interests and abilities of the group members. May be repeated up to three times for credit. Prerequisite: consent of the instructor.

MUS 225 Applied Music
1 semester credit
Designed for students who wish to begin or further their experience in vocal or instrumental music. Lessons in piano, voice, or various instruments may be offered privately or in small groups. May be repeated up to three times for credit. Prerequisite: consent of the instructor. Course Fee: $10.00

MUS 301 Music of the Twentieth Century
3 semester credits
A survey of the composers, styles, techniques, trends, and technologies that have shaped the serious music of the 20th century. Prerequisite: MUS 101 or consent of the instructor.

NAS 105 Introduction to Native American Language
3 semester credits
Introduction to one of several Native American languages, concentrating on simple conversations and the relationship of language to culture. The particular language to be studied will vary depending on availability of instruction.

NAS 220 Introduction to Ethnic Indian Studies
3 semester credits
Interdisciplinary treatment of Native American studies. Provides general background and understanding of American Indian cultures.

NAS 310 Native Cultures of North America
3 semester credits
Background on the extent and diversity of Native American cultural groups in North America, including languages, geographic locations of cultural groups, and the material, spiritual, and artistic cultures of American Indian tribal groups.

NAS 330 American Indian Oral Tradition
3 semester credits
A study of the oral traditions of various American Indian cultures, including examination of Indian language families, oral history traditions, oral literature, ritual and spiritual observances, together with English translations of Indian memoirs, autobiographies, and religious works.

NAS 331/ENGL 331 Literature by and About Native Americans*
3 semester credits
A critical and cultural examination of a representative number of major works written about Native Americans by non-Native Americans and major works by Native Americans. Readings include mythology, poetry, essays, novels, and non-fiction.

NAS 350 Indian Law
3 semester credits
Treats the present applications and precedents of Federal Indian law and its historical development, including Indian treaties, tribal sovereignty, jurisdictional disputes, tribal and state powers of taxation, economic and environmental controls, and real property interests.

*Restricting, see “Dual Prefix Listed Courses” in “Graduation and General Education Requirements” section.
NAS 364/HIST 364 History of American Indians*
3 semester credits
History of American Indians from Pre-Columbian times to the present, with special emphasis on demographic shifts caused by encroaching European and American westward expansion, and relationships between Native Americans and immigrants.

NATURAL SCIENCES
NSCI 110 Survey of the Natural Sciences
3 semester credits
Introduction to aspects of the Biological, Physical, and Earth Sciences. The biology component emphasizes the structural and functional features of organisms, their classification, and their importance in the environment. The physical science component presents a non-mathematical approach to understanding some of the basic concepts in chemistry and physics. The earth science studies focuses on the interrelationships between geology, paleontology, astronomy, meteorology and oceanography. This course is required for elementary education majors. This course does not meet the laboratory science requirement. **Course Fee: $15.00**

NSCI 301 Essence of Science
3 semester credits
This is a lecture course covering the important scientific discoveries from the ancient Greeks to the development of modern molecular biology and the human genome project. The course lectures, readings and discussions will develop how science, the scientific method and resulting technology have led to the ascent of humans to their present state of power. Such an ascent has been made possible through the relationship of mathematics and the physical, chemical and biological sciences. Prerequisite: A college science course, junior standing or consent of the instructor. This course does not meet the laboratory science requirement.

NSCI 450 Undergraduate Research I
3 semester credits
Provides the opportunity to perform undergraduate research in a particular science area of interest as selected by the student; the research project will be initiated and completed under the counsel and guidance of departmental staff. Prerequisites: Appropriate science background and Junior standing. This course does not meet the laboratory science requirement. **Course Fee: $25.00**

NSCI 451 Undergraduate Research II
3 semester credits
Serves as a continuation of NSCI 450 and affords the option by which to complete a research endeavor in a selected science area. Prerequisite: NSCI 450. This course does not meet the laboratory science requirement. **Course Fee: $25.00**

NURSING
NURS 101 Nursing Syntax and Calculation
3 semester credits (3 hours lecture)
Course designed to be presented via computer assisted instruction and modular teaching methods. The content to be mastered will assist the pre-nursing student to gain the background skills needed to interpret medical terminology. The course will also provide the content necessary for the student to apply mathematical concepts to nursing medication administration.

NURS 128 Introduction to Nursing
6 semester credits (4 hours lecture/6 lab/clinical hours)
Introduces the role of the associate degree nurse as provider of care, manager of care, and member within the discipline. Emphasis is on the role of provider of care and human health needs. The nursing process, critical thinking, clinical decision-making, and health promotion are introduced. The course includes a clinical component to focus on application of these concepts. Prerequisite: Admission to the nursing. **Course Fee: $15.00**

NURS 130 Nursing Success I
3 semester credits (3 hours lecture)
This two-week elective course is designed to give incoming nursing students basic knowledge of study skills and test taking skills to enhance their success in their first year in the MSU-Northern nursing program. The American Psychological Association (APA) writing format, which is required for all papers written in the nursing program, is introduced. Information is provided on using the internet for nursing research and how to present appropriate documentation. **Course Fee: $15.00**

NURS 131 Nursing Success II
3 semester credits (2 hours lecture/3 lab/clinical hours)
This is an elective course for the incoming nursing students designed to provide an introduction to improve study skills and test taking abilities. Nursing skills such as developing nursing care plans through the use of the nursing process, using mathematics in the clinical setting and performing basic clinical skills are reviewed and practiced. Prerequisite: Admission to nursing.

NURS 136 Health Needs and Nursing Practice
6 semester credits (4 hours lecture/6 lab/clinical hours)
This is a theory and practicum course. This course builds on the development of the role of the associate degree nurse as provider of care. This course introduces and explores nursing care of individuals with common health care needs. Emphasis is on components of pharmacology, pathophysiology, and the introduction of wellness and health promotion of individuals and their family. Prerequisites: Successful completion of NURS 128 and MATH 110 or higher. **Course Fee: $15.00**

NURS 212 Transition to Associate Degree Nursing
3 semester credits (online with one day of lab/clinical)
This course facilitates transition of the LPN student into the ASN program. The nursing process, critical thinking, and the clinical decision making process are discussed. Clinical nursing competency is demonstrated.

NURS 218 Pharmacology for Nurses
3 semester credits (3 hours lecture)
This elective course is designed to facilitate the nurses understanding of pharmacological principles associated with medication administration. It reviews the use of clinical decision making processes and critical thinking used in drug therapy. A variety of medications used to meet specific patient needs is presented.
NURS 220 Psychiatric Mental Health/Illness
4 semester credits (3 hours lecture/3 lab/clinical hours)
This is a theory and practicum course. The process of critical thinking and clinical decision-making concerning individuals with mental health/illness needs are addressed. The focus is on therapeutic communication, behavioral and psychopharmacologic interventions. Clinical experiences provide an opportunity to apply theory to practice in institutional and community-based settings. Prerequisites: Successful completion of NURS 128, NURS 136, NURS 212, and MATH 110 or higher for LPN’s.

NURS 250 Adult Health/Illness Needs I
6 semester credits (3 hours lecture/9 lab/clinical hours)
This is a theory and practicum course focused on the care of the patient with medical-surgical health needs. This course builds on previous concepts of provider of care for individuals with health/illness needs in acute care settings. Clinical activities focus on application of these concepts. Prerequisite: NURS 128, NURS 136, and NURS 220. Course Fee: $25.00

NURS 251 Maternal-Child Health/Illness Needs
7 semester credits (5 hours lecture/6 lab/clinical hours)
This is a theory and practicum course. This course introduces the health/illness needs of the childbearing and childrearing families in both acute and community based settings. Clinical activities focus on application of these concepts. Prerequisites: NURS 128, NURS 136, and NURS 220. Course Fee: $25.00

NURS 252 Adult Health/Illness Needs II
6 semester credits (4 hours lecture/6 lab/clinical hours)
This is a theory and practicum course, which builds on the role of the nurse as provider of care and emphasizes the manager of care role for groups of individuals. Clinical activities focus on critical thinking and clinical decision making skills in the care of individuals with long-term care and rehabilitative needs. Course Fee: $25.00

NURS 253 Adult Health/Illness Needs III
6 semester credits (3 hours lecture/9 lab/clinical hours)
This is a theory and practicum course focusing on critical thinking and clinical decision making skills in the care of adults with increasingly complex health/illness needs. The transition to the graduate role integrates the roles of the provider of care, manager of care and member within the discipline in an acute care setting. Course Fee: $25.00

NURS 254 Principles of Nursing Practice
1 semester credit (online)
This is a theory course, which addresses the transition of the ASN student into a graduate nurse. Nursing practice standards, beginning management principles and professional issues are discussed.

NURS 279 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Two semesters of attendance at Montana State University-Northern, approval of advisor, Director of Nursing, Dean of the College of Education, Arts and Sciences, Nursing, and cooperative education coordinator. Pass/Fail only.

NURS 305 Nursing Ethics
3 semester credits (online)
The field of medical/nursing ethics has become more important as health care decisions have emerged into the public arena. Theories and principles used to address biomedical problems are drawn from the discipline of moral philosophy. The abortion debate, questions related to discontinuing feedings for clients and brain death are examples of legislative issues from the health care arena that have spurred public interest in ethical decision making. To operate as an advocate, nurses need to understand both the clinical and moral dimensions of the issues of patients and nurses caring for them. Prerequisite: NURS 128.

NURS 321 Theoretical Foundations of Nursing
3 semester credits (online)
Characteristics of nursing practice as a profession are discussed. Interrelationships of the health care delivery system and nursing roles, functions and clinical decision-making are analyzed. Theoretical bases/concepts of nursing practice are examined. Prerequisite: permission of instructor.

NURS 322 Health Assessment
3 semester credits (online)
Student's knowledge and skills in obtaining a comprehensive assessment of individuals across the lifespan are enhanced. Emphasis is on data collection through history-taking and physical examination in the context of family and environment. Prerequisite: permission of the instructor.

NURS 331 Nursing in Diverse Cultures
3 semester credits (online)
This elective course presents cultural concepts and the relationship to health/illness of individuals and families. The focus is on how culture influences nursing roles and clinical decision-making. Prerequisite: Permission of instructor.

NURS 344 Nursing Care of Clients with Complex Needs
3 semester credits (online)
Focus is on nursing care of clients/families with complex health/illness needs. Pathophysiological and psychosocial concepts are related to nursing roles and critical thinking. Prerequisites: NURS 321 and NURS 322

NURS 346 Gerontological Nursing
3 semester credits (online)
Biopsychosocial aspects of aging are explored in this elective course. Health/illness needs of the older adult and the impact of aging on the family and community are evaluated. Focus is on promoting functional ability and quality of life of the older adult. Prerequisite: Permission of the instructor.

NURS 347 Health Education
3 semester credits (online)
Principles of teaching/learning and the nurse's role as health educator are analyzed in this required course.
NURS 349 Clinical Preceptorship
3 semester credits (9 clinical hours)
This required practicum provides opportunity to explore one or more clinical practice areas. The student develops individual objectives aimed at increasing clinical decision making skills through critical thinking. The student will be under the direction of a BSN nurse, who is competent in the selected clinical area. Prerequisites: RN license, NURS 321 and NURS 322. Course Fee: $20.00

NURS 350 End of Life Care
3 semester credits (online)
This elective course is designed to explore the role of nurses in all aspects of end of life care. Focus will be on pain management, symptom management, cultural issues, ethical/legal issues, communication, grief and bereavement as the nurse provides holistic care to the patient and family.

NURS 440 Leadership and Management
3 semester credits (online)
Principles of leadership, management and organizational concepts are discussed. The nurse's role and functions as coordinator of care for individuals and groups within the health care system are explored. Prerequisite: NURS 321 and NURS 322. Course should be taken at the same time as NURS 441.

NURS 441 Leadership and Management Practicum
3 semester credits (9 clinical hours)
This practicum provides opportunity to apply leadership and management concepts in a health care system. Prerequisite: RN license. Course should be taken at the same time as NURS 440. Course Fee: $20.00

NURS 444 Nursing Research
3 semester credits (online)
Research methods and application to professional nursing practice are investigated. A research paper is developed and presented. Prerequisites: ENGL 112, statistics and/or permission of instructor.

NURS 446 Community Health Nursing
3 semester credits (online)
Nursing concepts and public health sciences are applied to the health of communities. Health promotion, maintenance, education, disease prevention and coordination of care are investigated. Application is on the individual, family and community as a client. Prerequisite: RN license. NURS 321 and NURS 322. Course should be taken at the same time as NURS 447.

NURS 447 Community Health Practicum
3 semester credits (9 clinical hours)
This practicum provides an opportunity to apply the community health nursing concepts. Prerequisite: RN license. Course should be taken at the same time as NURS 446. Course Fee: $20.00

NURS 479 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience extending the student's learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Cooperative Education 279 or Junior standing and approval of advisor, Director of Nursing, Dean of the College of Education, Arts and Sciences, Nursing, and cooperative education coordinator. Pass/Fail only

POWER GENERATION
PGEN 300 Alternative Power Sources
3 semester credits
This course examines the selection and application of alternate energy sources for power generation.

PHILOSOPHY
PHIL 200 Introduction to Philosophy
3 semester credits
Introduces the major problems and questions that have concerned philosophic thinkers from classical to modern times. Principal topics include issues of knowledge, truth, personal identity, ethics, justice, freedom, and religious belief, as discussed by such diverse thinkers as Plato, Aristotle, Descartes, Locke, Hume, Kant, Mill, Russell, Sartre, Austin, Rawls, and Rorty.

PHIL 210 Ethics
3 semester credits
Treats the major thinkers in the development of modern ethical concepts. Principal topics include ethical theories of hedonism, self-realization, empiricism, Stoicism, utilitarianism, voluntarism, existentialism, and linguistic analysis. Ethical works discussed include those of Plato, Aristotle, Epictetus, Epicurus, Aquinas, Eckhart, Machiavelli, Hobbes, Spinoza, Hume, Kant, Bentham, Mill, Kierkegaard, Nietzsche, Marx, Dewey, Moore, Sartre, Ayer, Firth, Austin, and Rawls.

PHYSICAL SCIENCE
PHYS 114 Foundations of Physical Science
3 semester credits
This is an introductory course primarily for non-science majors and students lacking high school physics and chemistry. The course includes principles of chemistry and physics. A non-algebra approach is used to study mechanics, heat, atomic structure, chemical combinations, electricity, and fundamentals of earth science. This course does meet the laboratory science requirement. Course Fee: $10.00

PHYS 231 Fundamentals of Physics I
3 semester credits
This is a general physics course covering measurement and experimental error, kinematics, dynamics, work and energy, momentum, rotational motion, properties of solids and fluids, thermal physics, properties of ideal gases, kinetic theory, and thermodynamics. Prerequisite: MATH 112 and MATH 125 or equivalent. MATH 125 may be taken concurrently with PHYS 231, but it is highly recommended that it be taken prior to enrollment in PHYS 231. Concurrent enrollment in PHYS 234 is required. Broadfield Science majors must take the 2 credit lab; Technology majors will take the 1 credit lab. Course Fee: $10.00
PHYS 232 Fundamentals of Physics II
3 semester credits
A general physics course covering properties of periodic motion, properties of waves, properties of light, geometric optics, optical instruments, wave optics and electric charge, electric field, electric potential, capacitance, electric current, resistance, magnetism, electromagnetic induction, alternating-current circuits, relativity and atomic structure. Prerequisite: PHYS 231, MATH 112 and MATH 125. Co requisite: PHYS 235. Broadfield Science majors must take 2 credits lab; Technology majors will take the 1 credit lab. Course Fee: $10.00

PHYS 234 Fundamentals of Physics I Lab
1 or 2 semester credits
This laboratory course will include experiments related to work and mechanical energy, properties of sound and properties of thermodynamics. Co requisite: Enrollment in PHYS 231. Broadfield Science majors enroll in 2 credits; Technology majors enroll in 1 credit lab.

PHYS 235 Fundamentals of Physics II Lab
1 or 2 semester credits
This laboratory course will include experiments related to the properties of light, electricity and atomic structure. Co requisite: Enrollment in PHYS 231. Broadfield Science majors enroll in 2 credits; Technology majors enroll in 1 credit lab.

PLUMBING
PLMB 100 Introduction to Plumbing Trades
4 semester credits
This course covers tools in the plumbing trade and how to use them: tools powered by electricity, batteries, and pressurized air, such as drills, saws, grinders, sanders, slings, hardware, hoists, rigging operations, critical safety issues, and accepted rigging techniques and practices. Course Fee: $25.00

PLMB 110 Introduction to Plumbing and Drawing
1 semester credits
This course introduces the history of plumbing from ancient times to current plumbing training programs, and also covers professional practices, career opportunities, and some basic safety. This course reviews the blueprints that are included in a building’s plans and then moves on to specific plumbing drawings, such as isometric and oblique pictorial drawings, orthographic drawings, and schematic drawings. It also covers drawings of fixtures, assembly drawings, and cutaway drawings. This course includes an application of plumbing math. Course Fee: $5.00

PLMB 120 Introduction to Piping Systems
3 semester credits
This course describes the various types of plastic piping and fittings, what each is used for, and the measuring, cutting, and joining techniques for each type; hangers and supports used with plastic pipe, various types of copper tubing and fittings, measuring, cutting, and joining techniques, two types of cast-iron pipe (hub and no-hub). This course also describes carbon steel pipe; an overview of the drain, waste, and vent (DWV) systems; basics of traps, drains, vents, DWV fittings, and cleanouts and an overview of the water distribution system. Course Fee: $30.00

PLMB 125 Introduction to Plumbing Fixtures
2 semester credits
This course covers the various types of fixtures that plumbers install, including sinks and lavatories, bathtubs and showers, water closets and urinals, garbage disposals and dishwashers, and laundry trays and mop basins. Course Fee: $15.00

PLMB 170 Plumbing Codes
2 semester credits
This course is a study of the State of Montana plumbing code as it regulates environmental sanitation for the protection of public health. It also includes a study of the materials and installation methods that require a minimum of service and maintenance. Course Fee: $5.00

PLMB 200 Pipe Fitting Tools and Motorized Equipment
3 semester credits
This course covers general hand tool safety and procedures for identifying, selecting, inspecting, using, and caring for pipe vises and stands, pipe wrenches, levels, pipe fabrication tools, and pipe bending and flaring tools. Course Fee: $25.00

PLMB 210 Advanced Blueprint Reading
2 semester credits
This course introduces plot plans, structural drawings, elevation drawings, as-built drawings, equipment arrangement drawings, isometric drawings, spool sheets, and detail sheets in the plumbing industry. Course Fee: $5.00

PLMB 230 Hangers, Supports, and Field Testing
2 semester credits
This course describes pipe hangers and supports found on the job site and the selection and performance of field tests of plumbing installation. Course Fee: $10.00

PLMB 250 Special Piping
3 semester credits
This course explains how to assemble flared and compression joints using copper tubing and the installation of hydronic piping. Course Fee: $30.00

PLMB 260 Introduction to Control Circuit Troubleshooting
2 semester credits
This course covers the operation, testing, and adjustment of conventional and electronic thermostats as well as the operation of common electrical and electronic circuits used to control HVAC systems. Course Fee: $30.00

PLMB 270 Hydronic Heating and Cooling Systems
2 semester credits
This course covers operating principles, piping systems, and preventive maintenance pertaining to the servicing of boilers, chillers, chilled water systems, absorption systems, steam systems, and system traps. Course Fee: $15.00
PLMB 280 Energy Management  
1 semester credits  
This course explains how computer and microprocessor controls are used to manage zoned HVAC systems in residential and commercial buildings. **Course Fee: $5.00**

PLMB 285 System Startup and Shutdown  
1 semester credits  
This course covers procedures for the start-up of hot water and steam heating systems and chilled water systems. Emphasis is on start-up after initial equipment installation or after an extended period of shut-down. **Course Fee: $5.00**

POLITICAL SCIENCE  
POL 134 American Government  
3 semester credits  
Study of the American federal republic and political system. Focuses on the constitutional structure, limits and operation of the federal government, protection of individual rights, federal-state relations, political processes, and dynamic changes in the government system over time.

POL 201 State and Local Government  
3 semester credits  
Introductory study of state and local government, including constitutions, legislatures, supreme courts, governors' administrative agencies in their historic and contemporary settings. County and city governments are included in the scope of this course.

POL 235 Political Ideologies  
3 semester credits  
Introduction to such modern political ideologies as Classical Liberalism, Democratic and Totalitarian Socialism, Conservatism, Fascist Totalitarianism, and Environmentalism. Focuses on the nature of ideological thinking, the logic and internal structures of various ideologies, and their effects in practice.

POL 303 American Constitution  
3 semester credits  
A study of the origin and development of the American Constitution including the separation of powers, the Executive, Legislative, and Judicial branches of government.

POL 344 International Relations  
3 semester credits  
A study of the principal forces, movements, ideologies, and instruments of international politics. Prerequisite: consent of the instructor.

POL/ECON 348 Public Choice and the Public Interest*  
3 semester credits  
This is a study of political economy focusing on what modern public choice and public interest models say about the proper boundaries of the public and private sectors. It analyzes the rent-seeking activities of special interest groups and the relative impacts of altruism and self-interest in explaining political behavior and governmental policies in democratic systems. The material focuses on the nature of public goods, market failures, government regulation, and wealth redistribution, among other topics. Theoretical, historical, and empirical forms of evidence are brought to bear on the issues.

POL 401 Seminar in Political Science  
3 semester credits  
Student participation in the examination of contemporary political ideologies. Contemporary issues in political science, including the structures of political parties, are discussed. Prerequisite: Junior standing.

PSYCHOLOGY  
PSYC 101 Introduction to Psychology  
3 semester credits  
An introductory survey of the scientific discipline of psychology. Attention will be given to such standard topics as the nature of empirical, scientific research, and the learning process, intelligence, perception, personality, motivation, emotion, cognitive processes, abnormal behavior, human sexuality, psi-phenomena, major systems of psychotherapy, human growth and development, psychobiology and physiology, social psychology, memory, stress, forensic and industrial psychology. Students will be guided towards an appreciation of the six major theoretical perspectives that psychology has to offer. As psychology is intended to describe, predict, understand, and to control behavior, students should emerge from the course with an increased degree of enlightened control over their lives.

PSYC 205 Human Growth and Development  
3 semester credits  
Human development is the study of how and why people change over time, as well as how and why they remain the same. Thus, this course will provide an overview of what is empirically known about all the periods of life from conception to death of our physical vehicles. We shall examine what is known scientifically about physical, cognitive, and psychosocial development in humans. We shall examine how changes in each one of these major areas impacts change in each of the other two. The relative importance of nature and nurture will be examined for each of the various life stages. The issues of native temperament and physical appearance will be given special emphasis as these areas impact psychosocial and cognitive development. A considerable amount of time will be devoted to what is known about methods of effective/ineffective, successful/unsuccessful parenting. Finally, we shall look at the physical, cognitive, and psychosocial aspects of our final years of life.

*Restricting, see “Dual Prefix Listed Courses” in “Graduation and General Education Requirements” section.
PSYC 315/515 Psychology of Development and Adjustment
3 semester credits
In this course students will study the developmental process from conception to death in light of the changes/challenges that each individual will face throughout his/her life. Adjustment will be studied in light of coping strategies and therapeutic interventions. Sequences and patterns of psychological, biological, and social development are emphasized. Graduate credit requirements are described in the course syllabus.

PSYC 360/560 Personality
3 semester credits
A survey course examining major theories of personality development and change. Particular attention will be paid to the impact of lifestyle upon brain biochemistry, and to the major "trait" approaches to assessing and understanding human personality. The causes, treatment, and prevention of severe shyness will be accorded special attention. Graduate credit requirements are described in the course syllabus.

PSYC 461/561 Abnormal Psychology
3 semester credits
This course will survey the psychotic, neurotic, and life adjustment disorder/diseases to which humankind is subject. Each problem area will be analyzed as to its etiology, behavioral symptomology, and viable therapeutic modalities. Emphasis will be placed on the biological underpinnings of behavioral pathology, and upon the ways whereby such underpinnings influence social learning and environmental experiences. Additional emphasis will be placed on classical and operant conditioning as these processes relate to the development of counterproductive, abnormal behavior patterns. The course will also examine the impact of lifestyle (including thinking style) upon brain biochemistry. Finally, the course will examine several of the major theories (and related research) of personality. Graduate credit requirements are described in the course syllabus.

PSYC 650 Advanced Educational Psychology
3 semester credits
This course is designed to allow students to explore educational psychology domains in-depth. The current domains of exploration included (a) the nature, value and application of educational psychology research to instruction, (b) an in-depth exploration of learning theory, and (c) the application of learning theory to instruction. Each of these domains is addressed within a broad view of learning and instruction including bridging the gap between research and practice. Thus, this course has a dual emphasis: research and instruction.

SMALL BUSINESS MANAGEMENT
SBM 338 Promotion
3 semester credits
The course will build a strong foundation in the primary skills of advertising, public relations, direct marketing, and promotional techniques. These skills will be related to such topics as forecasting, budgeting, and assessing promotional efficiency. Developing a promotional campaign and the related components of costs, creativity, ethics, and regulations will also be incorporated. Improving these conditions on the job.

SBM 402 Small Business Management
3 semester credits
Practical analysis of principles of small business management and owner-operated businesses are covered including management methods, location decision making, financial support for startups, management, common administration and control problems, and analysis of trends, professional practices, and family applications. Prerequisites: BUS 300 and BUS 335.

SBM 416 New Venture Development
3 semester credits
An introduction to the subjects of background research, financial analysis and business plan development necessary for the start of a new business or venture. Analysis of entrepreneurial skills, the formation of the venture management teams, and dealing with venture capital sources are also covered in the course. Prerequisite: Senior standing or permission of instructor.

SOCIOLOGY
SOC 101 Introduction to Sociology
3 semester credits
Study of the concepts and principles of group behavior and of the impact which society has upon the programming of the mind and thought processes. Analysis of the components of culture and of the structure of society, as well as social organization and differentiation will also be emphasized. Introduces the essentials of micro sociology and macro sociology.

SOC 102 Social Problems
3 semester credits
A study of the antecedent causes and consequences of such major social problems as violent crime, drug abuse, alcoholism, family violence, divorce, the population explosion, war, maltreatment of the aged, juvenile vandalism, unplanned pregnancy, sexual deviance, riot behavior, religious cults and zealous fundamentalism, are provided with a sociological perspective. Key sociological theories (e.g., interactionism, functionalism, and conflict) are critically examined. Prerequisite or co-requisite: SOC 101.

SOC 240 Social Psychology
3 semester credits
Comprehensive survey of social psychology as an interdisciplinary field of inquiry. Incorporates such standard social psychology topics as socialization, communication and language, perception and beauty, attitude and attitude change, norms, social order and conformity, roles and the ways they shape personality, situational influences on behavior, interpersonal attraction, aggression and conflict, conflict resolution, group behavior and gender roles.

SOC 245 Criminology
3 semester credits
Examination of the various sociological, psychological, and biological theories that purport to explain criminal behavior.
SOC 255 Sociology of the Family
3 semester credits
In-depth examination of the roles of the social institutions known as courtship, marriage, family, and divorce and the interrelationship among these and such other social institutions as work, education, religion, and the political system.

SOC 315 Race, Gender and Ethnic Relations
3 semester credits
Provide knowledge and understanding of such major minority groups as Native Americans, Chicanos, Puerto Ricans, Cuban Americans, Chinese Americans, Japanese Americans, Jews, and women. Some attention will also be devoted to various nationality groups that suffered severe prejudice and discrimination during earlier decades of American history. Various theoretical and research perspectives pertaining to prejudice and discrimination will be examined.

SOCIAL SCIENCES
SOSC 201 Introduction to the Social Sciences
3 semester credits
A systematic and comparative study of the interrelationships among the traditional social sciences (i.e., anthropology, economics, geography, history, political science, psychology, and sociology), together with a review of the most important social science individuals and their major works.

SOSC 279 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Two semester of attendance at Montana State University-Northern, approval of advisor, Dean of the College of Education, Arts and Sciences, Nursing, and cooperative education coordinator. Pass/Fail only.

SOSC 325/EDUC 325 Methods of Teaching History and Social Sciences*
3 semester credits
This course is a study of the theories and practices employed in teaching history and the social sciences on the secondary level. Prerequisites include: A minimum of 15 semester hours in history and the social sciences and Junior standing, Level I Admission to Teacher Education, EDUC 300 and EDUC 376. Co-requisite: EDUC 339 Secondary Field Experience.

SOSC 479 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience extending the student's learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Cooperative Education 279, or Junior standing and approval of the advisor, Dean of the College of Education, Arts and Sciences, Nursing, and cooperative education coordinator. Pass/Fail only.

SPANISH
SPAN 105 Elementary Spanish I
4 semester credits
Introduction to Spanish, emphasizing conversational ability but paying appropriate attention to reading comprehension and correct written expression. Extensive use of spoken Spanish in the classroom, small group practice sessions, and individual conferences with the instructor. Students desiring further Spanish study may register for additional credits of Spanish. Two semesters of Spanish 105 (8 semester credits) constitute the first year University Spanish sequence. Students with prior Spanish study should consult the instructor for placement.

SPAN 106 Elementary Spanish II
4 semester credits
Elementary Spanish II is a continuation of Elementary Spanish I emphasizing conversational ability but paying appropriate attention to reading comprehension and correct written expression. Extensive use of spoken Spanish in the classroom, small group practice sessions, and individual conferences with the instructor will be features of this course. Prerequisite SPAN 105. Two semesters of Spanish 106 (8 semester credits) constitute the second year University Spanish sequence. Students with prior Spanish study should consult the instructor for placement.

SPEECH
SPCH 141 Fundamentals of Speech
3 semester credits
A study and utilization of the principles and techniques of oral communication. Problems of research, preparation, content, organization, argument, and delivery are examined.

SPCH 142 Interpersonal Communication
3 semester credits
A study of the theory and application of verbal and nonverbal communication as they occur in relatively unstructured person-to-person settings.

SPCH 240 Small Group Communication
3 semester credits
An introduction to the theory and practice of purposeful leadership and participation in group, committee, conference, and public discussion. A focus of this course will include analysis and participation in small groups, how small groups function and an examination of conflict management in small groups. Group interaction will focus on a service learning activity that has outreach components.

SPCH 310 Organizational Communication
3 semester credits
This course features the study of the communication process in an organizational society. This study includes an examination of contrasting theories of organization. The class will also examine the role of communication in different types of organizational structures, the impact of organizational culture and performance, and the nature of communication on different levels within the organization. Particular attention will be paid to the constituting nature of communication in contemporary organizations.

*Restricting, see “Dual Prefix Listed Courses” in “Graduation and General Education Requirements” section.
SPCH 320 Communication Theory
3 semester credits
Examination of the current state of representative theorizing about communication. Includes a summary of communication theories and examination of the root assumptions, conceptualizations, and explanatory power of the major theories of the nature of communication.

SPCH 485 Special Topics in Communication
3 semester credits
Topics of special interest as announced in the "Schedule of Classes". May be repeated for credit if there is no duplication of topics.

TRANSITIONAL STUDIES
TRST 102 Study Skills
1 semester credit
Introduction to methods of approaching basic study skills in University designed for students who feel they need help with basic study habits to be successful. Emphasis is placed on strategies for test taking, memory, time management, textbook mastery, tapping creativity and exploring individual learning styles in order to achieve personal goals.

TRST 103 Transitional Life/Career Exploration
1 semester credit
This course is designed to assist the student in decision making and career development skills. Through interactive coursework and a variety of evaluative mechanisms, the student will explore career options as well as career "fitness" and the academic preparation/expectations necessary to achieve success in a chosen field in order to design an individualized plan of action to meet academic and career goals. The course is designed to be a "first step" to success for the new University student.

TECHNICAL SCIENCE
TSCI 110 Introduction to Water and Wastewater
4 semester credits
Introduction to drinking water and sewerage/wastewater treatment systems. Topics include plant layout, process control, distribution and collection systems, federal and state regulations, facultative lagoons, and industrial treatment processes and laboratory procedures. The laboratory procedures are not the kinds of experiences that satisfy the laboratory science requirement. This course does not meet the laboratory science requirement.

TSCI 205 Distribution Systems
3 semester credits
Introduction to the topics included on the Montana State Examination. Laboratory experience in basic mechanical and plumbing skills, identification, selection, operation, maintenance and repair of hardware and piping systems, and safety procedures commonly used by water or wastewater treatment plants. The laboratory procedures are not the kinds of experiences that satisfy the laboratory science requirement. This course does not meet the laboratory science requirement.

TSCI 206 Applied Water Hydraulics
3 semester credits
Applied hydraulics including study of water and wastewater collection and distribution, maintenance, and safety. Includes lecture and laboratory hours, but the laboratory hours are not the kind of experience that satisfies the laboratory science requirement. This course does not meet the laboratory science requirement.

TSCI 230 Introduction to Groundwater Concepts
3 semester credits
An introduction to the basic concepts governing groundwater including geology, chemistry, contamination, contaminant transport, and remediation techniques. Attention will be focused on the use of groundwater as a source for municipal supply. Includes some laboratory applications. The laboratory procedures are not the kinds of experiences that satisfy the laboratory science requirement. This course does not meet the laboratory science requirement.

TSCI 231 Wastewater Processes
3 semester credits
An introduction to industrial and municipal wastewater treatment and preliminary, primary, and tertiary treatment processes and methods. Specific topics covered include characteristics of wastewater, sampling and testing procedures for wastewater analysis, sludge treatment and disposal, activated sludge process control, legal aspects of sewage disposal, chlorination records and report keeping, maintenance and operation, and safety. Concurrent enrollment in TSCI 232 is required. Prerequisites: TSCI 110, CHEM 111, and MATH 112.

TSCI 232 Wastewater Processes Laboratory
2 semester credits
Laboratory and on-site activities associated with wastewater treatment and analysis. Concurrent enrollment in TSCI 231 is required. This course taken in conjunction with the lecture portion of the course (TSCI 231) meets the laboratory science requirement. Course Fee: $20.00

TSCI 233 Water Treatment Processes
3 semester credits
Water treatment processes including collection and distribution, sedimentation, filtration, chlorination, softening, aeration, fluoridation, corrosion and odor control, maintenance water bacteriology and chemistry, and basic hydraulics and electricity. Concurrent enrollment in TSCI 234 is required. Prerequisite: TSCI 231. Course Fee: $20.00

TSCI 234 Water Treatment Processes Laboratory
2 semester credits
Laboratory and on-site activities associated with water treatment processes and water analysis. Concurrent enrollment in TSCI 233 is required. This course taken in conjunction with the lecture portion of the course (TSCI 233) meets the laboratory science requirement.
TSCI 279 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to water quality studies. Prerequisites: TSCI 111, two semesters of attendance at MSU-Northern, approval of advisor, Dean of the College of Education, Arts and Sciences, Nursing, and cooperative education coordinator. Pass/Fail only. This course does not meet the laboratory science requirement.

TSCI 304 Fuels and Lubricants
3 semester credits
Petroleum products and their application to the fuel and lubricating requirements of automotive and diesel vehicles. Laboratory tests related to octane, distillation, volatility, viscosity, carbon residue, API degree, and dropping point of greases. Chemical analysis will be made by gas chromatography and infrared. Includes lecture and laboratory hours. This course does meet the laboratory science requirement.

TSCI 320 Environmental Analytical Techniques
2 semester credits
Focuses upon the chemical, physical, and biological analytical techniques that are commonly used in performing environmental health and water quality assessments, and involves extensive field and laboratory work. Offered alternate years. Prerequisite: basic chemistry course. This course does meet the laboratory science requirement. Course Fee: $15.00

TSCI 415 Pollution Prevention
3 semester credits
An in-depth examination of the process of systematically developing and implementing a pollution prevention program, focusing on developing an awareness of technology applications which have potentially harmful environmental impacts. Case studies and field experience are included such as Decision Support Systems and Water Quality Models. This course does not meet the laboratory science requirement.

TSCI 420 Applied Water Quality Technology
3 semester credits
Computer techniques utilized for the acquisition of data, the handling of data generated, methods of data evaluation including statistical evaluation and data presentation used in the water quality profession. Includes introduction to methods of determining water rates, fees, and amortization of capital costs necessary to operate a water utility. This course does not meet the laboratory science requirement.

TSCI 479 Cooperative Education
1, 3, 6 or 12 semester credits
A planned and supervised work-learning experience extending the student's learning experience in industry, business, government, or community service agencies related to water quality studies. Prerequisites: Cooperative Education 279 or Junior standing and approval of advisor, Dean of the College of Education, Arts and Sciences, Nursing, and cooperative education coordinator. Pass/Fail only. This course does not meet the laboratory science requirement.

TECHNICAL SALES AND SERVICE
TSS 222 Customer Service
3 semester credits
The course is designed to be a first exposure to the ideas of identifying and fulfilling customer needs. It leads the students through steps on getting to know the customer, developing a customer report card, examining customer satisfaction through customer eyes versus company eyes, and building a customer satisfaction measuring system.

TSS 246 Technical Sales and Service
3 semester credits
The purpose of this course is to acquaint the student with the sales methods available for the professional sales arena and to develop the framework for preparing professional sales plans. The students will work their way through basic one-on-one small item sales to counter sales, to retail floor sales, to single item industrial sales, to multi-item industrial sales. An emphasis will be put on fast moving technology that requires detailed specifications in sales activities.

TSS 248 Retail/Distributorship
3 semester credits
This course addresses issues that would be of concern to a person interested in a retail career as an owner, a manager of an enterprise, or an employee looking to the future. Such topics as organizing and financing, location decisions, merchandise and expense planning, inventory management, pricing, materials handling, design and layout, and promotions will be discussed. Part of the course will focus on the distributorship as a special form of retail franchising.

TSS 408 Technical Sales Seminar
3 semester credits
This is a senior level class requiring application of previous course work dealing with marketing and sales. The course will use detailed, in-depth analysis of popular case studies. Students will be expected to present legitimate resolutions to chosen case problems as individuals and as members of an analysis team.

VOCATIONAL EDUCATION
VOED 350/550 Principles of Industrial/Technology Education
3 semester credits
An introductory course designed for the industrial technology student to provide a survey and appreciation for the social and economic values of all forms of education in a democratic society. Major areas of inquiry will center around program requirements, historical development, career opportunities, methods of organizing and advising youth groups, and the major academic clusters of the degree, i.e., energy power transportation, production technology, communication technology, and construction technology. Graduate credit requirements are described in the course syllabus.

VOED 360/560 Analysis & Prep Lab Management
3 semester credits
This course will provide the student the opportunity to gain an understanding of the basic industrial materials and design applications that form the foundation of our technological society and environment. The course will also provide the 5-
12 technology education teacher with information related to
effective planning, organizing and controlling of technology
facilities. **Graduate credit requirements are described in
the course syllabus.**

**VOED 370/570 Methods of Teaching
Industrial/Technology Education**
3 semester credits
This course is designed to develop skills in teaching
industrial technology education. The course will provide a
study of the curriculum materials and techniques needed for
effective instruction. Prerequisites: Level I Admission to
Teacher Education, EDUC 300, EDUC 376, VOED 350 and
VOED 360 (VOED may be concurrent). Co-requisite:
EDUC 339 Secondary Field Experience. **Graduate credit
requirements are described in the course syllabus.**

**VOED 605 Coordination of Cooperative Programs**
2 semester credits
Organization, administration, and supervision of cooperative
programs.

**VOED 606 Assessment Techniques in Vocational
Education**
3 semester credits
Teacher made tests; formal and informal assessment;
alternative assessment; the validity, reliability, and methods
of making performance type tests.

**VOED 608 Curriculum Construction in Vocational
Education**
2 semester credits
Methods and procedures for determining curriculum content
and organization in vocational education.

**VOED 613 Research Practicum**
3 semester credits
An individualized course designed to provide the student
with the opportunity to acquire practical experience in
methods of educational research. Will include a study and
review of previous research related to the individual’s project.

**VOED 618 Survey Techniques in Vocational
Education**
2 semester credits
Techniques for community or area surveys to determine
possible needs for types of vocational education programs.

**VOED 619 Seminar in Vocational Education**
3 semester credits
Contemporary practices that arise in vocational education
relative to methods, content, practices, materials and
administration of vocational programs.

**VOED 621 Productivity and Organized Labor**
3 semester credits
The historical development of the labor movement in the
United States; factors involved in hiring employees and in
determining productivity. Emphasis on major labor
disturbances, federal legislation, and personnel.

**VOED 622 History and Philosophy in Vocational
Education**
3 semester credits
Historical and philosophical foundations of Vocational
Education and its relationship in the total education program.
Emphasis on current issues, historical events, and people that
contributed to Vocational Education.

**VOED 623 Administration, Supervision, and
Evaluation of Vocational Education Programs**
3 semester credits
Techniques used in administration, supervision, and
evaluation of Vocational Education classes and programs.
Emphasis on accountability and improvement of instruction;
evaluation techniques for instruction; financial
accountability; and sources and levels of administration.

**VOED 624 Vocational Education for Students with
Special Needs**
3 semester credits
Historical and legislative information on students with
special needs. Techniques and strategies for assisting students
with special needs in Vocational Education. Emphasis on
defining students with special needs; techniques, strategies,
and methods for curriculum modifications, instruction and
assessment; school-to-work transition; and practical
suggestions for ensuring success for students.

**VOED 625 Legislation and Regulations Governing
Vocational Education**
2 semester credits
Recent federal and state legislative activities, executive rules,
and regulations responsible for the improvement of
instruction with an emphasis placed on financing vocational
education.

**VOED 647 Organizing and Teaching Adult
Education**
3 semester credits
Methods of organizing, promoting and conducting adult
Vocational Education programs. Emphasis placed on how
adults learn.

**VOED 648 Planning Vocational Education
Programs**
3 semester credits
Factors involved in planning vocational facilities and
programs to meet specific objectives.

**VOED 680 Supervised Field Experience in
Vocational Education**
4 semester credits
An MSU-Northern directed practical experience in schools
and/or other public or private institutions wherein the student
is provided the opportunity to acquire 200 hours of
professional experience in an area other than his/her
employment situation.
ADMISSION

GENERAL INFORMATION

ACCESS TO THE UNIVERSITY
Montana State University-Northern is committed to a program of equal opportunity for education, employment, and participation in University activities without regard to race, color, sex, age, religion, marital status, sexual orientation or preference, creed or political belief, national origin, or because of mental or physical disability, or status as a Vietnam era or disabled veteran. This right shall be guaranteed to all students presently enrolled, students applying for admission, employees, and applicants for employment at Montana State University-Northern. Persons with inquiries or complaints regarding discrimination should contact the Director of Human Resources and Payroll, (406) 265-3710, Montana State University-Northern, or Director, Office of Civil Rights, Federal Office Building, 1244 Speer Boulevard, Denver, Colorado 80204.

CAMPUS VISITS
The best way to decide if Northern is for you is to come and check it out for yourself. Northern encourages all interested students and their families to come to Havre for a campus visit. Visitors will be treated to a campus tour with a Northern student. They will then meet with faculty from fields that interest them and professionals in the Financial Aid Office. Other visits that may be arranged for interested parties include the campus Child Care Center, Student Support Services, an athletics coach or even a classroom observation. Visitors can further get a taste of student life by being guests of the University in residence hall rooms and the campus-dining hall when available. At least one week's advance notice is required and reservations or further information are available by calling 1-800-662-6132, extension 3704 or 406-265-3704.

FALSIFICATION OF INFORMATION
Each student is responsible for knowing and complying with all regulations regarding admission procedures. A student’s failure to be informed or to comply will not excuse a student from responsibility or from any penalty or difficulty which he or she may encounter. The falsification or suppression of any information requested on the application for admission will be grounds for cancellation of registration.

IMMUNIZATION REQUIREMENTS
In order to be in compliance with Montana state law, students born on or after January 1, 1957 who are taking seven or more credits OR are enrolled in a degree program must either:
A. Show proof of two vaccinations against measles and one against rubella. Immunizations must have been given after 1967 and after the student's first birthday and must have been administered at least thirty days apart. Current immunizations must have been administered in the form of the MMR vaccine. Immunizations must be documented by a physician, registered nurse or school official.
"OR"
B. Show documentation of having contracted measles and rubella. Documentation by a physician is required including dates of illness.
"OR"
C. File a medical or religious exemption.

International students have additional immunization requirements. Please refer to the section entitled "INTERNATIONAL STUDENTS" for additional information.

RESIDENCY
The Montana University System classifies all applicants for admission and currently enrolled students as either in-state or out-of-state. This classification affects admission decisions and fee determinations. The basic rules for making the classifications are found in Board of Regents' policy. If you have questions regarding your residency status, please contact the Admissions Office. A copy of the "Montana University System Student Guide to Montana's Residency Policy" will be forwarded to you. The Guide contains the policy and a Residency Questionnaire that may be submitted by individuals who believe they are eligible for in-state tuition and fees.

WHEN TO APPLY
All applicants should apply for admission as early as possible, but at least one month prior to registration. This will insure proper processing for registration and allow time for an evaluation of credits. Applicants whose files are not complete by the registration date may be required to register late and pay late fees. International students have different processing timelines; please refer to the section entitled "INTERNATIONAL STUDENTS" for additional information.

ADVANCED PLACEMENT PROGRAM POLICY
Applicants for Advanced Placement credit should ask the College Entrance Examination Board to submit official examination scores to the Office of Admissions. Grades of 3, 4, or 5 on College Entrance Examination Board Advanced Placement Examinations will result in the granting of credit upon completion of 12 semester credits of coursework at Montana State University-Northern. This credit will be awarded to degree seeking students for corresponding courses at Montana State University-Northern. Grades will not be awarded. A notation of the award will be placed on the student's transcript.
AMERICAN COLLEGE TEST/SCHOLASTIC APTITUDE TEST
All first-time entering freshmen applicants who have graduated from high school less than three years prior to the first date of enrollment at Montana State University-Northern or are less than 21 years of age are required to take the American College Test (ACT) or the Scholastic Aptitude Test (SAT) prior to course registration and have the official results sent to Montana State University-Northern. Testing is also available during the orientation program prior to each semester.

COLLEGE PREPARATORY AND ADMISSIONS STANDARDS REQUIREMENTS

FRESHMEN ADMISSION
Individuals seeking a Bachelor's degree: Graduates of accredited high schools who graduated less than three years prior to attendance, must meet both the Admission Standards requirements and the Board of Regents college preparatory curriculum to begin as first-time, full-time freshmen.

ADMISSIONS STANDARDS REQUIREMENTS
The Admission Standards requirements are as follows:

- Enhanced ACT Composite Score of 20 or higher
  OR
- SAT Combined Verbal and Math Standard Score of 1440 or higher
  OR
- High School Grade Point Average of 2.50 or higher
  OR
- Rank in the upper half of the student’s graduating class.

COLLEGE PREPARATORY CURRICULUM
Students must meet one of the three following categories for admission as a full-time freshman.

<table>
<thead>
<tr>
<th>A</th>
<th>MINIMUM CORE WITH TEST REQUIREMENT</th>
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<tbody>
<tr>
<td>COURSE</td>
<td>YRS</td>
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<tr>
<td>Mathematics</td>
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<tr>
<td>English</td>
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<tr>
<td>Science</td>
<td>2</td>
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<tr>
<td>Social Studies</td>
<td>3</td>
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<tr>
<td>Electives</td>
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OR

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<tr>
<th>B</th>
<th>MINIMUM CORE WITH AP CREDIT BY EXAM</th>
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</thead>
<tbody>
<tr>
<td>COURSE</td>
<td>ADVANCED PLACEMENT</td>
</tr>
<tr>
<td>Mathematics</td>
<td>Advanced Placement Courses designed to prepare students for these exams.</td>
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<tr>
<td>English</td>
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<td>Electives</td>
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## Rigorous Core Without Test Requirement

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<tr>
<th>COURSE</th>
<th>YRS</th>
<th>RIGOROUS CORE</th>
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<tbody>
<tr>
<td>Mathematics</td>
<td>3</td>
<td>Algebra I, II, geometry (or the sequential content equivalent of these courses, i.e. three levels of Integrated Mathematics).</td>
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<td>1</td>
<td>A course beyond Algebra II or beyond Integrated Math III (such as Trigonometry, Pre-Calculus, Calculus, Computer Math, Integrated Math IV). <em>All with grades of C or better.</em></td>
</tr>
<tr>
<td>English</td>
<td>4</td>
<td>Written and oral communication skills, literature, and a designated college-prep composition or research-writing course.</td>
</tr>
<tr>
<td>Science</td>
<td>3</td>
<td>Full year each: General, physical or earth science; biology; chemistry or physics.</td>
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<tr>
<td>Social Studies</td>
<td>3</td>
<td>Global studies (world history, world geography), American history; government, economics, American Indian history or other third-year courses. Recommendation: one half year or more of other courses such as psychology, humanities.</td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
<td>2 years of a second language, music, fine arts, speech/debate, career and technical education (such as information technology, computer science).</td>
</tr>
</tbody>
</table>

Students who are not eligible to enter a four-year program may pursue an associate degree major and change to a four-year program upon successful completion of MATH 110 or higher.

### Exceptions to the College Preparatory/Admission Standards Requirements:

A. Non-traditional students (students that have graduated from high school at least three years prior to enrollment),

B. Summer only students,

C. Part-time students taking seven or fewer college or university level credits. For the purpose of this section, "university level credits" means those courses that are applicable toward an associate of applied science, associate of science, bachelor of applied science, or baccalaureate degree at Montana State University-Northern. Such courses shall include neither remedial nor developmental courses.

### How to Apply

1. Submit an application form. Applications may be obtained from Montana high school guidance counselors, or by writing to the Admissions Office, Montana State University-Northern, Havre, MT 59501 or calling toll-free 1-800-662-6132 ext. 3704 or (406)265-3704 or www.msun.edu.

2. A $30 non-refundable application fee and the completed admissions application should be submitted to the Admissions Office. If the applicant is admitted but does not register, the $30 application fee is valid for the subsequent twelve months.

3. A final high school transcript, with a graduation date posted, must be sent to the Admissions Office, Montana State University-Northern, Havre, MT 59501.

4. All freshmen applicants who have graduated from high school less than three years prior to the first date of enrollment at Montana State University-Northern must submit a score report from the American College Test (ACT) or from the Scholastic Aptitude Test (SAT).

### Transfer Student Admission

In-state applicants who have earned 12 or more semester credits at another accredited college or university and are in good academic standing with the college or university from which they are transferring are considered transfer students.

Out-of-state applicants who have earned 12 or more semester credits with at least a 2.00 cumulative grade point average (based on a 4.00 scale) for all college or university level work are considered transfer students.

All applicants who have earned fewer than 12 post-secondary semester credits must meet freshman student requirements and must have an official copy of their transfer work sent to Montana State University-Northern (see Transfer of Credits).

### How to Apply

1. A $30 non-refundable application fee and the admissions application should be returned to the Admissions Office. If the applicant is admitted but does not register, the $30 application fee is valid for the subsequent twelve months.

2. The student must insure that a complete and official transcript from each college and/or university or other post-secondary institutions attended is mailed to the Admissions Office. The student must submit official transcripts from ALL Regionally accredited institutions attended, whether or not credit was earned. A transcript will be accepted as official only when sent directly from the Registrar of the previous institution(s) attended to the Admissions Office at Montana State University-Northern.
Montana State University-Northern.

3. In-state transfer students must be in good academic standing with the college or university from which s/he is transferring. Out-of-state transfer students must have at least a 2.00 (“C”) cumulative grade point average for all college and/or university level work (based on a 4.00 scale). All transferable credits from all colleges or universities previously attended will be considered when determining transfer eligibility.

4. All credits previously earned are transferred when the student transfers to Montana State University-Northern from a college and/or university level institution which is regionally accredited.

5. In cases where no formal transfer credit agreement exists between Montana State University-Northern and the sending institution, the Registrar’s Office at Montana State University-Northern, in conjunction with the appropriate program advisor, will review all eligible course work for transfer credit.

6. No credit will be granted for remedial coursework or for courses with grades below C.

Grade point averages for transfer work are not calculated in the grade point average at Montana State University-Northern. The transcript will list courses and grades from previous institutions attended for which transfer credit has been granted. Only the credits and grade points earned in courses taken at Montana State University-Northern are used in the calculation of the grade point average.

GRADUATE ADMISSION
Students who wish to pursue graduate work at Montana State University-Northern should contact the Graduate Office, Montana State University-Northern, Havre, MT 59501 for application materials. All application materials should be returned to the Graduate Office one month prior to the proposed date of registration to allow adequate time for complete processing.

To be considered for admission to graduate study, an applicant must have been granted a baccalaureate degree from an accredited college or university. An undergraduate student who is within 16 credits of completion of the baccalaureate degree, and who has at least a 3.00 grade point average over the last 60 credits, may petition the Graduate Council for approval to take up to nine credits of graduate coursework which may apply toward a graduate degree. These credits may not be applied to the student’s undergraduate program. Graduate credit earned in this manner will not become a part of the student’s permanent record until all requirements for the baccalaureate degree have been met. Admission to graduate studies does not constitute matriculation for degree candidacy. Students who wish to matriculate for advanced degrees must make proper application for the specific degree sought (see Graduate Studies Overview). Information regarding candidacy is available from the Graduate Studies Office.

HOW TO APPLY
1. Submit the Graduate Application for Admission to the Graduate Office. This form may be obtained from the Graduate Studies Office.

2. A $30 non-refundable application fee, payable to Montana State University-Northern, is required of first-time applicants to Montana State University-Northern. If the applicant is admitted but does not register, the $30 application fee is valid for the subsequent twelve months.

3. One copy of the applicant’s official transcript, showing a baccalaureate (or higher) degree must be sent directly to the Graduate Office by the college or university previously attended, if other than Montana State University-Northern. A transcript will be accepted as official only when sent directly from the Registrar of the institution to the Graduate Office at Montana State University-Northern.

SPECIAL ADMISSION PROGRAMS

ADULT SPECIAL
An applicant, 21 years of age or over, who is not a high school graduate, may seek admission as an Adult Special student by presenting evidence that s/he is adequately prepared to pursue a selected University program. Upon completing the work of the freshmen and sophomore years with a grade average of “C” or better, an Adult Special student may, upon the recommendation of his/her faculty advisor and major academic College Dean, be accepted as a regular student and a candidate for a degree on the same basis as students who have been admitted upon graduation from an accredited high school. Adult Special students cannot enter the nursing program. Nursing students must have a minimum of a GED.

HOW TO APPLY
1. Submit an application form. Applications may
be obtained by writing to the Admissions Office, Montana State University-Northern, Havre, MT 59501 or calling toll free 1-800-662-6132, ext. 3704 or (406) 265-3704.
2. A $30 non-refundable application fee and the completed admissions application should be returned to the Admissions Office. If the applicant is admitted but does not register, the $30 application fee is valid for the subsequent twelve months.

EARLY ADMISSION
A high school student may apply for admission to take regular University courses while concurrently enrolled in high school. High school students may be accepted for admission when academic ability and general maturity warrant acceptance. Such admission shall be based on providing educational opportunities not available in the high school setting.

ACADEMIC ELIGIBILITY
To be eligible for early admission, the applicant:
1. Must have completed their sophomore year in high school.
2. Must have a minimum grade point average of a 3.00 and/or a 20 ACT composite score or 930 SAT score or higher.
3. Students attending non-accredited high schools must have taken the ACT and received a 20 composite score or 930 SAT score or higher.

HOW TO APPLY
1. Submit an application form. Applications may be obtained by writing to the Admissions Office, Montana State University-Northern, Havre, MT 59501 or calling toll free 1-800-662-6132, ext. 3704 or (406) 265-3704.
2. A $30 non-refundable fee and the completed admissions application should be returned to the Admissions Office. If the applicant is admitted but does not register, the $30 application fee is valid for the subsequent twelve months.
3. Request that a current high school transcript be sent to the Admissions Office, Montana State University-Northern, Havre, MT 59501.
4. A letter of recommendation from the high school principal or guidance counselor must be submitted.
5. Submit a copy of ACT or SAT scores.
6. Secure approval from the instructor and College Dean for each course in which enrollment is planned.

Students are limited to six credits per semester under this program.

GENERAL EDUCATION DEVELOPMENT (GED)
A person who is 21 years old or older and who is not a graduate of an accredited high school may be admitted by earning satisfactory scores on the General Educational Development Examination. A person under the age of 21 who has earned satisfactory scores on the General Education Development Examination and who is not a graduate of an accredited high school may be admitted as a "Conditional Freshman".
Conditional Freshmen must complete a prescribed program of study during the first semester of enrollment. Conditional Freshmen who complete the prescribed courses without being placed on probation are removed from conditional status and will be considered regular students in the subsequent semester.

The GED examination may not be used to satisfy the requirements of high school graduation until after the student's high school class has graduated. Information regarding requirements and test center locations for the GED in Montana may be obtained from the GED Program, Office of the Superintendent of Public Instruction, State Capitol, Helena, MT 59620.

HOW TO APPLY
1. Submit an application form. Applications may be obtained by writing to the Admissions Office, Montana State University-Northern, Havre, MT 59501 or calling toll-free 1-800-662-6132, extension 3704 or (406) 265-3704.
2. A $30 non-refundable fee and the completed admissions application should be returned to the Admissions Office. If the applicant is admitted but does not register, the $30 application fee is valid for the subsequent twelve months.
3. Request a copy of your GED score report to be forwarded to the Admissions Office. Information can be obtained from the GED test site coordinator. Request forms for Montana GED scores are also available through the Admissions Office.
4. Submit a copy of ACT or SAT scores.

INTERNATIONAL
Freshman and Transfer Student Admission Requirements
1. International Application. For Admission must be submitted to MSU-Northern, Admissions Office, PO Box 7751, Havre, MT 59501. Deadline for application is July 1 for Fall Semester, November 1 for Spring Semester, and April 1 for Summer Semester. To obtain an international application call toll-free 1-800-662-6132, ext.3704 or visit http://www.msun.edu.
2. Application Fee. A US$30 non-refundable fee is required of all applicants. Checks or Money Orders must be made payable to MSU-Northern. If the applicant is admitted but does not register, the $30
application fee is valid for the subsequent twelve months.

3. **Statement of Financial Support.** A statement of financial support from a bank or financial institution regarding funds of a financial sponsor, the student or the parent. The statement must verify financial support available to the applicant in US Dollars based on current year cost of attendance budget, for each year of attendance. Contact the Admissions Office for current year cost of attendance budget for International students at 1-800-662-6132, extension, 3704.

4. **English Language Proficiency.** An official TOEFL score report of a 475 (153 CBT) for undergraduate, 500 (173 CBT) for graduate admission, or successful completion of an English as a Second Language Program. For further information contact: ELS Language Centers, 5761 Buckingham Parkway, Culver City, CA 9023 USA. Telephone: (310)642-0988 or visit http://www.els.com.

5. **Certificates of completion.** with official grades from other English language programs or institutes may be considered as satisfying the English language requirement. TOEFL scores or transcripts for ESL programs must be sent directly from the Educational Testing Services (ETS) or Language Institute attended to MSU-Northern, Admissions Office.

6. **Educational Credentials.** International students must meet the equivalent of out-of-state admission requirements for the appropriate category of freshman, transfer, or graduate student. Official/certified transcripts and marks are required from all secondary and college or university education completed.

   - **Freshmen** must submit official secondary transcripts posting date of completion and must include an English translation. Certified true copies of original transcripts are acceptable.
   - **Transfer Students** must request official transcripts from each international or U.S. post-secondary institution attended, directly from the institution(s) to MSU-Northern. All transcripts of academic work undertaken outside of the U.S. or in non-English-speaking Canada must be submitted to World Education Services (WES) for evaluation of foreign educational credentials. For further information contact: World Education Services, PO Box 745, Old Chelsea Station, New York, NY 10113-0745 or visit www.wes.org.

7. **Immunization Records.** Non US Citizens must show a physician validated immunization record of measles (rubeola) and rubella immunity, Diphtheria-Tetanus (DT or Td), and skin testing for Tuberculosis that was completed within one year of the planned attendance date. This evidenced must be presented before a student is permitted to register.

**RE-ADMISSION**
A former Northern Montana College/Montana State University-Northern student who did not attend the preceding semester must submit an application for re-admission to the Admissions Office and official copies of transcripts from all institutions attended since his/her last registration at Montana State University-Northern. A transcript will be accepted as official only when sent directly from the Registrar of the institution(s) previously attended to the Admissions Office at Montana State University-Northern.

**UNDERGRADUATE NON-DEGREE**
The undergraduate non-degree admissions status is designed to meet the needs of students who do not wish to pursue a degree at Montana State University-Northern. Once admitted to non-degree status, the student may retain that status indefinitely. If the student wishes to change to regular status, the steps outlined under "Changing from Non-degree Status" must be followed. A non-degree application form must be completed. ACT/SAT test scores will not be required. Non-degree applicants will not be required to submit transcripts from previous institutions. The applicant must certify that s/he has not been suspended from any post-secondary institution within the past twelve months. A non-degree student in good standing (2.00 or higher cumulative GPA) may apply for a change from non-degree to regular status. Requirements for regular admission must be met at that time. Professional Teacher Education, Nursing, and Graduate courses are not available to non-degree students. Non-degree status is not suitable for any person receiving financial aid or veteran’s benefits. Non-degree students may not participate in intercollegiate athletics or any other program requiring regular admission status. Non-degree students are subject to the same University regulations as regular students.

**HOW TO APPLY**
1. Submit the Undergraduate Non-Degree Application Form. Applications may be obtained by writing to the Admissions Office, Montana State University-Northern, Havre, MT 59501 or calling toll free 1-800-662-6132 or (406) 265-3704.
2. A $30 non-refundable application fee and the completed admissions application should be returned to the Admissions Office. If the applicant is admitted but does not register, the $30 application
fee is valid for the subsequent twelve months.

**CHANGING FROM NON-DEGREE STATUS**

To change from non-degree status to regular status, a student must have at least a 2.00 cumulative GPA and do the following:

1. Submit ACT/SAT scores if they would have been required at the time of first admission to Montana State University-Northern.

2. Submit high school and/or official college, university, or other post secondary transcripts from all other institutions attended. The student must submit transcripts from ALL institutions attended, whether or not credit was earned. A transcript will be accepted as official only when sent directly from the Registrar of the institution to the Admissions Office at Montana State University-Northern.

3. Show proof of two vaccinations against measles and one against rubella. Immunizations must have been given after 1967 and after the student’s first birthday and must have been administered at least thirty days apart. Current immunizations must have been administered in the form of the MMR vaccine. Immunizations must be documented by a physician, registered nurse or school official.

   "OR"

   Show documentation of having contracted measles and rubella. Documentation by a physician is required including dates of illness.

   "OR"

   File a medical or religious exemption.

**WESTERN UNDERGRADUATE EXCHANGE (WUE)**

WUE is the Western Undergraduate Exchange, a program coordinated by the Western Interstate Commission for Higher Education (WICHE). Through WUE, resident students of participating states may enroll in two-year and four-year public college programs at a reduced tuition level: approximately 150 percent of the institution’s regular resident tuition. WUE tuition is considerably less than nonresident tuition. Resident students from the following states may participate if they meet eligibility requirements: Alaska, Arizona, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, and Wyoming.

**How to Apply.**

Information and a WUE Scholarship application for Montana State University-Northern may be obtained from the Admissions Office at 1-800-662-6132, extension 3704, or (406)265-3704. Or email: admissions@msun.edu.

March 1 is a Priority Deadline for WUE applicant consideration.

1. Submit application for Admission.

2. Submit the WUE scholarship application along with a working copy of transcript.

Send WUE Scholarship Application and supporting documents to:

MSU-Northern
Admissions Office
PO Box 7751
Havre, MT 59501

**Conditions for Enrollment.** A limited number of students are granted the WUE scholarship on a competitive and space-available basis. Montana State University-Northern reserves the right to change the requirements for admission into the WUE program without further notice.

1. To be eligible for a WUE Scholarship, applicants must be admitted to Montana State University-Northern, and be a resident of a participating WUE state.

2. Students pursuing a pre-nursing degree can only receive the WUE Scholarship until they are accepted into their professional program.

3. Duration of the WUE Scholarship is four years or until completion of 120 credits, whichever comes first.

4. Recipients of a WUE Scholarship must maintain a cumulative G.P.A. of 3.0 or above and maintain 15 credits per semester.

5. Time as a WUE Scholarship recipient cannot be used toward fulfilling Montana residency requirements.

6. Spring Semester WUE Scholarship applicants may be considered by the Scholarship Coordinator on a space-available basis.

To obtain information about WUE programs in other states visit: http://www.wiche.edu/sep/wue/.
FEES

A full listing of current tuition, fees, room and board, and other University-related expenses is available at either the Admissions or Business Office.

COURSE FEES

Section 1.02  In addition to the usual tuition and fees paid by students, special fees may be attached to specific courses. Those course fees are used to pay for materials that are damaged or consumed by students, particularly during the laboratory portion of the classes. As a consequence, course fees are most often attached to classes in the sciences, the arts, and technical programs.

On the Montana State University-Northern campus, students who take classes in the following degree areas will often have to pay additional fees because of the courses they take: Art, Automotive, Biology, Engineering Technology: Civil Engineering Technology, Chemistry, Diesel, Design Drafting, Engineering Technology: Electronics Engineering Technology, Earth Science, Health and Physical Education, Metals Technology, and Nursing. Course fees are also assessed in other program areas, but not as extensively as the previous listing.

To find out if a course fee will be assessed for a particular course, students should refer to the specific course descriptions listed in this catalog. Those course descriptions begin on page 110 of this catalog.

FEE REFUNDS

1. Refunds for withdrawals from school are made by the Business Office only after verification of enrollment status as of the 15th day of classes.
2. The registration fee is non-refundable. The health insurance fee will be refunded to the end of the 10th day of instruction.
3. Ninety (90) percent of all remaining fees (tuition, network, computer, equipment, building, gym use, SUB use, student activity, athletic, non-resident tuition, non-resident building, health service fee, internet fee, radio fee, distributed learning access fee, Great Falls fee, campus facilities fee, library fee) will be refunded to the end of the fifth day of instruction for students enrolled in full semester courses.
4. Seventy-five (75) percent of all remaining fees will be refunded to the end of the tenth day of instruction.
5. Fifty (50) percent of all remaining fees will be refunded to the end of the fifteenth day of instruction.
6. No refunds for withdrawals from school are made after the fifteenth day of instruction.
7. Drop/adds will be computed in accordance with regular institutional fee schedules. There will be no refund for classes dropped after the fifteenth day of instruction.

INSTALLMENT PAYMENT PLAN

The following installment payment plan for tuition/fees, room and board is available.

1. At least ¼ of the total amount must be paid when the student enrolls.
2. One-half of the total due must be paid within 30 days.
3. Three-fourths of the total due must be paid within 60 days.
4. The full amount due must be paid within 90 days.
5. A late fee of $15.00 will be assessed for each payment that is late.
6. An administrative charge of $30.00 per semester will be levied for use of the plan.
7. Payments must be made even though the student withdraws from school. Any refund due the student because of withdrawal, either voluntary or involuntary, will be applied toward the satisfaction of the obligation. Should the refund be larger than the amount outstanding, the excess of refund due over balance outstanding will be returned to the student. Any unpaid balance of the obligation must be paid before the student may re-enroll, graduate, obtain a transcript, or transfer to another college and/or university.
FINANCIAL AID

Phone Number: 265-3787

Student financial assistance at Montana State University–Northern is available in the form of loans, scholarships, fee waivers, grants and work opportunities. A typical Financial Aid package is a combination of several of these sources.

Financial assistance is based on financial need and academic ability, although some scholarships are given on the basis of academic achievement only. All forms required to apply for Financial Aid may be obtained through the Financial Aid Office.

To apply for aid, students must complete a Financial Aid Application. This form can be obtained from the Financial Aid Office and is used in determining the total amount of aid which a student may be eligible to receive. Aid eligibility is determined through an analysis of the student’s family financial strength.

DETERMINING ELIGIBILITY

The three components used to determine your eligibility for financial aid are:
1) Cost of Education or allowable expenses
2) Expected Family Contribution, and
3) Other Financial Resources available to you.

COST OF EDUCATION: This is the estimated average amount for expenses at Northern according to your residency classification, hours enrolled, and program of study. This budget uses average costs and includes everything from tuition and fees to miscellaneous expenses. Expense budgets may also include adjustments for childcare, and costs related to a disability or other non-discretionary expenses.

Since expense budgets reflect average costs, you may spend more or less than the amounts allowed. However, you may pay more for your personal expenses than the amount budgeted. The amount you spend, except for tuition and fees, is up to you and depends on your own individual lifestyle, priorities, and obligations.

The estimated expense budget for the 2005-2006 (nine months) academic year includes the following (fees will vary for upper level and graduate students):

<table>
<thead>
<tr>
<th></th>
<th>RESIDENT</th>
<th>NON-RESIDENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition/fees</td>
<td>$4840.00</td>
<td>$13400.00</td>
</tr>
<tr>
<td>Books/Supplies</td>
<td>1200.00</td>
<td>1200.00</td>
</tr>
<tr>
<td>Room/Board</td>
<td>8000.00</td>
<td>8000.00</td>
</tr>
<tr>
<td>Misc/Travel</td>
<td>3000.00</td>
<td>3000.00</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td><strong>$17040.00</strong>*</td>
<td><strong>$25700.00</strong>*</td>
</tr>
</tbody>
</table>

*All amounts subject to change without notice.

Tuition and Fees: Average charges for basic instructional costs and mandatory fees. Actual fees paid may vary based on the number of credits carried each semester.

Room and Board: An average amount for housing and food charges for students living on or off campus.

Books and Supplies: A standard allowance for required books and supplies.

Transportation & Personal Expenses: A modest allowance for non-local transportation, (such as a trip from campus to home), entertainment, medical, laundry, toiletries, clothing, etc.

If attendance is less than or greater than nine months, or if enrollment is less than 12 credit hours per semester, budget components will be prorated accordingly. Please remember, financial aid often cannot meet all of your costs while attending MSU-Northern, so it is very important for you to manage your financial resources wisely.
EXPECTED FAMILY CONTRIBUTION: Since financial aid is designed to assist with your educational expenses, Expected Family Contribution is the amount that you and your parents (if applicable) are expected to contribute toward your costs. This amount is determined from information provided on your Free Application for Federal Student Aid (FAFSA) according to a formula established by Congress.

OTHER FINANCIAL RESOURCES: This component represents other known and expected financial resources you will have available to assist you with your educational costs, such as scholarships, Veterans Education Benefits, etc.

Your eligibility (financial need) is calculated by subtracting your Expected Family Contribution and Other Financial Resources from your allowable Costs of Education.

HOW AID IS AWARDED
Your award package is based on a combination of funds available and your eligibility. Your award package may not include funds from all aid programs. Some funds carry restrictions, and some are limited as to amounts that can be awarded. Financial aid packages are based on the level of eligibility from highest to lowest and files are worked generally in the order received by the Financial Aid office.

The Federal Pell Grant is the first program awarded, if you are eligible. The next programs awarded are grants (federal, state, institutional) and scholarships. Some awards stipulate further restrictions such as residency. MSU-Northern funds are limited and awarded until funds are committed. Work-study funds are awarded after grants. Stafford loans are awarded after Perkins Loans have been awarded. PLUS Loans are the last category of aid to be awarded. PLUS (Parent) loans are awarded only when requested by the student or parent after the student applicant receives his/her award letter.

YOUR AWARD PACKAGE
Your financial aid award package is designed to meet as much of your financial eligibility as possible. All awards are contingent on the following:

1. Availability of funds from federal, state, and institutional sources.
2. Accuracy of information provided on your application by you and/or your parents or spouse.
3. Adjustments to your award when our office receives information that affects your eligibility. Any aid you receive, in addition to that listed on your award offer, which exceeds your unmet eligibility will result in an adjustment in your award(s) from MSU-Northern.
4. Satisfactory academic progress toward your degree.
5. Compliance with our requests to send additional documentation to support your application.
6. Eligibility to receive funds. i.e., you are a U.S. citizen or eligible non-citizen, you have signed all required documentation, and you are enrolled in a degree-seeking program of study for the appropriate number of credit hours based on your funding status.

ACCEPTING OR DECLINING YOUR AWARD
Unless otherwise indicated, the awards listed on your Financial Aid Award Letter represent an offer based on your anticipated enrollment funding level. You must accept or decline each part of your aid package. It is important that you make your decision, sign the award offer, and submit the document by the deadline date. If you want to accept a lesser amount than the amount awarded, indicate the amount you wish to request. This is very important, particularly on the loan amounts. Think about the amount and type of loan being accepted. If you have more than one type of loan, you will likely be required to repay those loans simultaneously. Do not borrow more than you absolutely need.

If you have unique circumstances which may affect your costs of attending MSU-Northern, please contact the Financial Aid Office. We may be able to reevaluate your eligibility based on special conditions.

First time students may indicate your acceptance or rejection of the aid offered by returning one copy of your Financial Aid Award Letter to:

Montana State University-Northern
Financial Aid Office
P.O. Box 7751
Havre, MT 59501

Continuing students will accept, reject, or adjust their awards electronically on our web site at www.msun.edu
FINANCIAL AID PROGRAMS

Financial aid is money in the form of loans, grants and employment available to students to help pay the cost of attending the institution of their choice. Financial aid comes from the Federal Government, which is the largest provider of aid, as well as state governments, the schools themselves, and a large variety of other public and private sources.

The following is a source of information concerning Federal financial aid for which you may be eligible. Please refer to the current edition of "THE STUDENT GUIDE" published by the U.S. Department of Education. The booklet is available from the Financial Aid Office in Cowan Hall 216 or on the web at: http://www.ed.gov/gov_info/SFA/StudentGuide/

ACCESS GRANT
The ACCESS Grant was established by the Student Assistance Foundation of Montana for Montana undergraduate students who do not meet the Federal definition of “need”. Currently, these funds are awarded initially to 1st year students who are not eligible for other grants and whose estimated family contribution is greater than $9000. These funds will be credited to your student account.

MTAP (Baker Grant)
The Baker Grant was established to help working Montana undergraduate students achieve their educational goals. Eligible students must meet established minimum income earned from work criteria, be enrolled full-time and making satisfactory academic progress as defined by the institution. Other awards will also be taken into account in determining eligibility. Funds will be credited to your student account.

FEDERAL PELL GRANT
A Federal Pell Grant, unlike a loan, does not have to be repaid. Pell Grants are awarded only to undergraduate students who have not earned a bachelor's or professional degree. The maximum Pell Grant for the 2004-2005 award year is scheduled to be $4050. You can receive one Pell Grant in an award year. How much you receive will depend on your cost of attendance, whether you are a full-time or part-time student, and whether you attend school for a full academic year or less. You may not receive Pell Grant funds from more than one school at a time. Pell Grant funds will be credited to your student account in the registration process in the Business Office.

FEDERAL SUPPLEMENTAL EDUCATIONAL OPPORTUNITY GRANT (FSEOG)
A Federal Supplemental Educational Opportunity Grant (FSEOG) is for undergraduates with exceptional financial need, with priority being given to students who receive Federal Pell Grants. A FSEOG does not have to be paid back. FSEOG funds will be credited to your expenses in the registration process in the Business Office.

MONTANA HIGHER EDUCATION GRANT (MTHEG)
A Montana Higher Education Grant is for undergraduates based on financial need. A MTHEG does not have to be paid back and the funds will be credited to your expenses in the Business Office. Recipients must be residents of Montana.

STUDENT EMPLOYMENT & WORK-STUDY
The Career Center located in Donaldson Hall assists students attending MSU-Northern to locate employment. Both work-study and other part-time employment are listed with the Career Center. On and off campus employment opportunity assistance is available. Referral systems are in place for you to choose jobs that interest you and assistance is available to help with interviews.

1. You must receive work-study as part of your financial aid package in order to apply for a work-study job. It is not necessary that you accept work-study if you are successful in finding other part-time employment. If you accept work-study aid, please contact the Career Center for job fair, hiring policies and other information you may need to secure employment.

If you did not receive a work-study award as part of your financial aid package, you may have your name added to the work-study waiting list. If work-study funds become available, students on the waiting list will be considered for an award based on their eligibility. Being placed on the list in no way assures that you will receive a work-study award.

Work-study awards are not credited to your expenses in the Business Office. You are paid on scheduled pay days for the actual hours worked during the preceding month. When you have earned the amount of your work-study award, your employer may decide to continue your employment as a regular student employee.

FEDERAL PERKINS LOANS
A Perkins loan is a low interest (5%) loan for students with exceptional need. This program is for both graduate and undergraduate students and offers many principal forgiveness opportunities. There are no origination or other loan fees
assessed. The grace period before repayment begins is 9 months. Principal and interest payments begin at that time, and you have 10 years in which to repay the loan. If you accept this loan, a promissory note and other loan documents will need to be completed before the loan can be disbursed. These funds will then be credited to your student account.

**FEDERAL FAMILY EDUCATION LOANS**

FFEL’s (Stafford Loans) are either **subsidized** or **unsubsidized**. With a subsidized loan, the Federal Government pays interest on the loan until you begin repayment and during authorized periods of deferment. If you receive an unsubsidized loan, you will be charged interest from the time the loan is disbursed until it is repaid in full. If you allow the interest to accumulate, it will be capitalized (added to the principal which means the loan "grows") and the amount you repay can become very expensive. If you choose to pay the interest as it accumulates, you will repay less over the life of the loan. You can receive both a subsidized and an unsubsidized loan for the same enrollment period.

The interest rate is variable but will never exceed 8.25%. You will also pay up to 4% in fees, which are deducted from each disbursement. These fees are paid to the lending institution from which you borrowed the funds.

Repayment begins after you graduate, leave school, or drop below half-time enrollment. You have six months before payments begin. This is called a "grace period". Contact your lender for more information about repayment options.

Stafford Loans will be credited to your expenses in the Business Office.

**FEDERAL PLUS LOANS (PARENT LOAN)**

Federal PLUS Loans enable parents with good credit histories to borrow to pay the education expenses of their children. To be eligible, the child must be a dependent undergraduate student enrolled at least half time. The yearly borrowing limit on the PLUS loan is equal to your cost of education minus any other financial aid you receive.

The interest rate is variable, but it will never exceed 9%. The interest is charged on the loan from the date that the first disbursement is made until the loan is paid in full.

The borrower must also pay a loan fee of 4% of the amount borrowed, which is deducted from each disbursement. The loan fee is paid to the lending institution.

Repayment generally begins within 60 days after the loan disbursement. There is no grace period. This means that interest begins to accumulate at the time of the first disbursement and repayment of both interest and principal begins while the student is in school.

Contact the Financial Aid Office for information on how to process this type of loan.

PLUS Loan checks are usually co-payable to the institution and borrower. After required endorsements have been processed, funds that exceed expenses are returned to the borrower.

**SCHOLARSHIPS**

Primarily two departments - the Admissions Office and the Financial Aid Office award scholarships. Committees make selections and application information is available at each office.

Scholarships are awarded generally in the spring of each year for disbursement in the following year. These awards are made on the basis of academic achievement, financial need, or a combination of the two. Many scholarships have additional requirements as well. Institutional scholarships are provided to the institution by donors who specify the award criteria. The selection process is managed by committee and awards are disbursed through the Financial Aid Office. Generally, the Admissions Office serves in-coming students and the Financial Aid Office serves continuing and transfer students.

Private scholarships are directly controlled by the donor, not the institution; the application process, selection criteria, and recipients are determined by the donor. The donor notifies you of the award, but usually sends the funds to the school for distribution.

**HOW SCHOLARSHIPS ARE PAID**

Most scholarships are credited to your expenses each semester. Some may be sent directly to you, but this is the exception. Normally, the institution must confirm that you have enrolled before payment will be made. If your scholarship arrives after you have paid your bill for the semester, funds will be delivered to you after you obtain a release card from the Financial Aid Office. Generally, scholarships of more than $500 are divided equally between fall and spring semesters. Scholarships totaling less than $500 will be disbursed in full and applied to your current enrollment semester. If your scholarship is not available at the time of payment deadlines, you must make other arrangements to pay your bill to avoid cancellation of classes or late charges.
DISBURSEMENT OF FUNDS

Provided you meet all qualifications to receive financial aid funds and you have accepted your charges, any scholarship, grant, or loan awarded to you will be automatically credited to your expenses (tuition, fees, room and board if you live on campus) and any other charges assessed by the institution. You may decline this automatic crediting of your charges by writing to the Financial Aid Office at any time prior to payment being made to you for the applicable term.

If financial aid credited to your expenses exceeds allowable charges due for the term, a check will be prepared for the difference and will be mailed to your current address on file in BANNER upon completion of processing. The check will usually be available approximately 10 days after the first day of classes of each term.

Check your fee statement carefully. Some types of financial aid appear on your fee bill as credits and others (such as work-study) are paid at other intervals. Compare your receipts, which show your aid against your award letter to reconcile funds awarded to you. NOTE: If for any reason you register for classes late or enroll for insufficient credits, your aid will be delayed and possibly adjusted. Loan funds will not be credited to your charges until all required documents have been processed.

Other aid, such as BIA grants and some scholarships arrive in the form of checks. These funds will be made available after processing is completed in the Financial Aid Office and distributed by the Business Office. Please remember, fees and other charges must be paid when due or a late fee may be applied and/or your registration may be canceled. If a check does not arrive in time for you to pay your fees and other charges, you are responsible for payment of your bill on the due date. If you have specific questions regarding charges, distribution of change checks, or release processes, please contact the Business Office at 265-3733.

SHORT-TERM LOANS

This is a loan which will permit a student, who may be experiencing temporary difficulties, to borrow small sums of money for a short period of time. No collateral is required for a short-term loan although the student must identify a reliable source of repayment and have a satisfactory repayment record with respect to any previous loan(s) received.

There is a $20.00 organization fee.

The institution reserves the right to reject or decline any application, and to determine the amount and date of repayment for any loan approved. Applications and other information regarding the short-term loan may be obtained from the Financial Aid Office. Allow a minimum of (3) three working days to process a short-term loan application, which may be submitted at any time during the semester.

YOUR RIGHTS AND RESPONSIBILITIES

- You have the right to privacy. All records and data submitted with your application for financial aid are treated as confidential information.
- You have the right to a complete explanation of the award process. If you do not understand your financial aid award, or feel your application has not been evaluated fairly, please contact the Financial Aid Office.
- You have the right to be notified of cancellation or withdrawal of aid and to be informed of why this action is being taken.
- You have the right to appeal. You may request a review of any decision concerning your financial aid eligibility. Please contact the Financial Aid Office and make an appointment. If necessary you may be directed to submit a written appeal and supporting documentation.
- You have the responsibility to report funds or benefits from any source (such as outside scholarships) that you receive or are promised (before and after you are awarded financial aid).
- The Financial Aid Office is required BY LAW to make adjustments to prevent or correct over awards. We take this responsibility seriously. You will save yourself frustration, inconvenience, and possible financial penalty by reporting any changes in your financial status promptly.
- You have the responsibility to report any change in your student status immediately. If you move, change your name, drop credits, withdraw from school, or do anything else that may affect your financial situation, please report that information to the Financial Aid Office and your student loan lender/servicer.
- You have the responsibility to keep copies of all correspondence regarding your financial aid, whether it is from the Financial Aid Office, governmental agencies, or outside lenders.
- You have the responsibility to use financial aid funds for educationally related expenses only such as tuition and fees, books, supplies, and reasonable living costs.
- You have the responsibility to repay loans on time. Acceptance of any loan carries the serious obligation to repay. Failure to meet this obligation affects the availability of loans to future students. Before you accept any loans for financing your education, you should carefully consider the total amount and repayment requirements for which you
will be responsible when you terminate your educational objectives.

- You have the responsibility to understand how the Financial Aid Office determines if you are making satisfactory academic progress and what happens if you do not maintain satisfactory progress.

HOW TO AVOID PROBLEMS

Come to the institution with some money of your own. Even if your aid is prepared on time, funds may not be available until classes begin and processing is complete. You will need money for housing, books, and other immediate expenses. If you are able to save money during the summer before school starts, these savings will be useful in meeting your beginning-of-the semester expenses and protecting you from hardships if your aid is delayed.

Register for the appropriate number of credits. You must register for the appropriate number of credits, which correspond to the funding level indicated on your Financial Aid Award letter.

Be sure to complete a loan/debt management counseling session if you are a first-time borrower at MSU-Northern. This may be completed online at www.mapping-your-future.com. Your funds will be delayed until you complete this requirement.

Pay your own fees and other charges by the due date if your aid is late. Fees are due at the beginning of each semester. If not paid when due, you are subject to a late fee and/or cancellation of registration. The Financial Aid Office may be able to offer you assistance depending on the nature of the processing problem but cannot prevent cancellation for non-payment of fees. If you anticipate problems, see either the Financial Aid Office or the Business Office for assistance.

If you are not sure how dropping or adding classes will affect your aid status, do not drop any of your classes or withdraw from MSU-Northern without checking first with the Financial Aid Office. If you drop below the required minimum credit load or fail to complete the appropriate number of credits, your aid may be canceled and repayment of the aid may be required.

Please notify the Financial Aid Office of any changes in either your permanent or school address.

DROPPING OR ADDING CREDITS

When an award letter is prepared for you, the Financial Aid Office has reviewed what you reported on the FAFSA (application) and the Student Data Form and funded you at the level you indicated. At the time of disbursement, your credit load and Satisfactory Progress status is reviewed. Coordination with the Registrar’s Office, Business Office and Financial Aid Office will dictate whether or not aid can be released or needs to be adjusted. Not all award amounts are affected by changes in enrollment. If your award is affected, you will be notified.

Disbursement of your aid is based upon the number of credits for which you are enrolled at the time your aid is disbursed. Your award letter will indicate this information. If you add credits after your financial aid has been disbursed, you may be entitled to additional funds. You should check with the Financial Aid Office for a review of your funding level.

If you drop credits after all your financial aid funds have been disbursed, including a retroactive drop of credits, you may have received funds that you were not entitled to receive. You will receive a bill for any overpayments that may occur.

SATISFACTORY PROGRESS REQUIREMENTS

To remain eligible for financial aid at MSU-Northern, you must make satisfactory academic progress toward your degree objective. Satisfactory Progress is a condition for continued eligibility and is measured by the following factors:

1. Students who receive financial aid assistance must complete the appropriate number of credit hours based on their aid funding level (credits funded). Failure to do so will result in one of two financial aid statuses, CAUTION or TERMINATION. See the "Satisfactory Academic Progress" policy enclosed with your award letter for complete details.

2. A student's eligibility is terminated at the point when maximum time frame parameters have been met. Generally, limitations are: 98 semester credits for an Associate degree, 186 semester credits for a Bachelor’s degree, or 45 semester credits for an undecided degree seeking student. Graduate student eligibility expires at 68 semester credits. Transfer credit will affect these time frames.

3. Students must meet a Grade Point Average (GPA) and a percentage of credits attempted (usually 67%) requirement to continue their eligibility. Minimum accumulative GPA is 2.00 for undergraduates and 3.00 for graduates. Satisfactory completion means a student has received a minimum grade of ‘D’ or ‘P’ (pass). Grades other than A, B, C, D, or Pass do not meet satisfactory academic progress requirements.

4. Students whose status is "Termination" will not be considered for aid while in the "Termination" status. A student's file will be reviewed and an award letter produced when a student is re-instated.
5. This policy is applicable to all students receiving institutionally administered aid. Any federal, state, and institutional aid (including scholarships, fee waivers, work-study and loans) are included in this policy. MSU-N Staff waivers are the only exception. The eligibility of students may be reviewed at any time during the semester.

6. Students declared ineligible for financial aid under this policy will have the opportunity to appeal. The appeal procedure must be initiated by the student by completing an appeal form and returning the form with appropriate documentation to the Financial Aid Office (Cowan Hall, Room 216).

A copy of the “Satisfactory Progress” policy is posted at our web site http://www.msun.edu. You are responsible for knowing and understanding this policy thoroughly. The information in this policy provides more detailed instructions on how the institution monitors progress and on how to exercise the appeal process.

WITHDRAWING FROM MSU-NORTHERN

If you stop attending classes, you should officially withdraw to prevent assignment of grades of "F". If you don’t withdraw, your status will be "TERMINATION", and you will not be eligible for aid until you reinstate your eligibility. In order to reinstate your eligibility, you must re-enroll and earn a GPA of 2.00 with no funding assistance from any funding source included in this policy. You must complete 67% of any credits attempted during your reinstatement period with a minimum GPA of 2.00 in order to regain eligibility. For more information on withdrawal procedures, contact the Registrar’s Office or Student Services, both located in Cowan Hall.

If you withdraw from all courses either officially or unofficially, a withdrawal calculation will be performed by the Business Office to determine whether you received funding for which you were not eligible. A copy of this refund/return of Title IV funds is available in the Business Office located in Cowan Hall. IF YOU DROP ALL YOUR CLASSES VIA THE WEB, YOU MUST NOTIFY THE FINANCIAL AID OFFICE IMMEDIATELY.

If you received funds for which you were not eligible, you will receive a bill from the institution for repayment of those funds.

If you are eligible for a refund of your registration or housing fees from MSU-Northern, Federal regulations require that the refund first be applied to any student loan disbursed to you during the current loan period and then to repay any other financial aid for which you were billed. Any remaining amount will be refunded to you.

If you have any student loans, your lender or servicer will be notified of your enrollment status change and you may enter a "grace period" or repayment status. In keeping with the terms of your loans, you are required to inform your lenders of changes in your enrollment status.

If you plan to return to MSU-Northern and apply for assistance, please refer to the Satisfactory Progress policy to determine your eligibility status for future applications for aid.

SPECIAL CIRCUMSTANCES

If you or your parent(s) have had a substantial change in family income or assets due to unemployment, disaster, disability, divorce, or the loss of other compensation or benefits since applying for financial aid, you and/or your parent(s) may be eligible for special consideration. In addition, if you have non-discretionary expenses, which may affect your ability to meet educational expenses, you may ask for reconsideration to increase your eligibility. As in any special consideration, all requests must follow the "Appeals" process outlined in the Satisfactory Progress policy. All requests must be documented and reasons for the exception must be provided.

If you or your parent(s) have special circumstances, please contact the Financial Aid Office for assistance with the "Appeal" process.

REPORTING CHANGES IN CIRCUMSTANCES

If your residency or student classification status changes, your aid eligibility may be affected. If you receive any new or additional aid from any source, your eligibility may be affected. Report these changes in writing to the Financial Aid Office as soon as you know of them. If these changes do not appear on your Award Letter, it is your responsibility to report them when you sign and return the office copy of the Award Letter.

The office will follow up on changes made and, if necessary, recalculate your eligibility. If you are no longer eligible for any part of the aid you have been offered, the Office will work with you to resolve the over award. If, however, it is necessary that you repay a portion of your financial aid, you must repay it before you are eligible to receive further aid.

VERIFICATION OF INFORMATION

Some applicants are selected at the federal level for verification of information contained on their application (FAFSA). This means that the Financial Aid Office needs additional information from you in order to determine your eligibility. You will be asked to supply a signed copy of the current year’s tax return(s) of the student (and parent or spouse) when applicable. Failure to provide this requested documentation would stop further processing.
ADDITIONAL INFORMATION

Our goal is to provide information for you the student, to enable you to meet your educational objectives and longer term goals.

We have a qualified staff of professionals to further assist you with questions beyond what is provided in this guide. If you have questions, please call us at 406-265-3787 or come in to the office located at Cowan Hall, room 216 in Havre. Office hours are 8:00 a.m. to 5:00 p.m. weekdays. Although personnel usually are available on a walk-in basis, appointments are recommended.

Policies and procedures governing financial aid programs are subject to change at any time without prior notice or publication due to changes of policy by federal and state governments. MSU-Northern is an equal opportunity/affirmative action institution that does not discriminate on the basis of race, color, national origin, sex, sexual orientation or preference, marital status, age, physical or mental disability, creed or political belief, religion, or veteran status.
ACADEMIC INFORMATION

GENERAL REQUIREMENTS AND ACADEMIC PROCEDURES
The catalog serves as a guide for students and advisors in planning academic programs and degrees offered at the University. Students are responsible for knowledge of and compliance with procedures and standards, but should seek guidance from their advisors or the Registrar when questions arise. The following procedures and policies have been adopted to help students, faculty, and administrators successfully carry out the academic program of the University. These policies reflect University policy when the catalog was published. Changes enacted after this date will be published by appropriate means. Exceptions and deviations from normal academic policy may be requested through petition procedures available from the Registrar’s Office.

ACADEMIC ADVISING
Montana State University-Northern is committed to the fundamental principle that the University exists to serve the students. All efforts of the University are aimed toward enabling students to realize their full potential in whatever field of endeavor they attempt. As a result of this commitment, Montana State University-Northern’s academic advising process is an integral component of the academic program and is considered to be a faculty responsibility. The academic advising program will enable students to:

1. Better understand the nature and purpose of higher education and its relevance to their future.
2. Become more sensitive to cultural differences.
3. Set and obtain individual goals, consistent with each person’s interests and abilities.
4. Better plan appropriate educational programs.
5. Proceed through individual educational programs in an orderly fashion, with continual monitoring and evaluation.
6. Become familiar with the many university and community resources available (educational, financial, social, etc.).
7. Receive accurate information regarding University requirements, options, and procedures.
8. Make intelligent career choices based upon realistic and accurate information.

Students may select or change their major or minor program at any time.

New students at Montana State University-Northern will work with the New Student Advising Center during their first year of residency at MSU-Northern. The Center will help students select appropriate classes and complete the registration process during that first year.

After their first year of attendance at MSU-Northern, a faculty member in the student’s major program area will normally assume the advising responsibility. The faculty advisor will explain University academic requirements and assist individuals in selecting courses and fulfilling the steps necessary to satisfy graduation requirements. Students with questions about their majors are encouraged to contact their faculty advisor.

Some students may continue their relationship with the New Student Advising Center beyond the first year. Students who might fall into that group include: pre-nursing students, and student who still have not declared a major after their first year of attendance at MSU-Northern.

Students who have not selected a major at the time of admission to Montana State University-Northern will work with the New Student Advising Center to register for classes, assess their areas of interest, and explore possible career opportunities.

Students are, under existing university policy, individually and personally responsible for meeting the graduation requirements of degrees they are seeking.

ADMISSION TO CLASSES
In order to be enrolled in a class, the student must register for the class by means of the procedures set out for registration. The student’s name must appear on the official class roster. Students who fail to register for classes prior to the deadline for doing so will not receive credit for the classes, even if they attend the classes and meet course requirements.

ADVANCED PLACEMENT PROGRAM POLICY
Applicants for Advanced Placement credit should ask the College Entrance Examination Board to submit official examination scores to the Office of Admissions. Credit will be granted for scores of 3, 4, or 5. This credit will be awarded to degree students for corresponding courses at the University. Grades will not be awarded. A notation of the award will be placed on the student’s transcript.

AUDITOR
An auditor is a student who wishes to enroll in a course but does not wish to pursue the course for credit. Auditors will not be required to take examinations or meet course requirements. Audited courses are noted on the transcript as such. Enrollment as an auditor requires permission of the instructor after students pursuing course credit have had an opportunity to enroll. Auditors pay the same fees as credit students. Auditors may not change to credit enrollment after the last day to add classes.

CANCELLATION FOR FAILURE TO COMPLETE REGISTRATION
A number of students who pre-register for classes do not return for the following term as anticipated. In order to establish orderly administration of the financial affairs of the University and to open the positions of these non-returning students in classes for which they pre-registered, a deadline for making fee arrangements is set for each
term and announced by the Business Office. Registrants who do not complete fee arrangements prior to the deadline are unregistered, and their positions in classes are made available to other students. Students whose registrations are canceled but who wish to attend the University for the canceled term must repeat the registration process. In addition, a late registration fee may be charged to offset the additional administrative expense of late registration.

**CHALLENGE BY EXAMINATION**

Montana State University-Northern seeks to serve students who have achieved academic competency through nontraditional forms of study or work experience. The University awards credit based on Advanced Placement (AP) examinations, College Level Examination Program (CLEP) tests, DANTES transcripts, military training, Trade Competency Examinations, and other faculty approved competency measures. The Registrar maintains a list of courses and the procedures a student must follow in order to be awarded credit.

**CHANGES IN REGISTRATION**

See “Dropping and Adding Classes” later in this section.

**CHANGE OF GRADE**

Grades submitted to the Registrar’s Office by faculty members are final and may not be changed except in the case of clerical error, upon successful appeal, or if they were fraudulently obtained. Students who believe an error in grading has occurred should first consult with the instructor. Final grade changes may not be used to extend the time for completion of a course, to allow a student to submit late work, or to retake examinations after the term is completed. A grade change is not meant to substitute for an "Incomplete" when an Incomplete cannot be justified. Grade changes made under this policy must be submitted to the Registrar by faculty by means of forms and procedures available in the Registrar’s Office. The College Dean must approve these forms.

**CLASS ATTENDANCE**

Each student is responsible for attending all classes regularly. Individual professors establish attendance policies for their courses. While a professor may not withdraw a student from a course, excessive absences may result in a grade of "F."
CLASSIFICATION OF STUDENTS
Students are classified as follows:

By year in school:
- Freshman: 0-29 semester credits earned. May not enroll in an upper division course without the permission of the instructor.
- Sophomore: 30-59 semester credits earned.
- Junior: 60-89 semester credits earned.
- Senior: 90 semester credits and above.
- Post-Graduate: Baccalaureate students earning additional hours of undergraduate or graduate credit, but not following a master's degree program.
- Graduate: Baccalaureate students enrolled in a master's degree program.

By credits:
UNDERGRADUATE STUDENTS
- Full-Time: Enrolled for 12 or more semester credits.
- Half-Time: Enrolled for six or more semester credits, but fewer than 12.
- Part-Time: Enrolled for fewer than six semester credits.

GRADUATE
- Full-Time: Enrolled for 9 or more semester credits.
- Half-Time: Enrolled for more than 5 semester credits, but fewer than 9
- Part-Time: Enrolled for fewer than 5 semester credits.

STUDENT STATUS
- Degree-Seeking: A student who plans to pursue a degree at Montana State University-Northern.
- Non-Degree-Seeking: A student who does not plan to pursue a degree at Montana State University-Northern.
- Adult Special: A student, 21 years of age or over, who is not a high school graduate, has not received their GED, and is not a transfer student, but wants to pursue a degree at Montana State University-Northern.
- Continuing: A student who completed the last regular semester at Montana State University-Northern. The spring or summer term is considered the last regular semester for students returning for fall semester.
- Former: A student who has previously attended the Montana State University-Northern but did not complete the last regular semester and who has not enrolled at another institution of higher learning since last attending the University. Former students must file an application for readmission.
- Transfer: Any student who was last registered for 12 or more credits at another institution.

CLEP (College Level Examination Program)
The program consists of five general examinations and subject examinations in many different areas. Credit for equivalent Northern courses may be obtained by testing to the percentile levels required by each academic College. Credit earned through CLEP is assigned a grade of "Pass" and does not affect the grade point average. All CLEP credits awarded appear on the transcript and may apply toward graduation. For more information regarding CLEP, please contact the Assistant Dean of Students, Cowan Hall 213.

CONTINUING EDUCATION COURSES
Continuing education courses may be offered for credit. However, no more than 30 such credits may be applied toward a Bachelor's degree. At the graduate level, no more than 12 credits may be applied toward a Master's degree.

COOPERATIVE EDUCATION
Cooperative Education is a program that allows students to earn academic credit and gain on-the-job experience in positions related to their field of study. Most disciplines include cooperative education courses, numbered 279 or 479. Cooperative Education is initiated with learning objectives defined through an agreement between the student, faculty, Cooperative Education Coordinator and the work supervisor. To be eligible for Cooperative Education, students must have completed one semester at the University and maintain a cumulative 2.00 grade point average. Students pursuing an associate degree may apply a total of 12 credits of Cooperative Education toward their degree requirements with the exception of Engineering Technology programs. Students pursuing a bachelor's degree may apply a total of 18 credits of Cooperative Education toward their degree requirements with the exception of Engineering Technology programs. These courses are taken Pass/Fail only.
COURSE NUMBERING SYSTEM

- 001-099: Credit earned cannot be used toward completion of degree requirements and are not computed in credits earned or grade point average. These credits may be considered for financial aid and certification purposes.
- 100-299: Lower division courses.
- 300-499: Upper division courses.
- 500-599: Upper division undergraduate courses taken for graduate credit. Additional work is usually required.
- 600-699: Graduate division courses only.
- 1390: Undergraduate level Continuing Education Courses
- 1590: Graduate level Continuing Education Courses

COURSE REPEITION

Students repeating a course will forfeit the original grade and will receive the new grade.

CREDIT LOAD

Students must complete 15 - 16 credits each semester in order to complete a two-year or four-year degree within the minimum time. The following table explains the rules governing maximum credit loads:

<table>
<thead>
<tr>
<th>Cumulative Grade Point Average</th>
<th>Maximum SemesterCredits</th>
<th>Approval Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.00 and above</td>
<td>22</td>
<td>No</td>
</tr>
<tr>
<td>2.50-2.99</td>
<td>20</td>
<td>No</td>
</tr>
<tr>
<td>2.00-2.49</td>
<td>18</td>
<td>No</td>
</tr>
<tr>
<td>Below 2.00</td>
<td>12</td>
<td>Yes</td>
</tr>
</tbody>
</table>

First-time University students may not take more than 18 credits during their first semester.

Transfer students: In determining the maximum credit load that a transfer student can carry during his or her first semester at Montana State University-Northern, the University will use the cumulative grade point average earned by that student before they came to Northern. Once a student has earned credits at Northern, his/her Northern grade point average will be used to determine credit load.

The rules for credit load are different during summer semester, and students should consult the summer semester bulletin for an explanation.

CREDIT NOT PERTAINING TO A TRADITIONAL TERM

The posting of credit earned outside of a traditional academic calendar term to Northern transcripts will be governed by the following rule: The credit will be posted to the Northern term during which the official transcript or report of the credit is received. If the official transcript or report is received when no Northern term is in progress, the credit will be posted to the Northern term following the receipt of the official transcript or report. In order to be considered an "official" transcript or report of credit, it must:

1. Be an original document produced by the issuing agency or institution. It must contain sufficient information to be identified as such. Telephone reports are not acceptable. Faxes are not acceptable. Documents transmitted by other electronic means, such as electronic mail, are not currently acceptable.

2. Be received directly from the issuing agency or institution without passing through the hands of the student. The transcript can pass through the hands of an official agent of the institution, however, such as a Dean or the administrative support personnel of an academic college.

DEPARTMENTAL DISTINCTION

Students maintaining a 3.50 GPA and selected by the appropriate faculty may be eligible to graduate with departmental distinction. This distinction will be noted on the commencement program.

DISTANCE/EXTENDED LEARNING

Students who are not able to physically attend classes on the Montana State University-Northern campus may still take courses leading to a degree by utilizing Northern’s distance learning options. Regional centers in Great Falls and Lewistown provide alternative sites for students to receive administrative and advising assistance, enroll in classes, pay fees, and register for financial aid. For more information about distance learning options please call (406) 265-3730.

DOUBLE MAJOR

A student may earn a second major and have it noted on his or her transcript by completing all course work for the second major. Students whose second majors fall within another degree type must follow procedures for a second undergraduate degree. Students should consult the policy on second undergraduate degrees, on page 194 of this catalog, to make sure they understand and satisfy the requirements of that policy if it applies to their additional program of study. Students who are applying for graduation with two majors will not be required to complete additional requirements for a minor required by either program.
DROPPING AND ADDING CLASSES
Since Montana State University-Northern delivers coursework in a variety of formats, methods, and time frames, the drop and add deadlines for students are determined by the percentage of instructional time that has passed in each course. The specific deadlines are set out below:

1. Students may add classes if 10 percent or less of the instructional time has passed in the course.
2. Students may drop classes, and eliminate all notice of those classes from their transcript if 20% or less of the instructional time for the class has elapsed.
3. Students may drop classes and receive a "W" on their transcript, if 60% or less but 20% or more of the instructional time has passed.
4. Students may not withdraw from classes if 61% or more of the instructional time for the involved class or classes has passed. The Registrar will determine and publish the drop and add deadlines for each class, using these percentages.

Students may add or drop a class until the close of business on the deadline day.

FINAL EXAMINATION WEEK POLICY
The last week of each regular semester will be set aside for final examinations. The Registrar will publish an examination schedule every semester. The final examination week is the only time when final exams may be given for full semester classes. The University expects every class to meet at its scheduled time for final exams. There will be no scheduled extra-curricular activities or meetings during finals week. Each scheduled exam period will be two hours.

If students are scheduled for more than two (2) final examinations on the same day, they may ask for an adjustment. They should contact the instructors in their classes, and try to arrange alternative test times during the final exam week. If those negotiations are unsuccessful, students should ask their College Dean to mediate the conflict.

FRESH START POLICY
Montana State University-Northern students may eliminate part of their previous coursework at the institution under this "fresh start" option. The policy is subject to several restrictions, and may not be available to all students. Under the policy, students may erase a maximum of two consecutive semesters or three consecutive quarters of previous Montana State University-Northern coursework. The coursework will remain on the student's academic record, but the credits and the grades will not be carried forward into the student's cumulative GPA. Once a student has elected to exercise the Fresh Start policy, the effects of the policy may not be rescinded.

Students must meet the following conditions to apply for the fresh start option:
1. they must be undergraduates;
2. they may only exercise the fresh start option once at Montana State University-Northern;
3. they must not have been enrolled at Montana State University-Northern for at least one calendar year;
4. they must apply for the fresh start option during the first year of their return to Montana State University-Northern.

GRADES
The quality of a student's work in each course is represented by a letter grade. In computing scholastic averages, each letter grade is assigned a specific number of grade points for each credit.

**Plus and minus grading will be implemented when policy is determined by the Office of the Commissioner of Higher Education (OCHE). Implementation target is Fall Semester 2005.

**Grade Points**

<table>
<thead>
<tr>
<th>Grades</th>
<th>Evaluation of Work</th>
<th>For Each Credit</th>
<th>Grade Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Excellent</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Above Average</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Average</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Below Average</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Failure</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>Pass</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Incomplete</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Audit</td>
<td>Audit</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>W</td>
<td>Withdrawal</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>Continuation</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>NR</td>
<td>Not Reported by Instructor</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>PF</td>
<td>Failure Due to Academic Dishonesty</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>IP</td>
<td>In Progress</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>NP</td>
<td>Not Passing</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Explanation of Grades and Notations**

P - Indicates that the student registered for the course on a "Pass-Fail" basis and passed the course. The pass grade is not computed in the grade point average; however, failures are computed in the grade point average like any other F.
I - Indicates that the work of the course is more than three-fourths complete, not finished, but may be completed. An incomplete is given only to a student who has a proper excuse for not having completed all the requirements of a course. The faculty member and student must arrange to complete the work prior to the ending of the following term. Arrangements must be completed in the next resident semester, or the "I" is changed to an "F." If the student is not in residence, two semesters are given to complete the work, or the incomplete becomes an "F." The final grade for the course will replace the notation of "I" in the semester in which the course was originally registered, and the credit for the course will be counted in that semester. The final grade will affect the grade point average of that semester, just as if the work had originally been completed in that semester.

PF - Indicates that the student failed due to Academic Dishonesty.

GRADE REPORTS
Following each semester students and their advisors may see a report of the students' grades by logging onto Northern's WEB site and getting into Banner. Students performing unsatisfactory work during the semester may also be notified. Grade point average (GPA) is computed by dividing the cumulative number of grade points by the total number of credits attempted.

GRADUATION ACADEMIC LATIN HONORS
Graduation academic Latin honors levels are based on all higher education work completed at the time the program was printed. This does not include work completed at the end of the Spring Semester of commencement. If work completed after the commencement program was printed changed any honors levels, every effort will be made to provide the proper cords, and the new honors levels will be read as the graduates during commencement are introduced.

Latin Honors: Minimum GPA
Cum Laude 3.50
Magna Cum Laude 3.75
Summa Cum Laude 4.00

Honor Cords:
Montana State University-Northern recognizes associate and baccalaureate students with excellent grades by awarding traditional Latin academic honors at graduation. Honored graduates wear honors cords and their names are noted in the commencement program. Cord colors are as follows:

Cum Laude Maroon
Magna Cum Laude Silver
Summa Cum Laude Gold

INCOMPLETES
An incomplete grade must be completed in the next resident semester, or the "I" is changed to an "F." If the student is not in residence, two semesters are given to complete the work, or the incomplete becomes an “F”.

INDEPENDENT STUDY
Independent study courses are offered at the discretion of individual faculty members and their Dean. Students who wish to enroll in independent study courses must first discuss the requested coursework with the instructor, then obtain the approval of the instructor’s dean.

Such approval is based on a preliminary plan of the intended nature, duration, and scope of the project. The work may be a regular catalog course or a course designed to meet the special needs of an individual student. Independent study courses will be numbered 299, 399, 499, 599, or 699 and will not appear on the regular schedule of classes. Students may not add independent study courses after the deadline for adding full-semester classes. No more than 9 independent study credits may be applied toward a Bachelor's degree and no more than 6 independent study credits may be applied toward an Associate or Associate of Applied Science degree. Independent study forms are available in the Registrar’s Office.

LEARNING EXPERIENCE ASSESSMENT PROGRAM (LEAP)
The Learning Experience Assessment Program is designed to provide opportunities to earn university credit for what has been learned through life and work experiences. Students who wish to pursue this means of earning credit will register for LEAP 289 and complete portfolios demonstrating how their competencies contribute toward degree requirements. Details concerning the LEAP program may be found in the university policy and procedures manual.

The only academic program that currently accepts LEAP credits is business.

MAJOR, MINOR OR ADVISOR CHANGES
Degree-seeking students may change their academic majors and minors by following procedures...
available from the Registrar’s Office.

Non-degree-seeking students may apply for degree-seeking status at the Office of Admissions. Degree-seeking students who have not selected majors are assigned a faculty advisor by the Registrar and may request a change of advisor at that office. Those who have selected a major are assigned faculty advisors by the academic College which administers their chosen major and may request a change of advisor from the Dean of that academic College. Non-degree-seeking students are not assigned faculty advisors, but may seek assistance from the Registrar.

**PASS-FAIL GRADES**

Students may take classes on a pass-fail basis. When considering that option, students should keep the following limitations in mind, however:

1. Courses that satisfy the requirements of a major, a minor, an area of concentration, or the professional education core cannot be taken on a pass-fail basis. Graduate courses cannot be taken on a pass-fail basis.
2. Students can only use eighteen (18) semester credits of pass-fail work in a Bachelor’s degree program; they can only use nine (9) semester credits of pass-fail work in an associate or associate of applied science degree program.
3. The two previous restrictions do not apply to specific coursework that is only offered on a pass-fail basis. That coursework would include cooperative education classes, student teaching, Advanced Placement, CLEP and challenge exams and trade competency tests.
4. Some academic Colleges have their own rules governing the use of pass-fail credits, and students should consult their faculty advisors for those limitations.
5. Students may change from a grade to pass or pass to a grade prior to the close of the "add" period for the class by means of forms and procedures available from the Registrar’s Office. Once pass-fail has been elected, the election cannot be reversed.
6. Scholarships awarded
7. Degrees conferred
8. Honors granted
9. Dates of attendance

Currently enrolled students have the right to refuse to permit the University to disclose the above information by submitting a "Privacy Rights" form. This form is the means by which the student notifies the Registrar of his/her intentions concerning the above information. The student is herewith notified that:

1. If the student signs the request to have the Registrar keep the above information private, the University will not even acknowledge the fact of the student’s enrollment to third parties, except in cases otherwise provided for, such as written requests for transcripts.
2. Emergency messages will not be taken for or relayed to the student.
3. The student’s name will not appear on any lists released to third parties, including honor rolls and graduation.
4. This is an "all or nothing" policy. The student may not select certain information or certain circumstances for non-disclosure.
5. Non-disclosure requests may be reversed by submission of notification to the Registrar’s Office.

**REGISTRATION RESTRICTIONS**

A student classified as a freshman may not enroll in an upper division course without the permission of the instructor.

**SCHOLASTIC HONOR ROLL**

In recognition of scholastic achievement, the University publishes at the conclusion of each semester an honor roll of undergraduate students who have earned a minimum grade point average of 3.25 in twelve or more credits of work graded on the regular grade scale. Students with a grade of Pass, Incomplete or "F" are not included on the honor roll listing.
SCHOLASTIC PROBATION/SUSPENSION REVIEW

Students whose semester and/or cumulative grade point average falls below 2.00 will be placed on academic suspension or probation according to the following guidelines. Suspended students may appeal for readmission prior to their elapsing suspension period by means of forms and procedures available from the Registrar’s Office.

1. Scholastic Warning: Applies only to first-time freshmen or new students who have earned less than twelve credits from a regionally accredited post-secondary institution. Such students are placed on scholastic warning at the end of their first semester of enrollment if they earn less than a 2.00 cumulative grade point average. A student may be on academic warning a maximum of one semester. Probation or suspension status applies to all subsequent enrollments in which the cumulative grade-point average remains below a 2.00.

2. Scholastic Probation: Students (other than those described in situation 1 above) are placed on probation at the end of a semester of enrollment when their cumulative grade point average falls below a 2.00. Transfer students (admitted under special conditions) who have earned 12 or more semester credits and whose transcript(s) indicates less than a 2.00 cumulative grade point average are admitted on scholastic probation.

3. Continued Scholastic Probation: Students may continue to enroll while on probation provided they earn at least a 2.00 semester grade point average, even though their cumulative grade point average remains below a 2.00.

4. Restrictions in enrollment while on Scholastic Warning or Scholastic Probation

status: No student on scholastic warning or probation may enroll for more than 12 credits during the semester without approval of the Admissions and Standards Committee.

5. Removal of Scholastic Probation: Such academic standing is removed when the cumulative grade point average is raised to a 2.00 or higher.

6. Scholastic Suspension: Students currently enrolled on scholastic probation or continued on scholastic probation are suspended when both the semester and cumulative grade point average are below 2.00. The first suspension from Montana State University-Northern will be for one semester. The second suspension will be for one calendar year. Students suspended for a third time, or those seeking early re-admission from a first or second suspension, must appeal by petition to the Admissions and Standards Committee. A student re-admitted after a period of suspension will be placed on scholastic probation.

Suspended students may attend classes until their appeal is decided.

SECOND UNDERGRADUATE DEGREES

To earn an additional degree, students must complete all coursework required in the degree program. A second degree will be awarded only when it differs from the student's first degree. For example, if the second major is a Bachelor of Science degree and the first was a Bachelor of Arts degree, then a second degree would be awarded.

A second associate or associate of applied science degree requires a minimum of twelve additional credits; and a second baccalaureate degree requires a minimum of thirty additional credits. Normal residency requirements and all other academic regulations also apply. Students wishing to earn a second associate, associate of applied science, bachelor, or bachelor of applied science degree must complete the regular admission procedures. For double major, i.e., a second major within the same degree type, see the section entitled "Double Major" on page 190.

SEMESTERS

Semester: Northern has three semesters in an academic year: Fall, Spring, and Summer. Students normally attend two semesters in an academic year: Fall and Spring. When a policy refers to a number of semesters, or to "regular" semesters, it is referring to the Fall and Spring semesters only, to the exclusion of Summer semester, unless the policy expressly indicates to the contrary.

SPECIAL TOPICS

Experimental courses and courses for special topics may be offered from time to time. Such courses are numbered 290, 390, 490, 590, and 690 and will not be offered more than twice, excluding summer sessions or continuing education offerings, which may be offered more often.

SUBSTITUTIONS

Course substitutions are exceptions and deviations from normal academic policy and may be requested on forms available from the Registrar’s Office. A substitution requires the approval of the student's faculty advisor, the academic College Dean of the student's major, and the Dean of the academic College that offers the course.

TRADE COMPETENCY TEST

Students who have had five or more years of work experience in an apprenticeable trade or licensed occupation may have their experience evaluated through a written and performance test administered by the National Occupational Competency Test Institute (NOCTI). This testing process, coupled with a committee evaluation of job success, may generate up to 39 credits toward earning a degree. Contact the Registrar or Dean of Education and
Acceptability of Credits

1) The University accepts all college and/or university level courses from institutions accredited by regional association of schools and colleges. This does not include remedial or developmental courses.
2) If an institution was not accredited at the time the transfer student enrolled there, but accreditation has subsequently been granted by a regional association, the student may petition to have the credits accepted.
3) If the institution was a candidate for accreditation at the time the transfer student took classes, credit will be granted after successful completion of 20 semester credits at Northern.
4) Credit will be granted for college-level continuing education, correspondence and extension courses successfully completed at regionally accredited institutions.
5) International coursework must be evaluated by a professional foreign transcript-evaluating agent, designated by the Office of Admissions, or by other means approved by university policy.
6) Credit may be granted for military service and for completed military service schools based on the recommendations of "A Guide to the Evaluation of Educational Experiences in the Armed Forces." See the Registrar for details.
7) Credit may be granted for education received from non-collegiate institutions on the basis of recommendations published by the American Council on Education.

Evaluation of Degree Requirements

a. The Registrar determines the acceptability of transfer credits toward general education requirements at the University. Academic Colleges may also be consulted.
b. The academic College that awards the student's degree will determine applicability of transfer courses to specific program-area degree requirements.
c. Secondary education majors may work with two different academic Colleges. The Department of Education will determine how transfer credits fit into the education core. The major and minor academic Colleges will determine how transfer credits fit into major or minor curricula.
d. Articulation agreements may have been negotiated between Northern and the transfer student's institution. Those agreements will determine the use of credits in a student's degree program.
e. Transfer students are encouraged to assist academic College faculty in evaluating previous coursework. Catalog descriptions, course syllabi and classroom work can all be used to document the content and rigor of transfer credits.

Transfer Grades

Transfer credit will be given for courses in which satisfactory grades were received. A satisfactory grade for transfer purposes is defined as A, B, C, or S.
Transfer Grade-point
a. The transfer grade point average will be used to determine eligibility for acceptance at Montana State University-Northern. Coursework from all higher education institutions will be used to calculate that grade point average.

b. Transfer grade point averages will not be computed for students whose 1st term of attendance at Northern is Fall 1989 or after. Student course work completed at the College of Technology in Great Falls will be treated as resident course work and included in MSU-Northern’s grade point average.

c. University honors may be based on the combined grade point average for all higher education work completed.

WAIVERS
Course waivers are exceptions and deviations from normal academic policy and may be requested on forms available from the Registrar’s Office. A waiver requires the approval of the student’s advisor, the academic Director of the student’s major. A waiver does not constitute a reduction of required credits. Students who receive a waiver for a course do not receive the credit hours for that course.

WITHDRAWALS FROM THE UNIVERSITY
Students may withdraw from the University by completing the procedures and forms available in the Registrar’s Office. Course grades will be determined as set out in the Drop and Add Policy.
SPECIAL TRANSFER PROGRAMS

In addition to the programs and degrees described in earlier pages in this catalog, two special transfer/partnership programs are available at Montana State University-Northern. Those programs are as follows:

1. **Dental Hygiene.** For many years, Montana was the only state in the United States without a dental hygiene program. That educational deficit was corrected in 2001, when the Montana Board of Regents approved such a program at the College of Technology in Great Falls, Montana.

   The program was implemented in fall semester, 2001. Students complete 70 credits to earn the associate of applied science degree in dental hygiene. Because of the rigors of the program, and because of limited resources, only 12 students each year are admitted to the dental hygiene courses themselves. Employment prospects for dental hygienists are quite good, however, and graduates can expect to earn a salary in the $40,000 - $50,000 range.

   Students interested in the program can complete at least half of the courses required for the degree at campuses other than the Great Falls College of Technology. At Montana State University-Northern, for instance, the following classes can be completed at this institution and transferred into the Great Falls dental hygiene program:

   --BIOL 217, Microbiology, 4 credits
   --BIOL 241, Anatomy and Physiology I, 4 credits
   --BIOL 242, Anatomy and Physiology II, 4 credits
   --CHEM 112, Physiological Chemistry, 3 credits
   --CHEM 121, General Inorganic Chemistry, 3 credits
   --CHEM 123, General Inorganic Chemistry I Lab, 2 credits
   --ENGL 111, Written Communication I, 3 credits
   --MATH 112, College Algebra, 3 credits
   --PSYC 101, Introduction to Psychology, 3 credits
   --SPCH 141, Fundamentals of Speech, 3 credits

   Students who are interested in the dental hygiene program, and who would like to complete the 11 classes outlined above, should consult with a faculty advisor on the MSU-Northern campus. The two MSU-Northern faculty advisors assigned to the dental hygiene program are: Carol Reifschneider, Hagener Science Center Room 206, phone: 265-4126; and Vaughn Rundquist, Hagener Science Center Room 106, phone: 265-4197.

2. **Early Childhood Development.** Montana State University-Northern has entered into a partnership with the University of Montana-Western to offer the associate of applied science degree in Early Childhood Development in Havre, Montana. Students who enroll in the program will complete approximately 30 credits in early childhood development under the instruction of faculty members from the University of Montana-Western. Although that University is located in Dillon, Montana, the courses are offered on the MSU-Northern campus.

   The additional credits (approximately 35) necessary to earn the degree can be completed at MSU-Northern and transferred to the University of Montana-Western. Once the necessary coursework and credits have been completed, the A.A.S. degree in early childhood development will be awarded by the University of Montana-Western.

   Again, the important news for students at MSU-Northern is that all of the course requirements for the degree can be completed at the Northern campus; and approximately half of the classes are MSU-Northern courses that will be accepted by the University of Montana-Western. The Northern classes are typical general education courses in composition, speech, mathematics, the arts and sciences and health and physical education. In addition to general education coursework, students will also have to complete between 9 – 14 elective credits. If students are interested in the early childhood development degree, they should consult with faculty members in the College of Education and Graduate Studies on the Montana State University-Northern campus. That College is located in Cowan Hall, Room 105, and the telephone number is 265-3745.

   Students should also know that, upon completion of the A.A.S. degree in early childhood development, they can continue on at Montana State University-Northern to earn a Bachelor of Science degree in elementary education. If that elementary education teaching degree is an ultimate career goal for students, they should consult with a faculty advisor early in their program of study, while they are still working on the associate of applied science degree in early childhood development. Because they will be transferring from the University of Montana-Western to Montana State University-Northern for continuation of their educational program, that faculty advisor can help students to enroll in the appropriate general education and elective courses necessary to earn a bachelor’s degree in education from MSU-Northern.
<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Education Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAWDEN, Monte (2001)</td>
<td>Assistant Professor, Biology and Chemistry</td>
<td>B.A., University of California, Riverside, 1965; Ph.D., Rutgers University, 1970</td>
</tr>
<tr>
<td>CAPDEVILLE, Alex (2000)</td>
<td>Chancellor; Associate Professor, Education</td>
<td>B.S., M.S., Northern Montana College, 1972, 1974; Ph.D., Colorado State University, 1977</td>
</tr>
<tr>
<td>CASTLE, Robin (2001)</td>
<td>Assistant Professor, Education</td>
<td>B.S., College of Great Falls, 1986; M.A.S., University of Montana, 1993</td>
</tr>
<tr>
<td>CHRISTECK, Robert P. (1977)</td>
<td>Professor, Chemistry</td>
<td>B.S., St. Cloud State College, 1964; M.N.S., University of South Dakota, 1968; M.S., University of Wisconsin-LaCrosse, 1968; Ph.D., University of Colorado-Boulder, 1972</td>
</tr>
<tr>
<td>DANLEY, William H. (1973)</td>
<td>Associate Professor, Agricultural Technology</td>
<td>B.S., M.S., New Mexico State University, 1971, 1973</td>
</tr>
<tr>
<td>DON, Steven (2003)</td>
<td>Instructor, Automotive and Diesel Technology</td>
<td>A.S., Montana State University-Northern, 1994; B.C., University of Canterbury, 1984</td>
</tr>
<tr>
<td>GILMARTIN, Brian G. (1988)</td>
<td>Professor, Psychology and Sociology</td>
<td>B.A., University of Colorado, 1962; M.S., University of Utah, 1964; Ph.D., University of Iowa, 1969</td>
</tr>
<tr>
<td>HENEHAN, Maureen (2005)</td>
<td>Assistant Professor, Nursing</td>
<td>B.S.N., St. Xavier University, 1969, 1978; M.S.N., Rush University, 1987</td>
</tr>
<tr>
<td>HOOGENDAM, Rose (2002)</td>
<td>Assistant Professor, Nursing</td>
<td>B.S., Montana State University-Bozeman, 1973; M.S., University of San Diego, 1985; R.N.</td>
</tr>
<tr>
<td>HOWLAND, James C. (1990)</td>
<td>Associate Professor, Computer Information Systems</td>
<td>B.S., Oregon State University, 1986; M.I.S., City University, 1992</td>
</tr>
<tr>
<td>HUSE, Shawn (2002)</td>
<td>Assistant Professor, Education; Head Men’s Basketball Coach</td>
<td>B.S., Montana Tech of the University of Montana, 1995; B.A., University of Montana, 1997; M.A., University of Nebraska-Kearney, 2002</td>
</tr>
</tbody>
</table>
JIMENO, Cheri (2003)
Provost/Vice- Chancellor for Academic Affairs;
Professor, Business
B.A., University of Montana, 1972; M.S., Montana State
University-Bozeman, 1984; Ph.D., Utah State University, 2000

Assistant Professor, Mathematics
B.S., Eastern Montana College, 1966; M.N.S., Oklahoma
University, 1971

JOHNSON, Kevin H. (1980)
Professor, Automotive Technology
B.S., Northern Montana College, 1978; M.S., Central
Washington University, 1987

KEGEL, Gregory D. (1982)
Dean, College of Technical Sciences; Professor, Design
Drafting and Manufacturing Technology
B.S., Northern Montana College, 1976; M.S., Central
Washington University, 1987

LOCKWOOD, Stephen P. (1988)
Professor, English
B.A., San Jose University, 1970; Ph.D., Indiana
University, 1985

LOCKWOOD, Suzanne F. (1988)
Professor, Nursing
St. Thomas Hospital, 1968; B.S.N., M.S.N., Indiana
University, 1980, 1984; Ed.D., Montana State University-
Bozeman, 1997; R.N., A.P.R.N., C.S.

MCCROSKEY, Mary (1992)
Associate Professor, Education
B.S. Northern State College, Aberdeen, SD, 1966; M.Ed.,
Northern Montana College, 1988; Ed.D, Montana State
University-Bozeman, 1997

MILLER, Michael. (2005)
Assistant Professor, Civil Engineering Technology
B.S., M.S., University of Illinois (1977), 1979; B.S.,
Bemidji State University, 1999

MILLER, Robert L. (1971)
Professor, Automotive Technology
B.A., Simpson College Iowa, 1951; M.Ed., Northern
Montana College, 1980

MUNSON, Terence (1989)
Associate Professor, Business
B.S., Northern Montana College, 1972; M.I.M.,
American Graduate School of International Management,
1983

OBERQUELL, Christian (2001)
Instructor, Education
B.S., University of Mary, 1994; NATA Certified, 1995

PAPPAS, Mary M. (1986)
Director of Nursing, Professor, Nursing
A.D.N., Northern Montana College, 1969;

M.S., University of Portland, 1989; R.N., C.A.N.P.

PARKER, Reno L. (1988)
Professor, Biology
B.A., University of Minnesota, 1963; M.S., Montana
State University, 1966; Ph.D., Kent State University, 1970

PEASE, Norton (2002)
Assistant Professor, Graphic Design
B.F.A., Iowa State University, 1995; M.F.A., Washington
University, 1999

Assistant Professor, Mathematics
B.S., Northern Montana College, 1990; M.S. Montana
State University-Bozeman, 1993

RAWN, Will (1990)
Interim Dean, College of Education, Arts and Sciences,
and Nursing; Professor, English
B.A., Oberlin College, 1965; M.F.A., Ph.D., University
of Iowa, 1973, 1984

REIFSCHNEIDER, Carol (1995)
Associate Professor, Water Quality Technology:
Environmental Health
B.A., M.S., Ph.D., University of Kansas, 1977, 1982,
1993

RUNDQUIST, Vaughn M. (1988)
Associate Professor, Biology
B.A., Moorhead State College, 1966; M.S., University of
Wisconsin, 1969; Ph.D., Montana State University, 1973

SCHERESKY-O'NEIL, Lisa (2001)
Assistant Professor, Nursing
B.S., A.D.N., B.S.N., Montana State University-
Northern, 1992, 1993, 1997; M.S.N., University of
Phoenix, 2002; R.N.

SEIFFERT, Mark A. (1994)
Associate Professor, Theatre and Speech Communication
B.A., Montana State University, 1984; M.A., Texas Tech
University, 1985; Ed.D., West Virginia University, 1990

SELLERS, Darlene (1998)
Associate Professor, Education
B.S., University of Wyoming, 1988; M.Ed., University of
Southern Mississippi, 1990; Ph.D., University of
Wyoming, 1995

SKORNOGOSKI, Brenda F. (1986)
Associate Professor, Business

SMEBY, Curtis (1998)
Associate Professor, Education
B.A., Acadia University, 1980; M.S., University of
Oregon, 1981;
Ed. Specialist University of Southern Mississippi, 1990;
Ph.D, University of Wyoming, 1996
SNIDER, John M. (1989)  
Professor, English  
B.A., Dickinson College, 1972; M.A., Ph.D., University of Illinois, 1974, 1983

SOISETH, Joel K. (1988)  
Professor, Art  

STALLKAMP, Lloyd E. (1988)  
Professor, Electronics Engineering Technology  
B.A., St. Cloud State University, 1970; B.S., Bemidji State University, 1982; M.Ed., South Dakota State University, 1986

STILGER, Lynn (1990)  
Associate Professor, Diesel Technology  

STONE, Roger D. (1988)  
Associate Professor, Computer Technology  
B.A., College of Great Falls, 1983; M.I.S., City University, 1992

STRIZICH, Lawrence J. (1988)  
Professor, Electronics Engineering Technology  
B.S.E.E., University of Colorado, 1974; M.E., University of Idaho, 1996; PE-Licensed Engineer

Associate Professor, Mathematics  
B.S., Montana State University, 1974; M.S., Oregon State University, 1977; Ed.D., Montana State University, 1992

Associate Professor, Automotive Technology  

THACKERAY, JR, William W. (1965)  
Professor, English  
B.S., Northern Montana College, 1958; M.A., University of Utah, 1964; D.A., Idaho State University, 1985

TRETHEWEY, Janet M. (1988)  
Associate Professor, Education  

VERPLOEGEN, Mary (2000)  
Assistant Professor, Computer Information Systems  
B.S.Ed., Northern Montana College, 1987; M.S., Oregon State University, 1988

WELCH, Thomas M. (1981)  
Professor, Agricultural Technology  
B.S., South Dakota State University, 1979; M.S., Montana State University, 1984

WIBERG, Janice L. (1979)  
Professor, Music  

WILKE, Lanny (1996)  
Assistant Professor, Business  

WILLIAMS, Katherine Knapp (2002)  
Assistant Professor, Community Service and Communications  
B.S., M.A., Appalachian State University, 1976, 1980; Ed.D., Ball State University, 1991

YOUNG, Annette (2002)  
Assistant Professor, Education  
B.A., Rocky Mountain College, 1986; M.A., English, Northern Arizona University, 1989
### Emeriti Faculty

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<td>Black, Amy A. (1969-1987)</td>
<td>Associate Professor Emerita, Nursing</td>
<td>B.S., Montana State University, 1957; M.S., University of California, 1966</td>
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<td>Borchert, Horace F. (1959-1988)</td>
<td>Professor Emeritus, Science</td>
<td>B.S., Valley City State Teachers College, 1949; M.S., University of Colorado, 1956; Ph.D., Montana State University, 1969</td>
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<td>Korb, August W. (1955-1994)</td>
<td>Assistant Vice President for Academic Affairs and Professor Emeritus, Education</td>
<td>B.A., Northern Montana College, 1959; M.A., Northern Colorado State University, 1957; Ed.S., Central Missouri State University, 1972</td>
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<tr>
<td>BROWNSON, E. James (1958-1987)</td>
<td>Associate Professor Emeritus, Art</td>
<td>B.S., University of Nebraska, 1948; M.A., Ohio State University, 1951; A.B.D.</td>
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<td>Vice President for Academic Affairs and Professor Emerita, Biology</td>
<td>B.S., Northern Montana College, 1961; M.S., Montana State University, 1980; Ph.D., University of Hawaii, Honolulu, 1989</td>
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<td>Professor Emeritus, Social Science</td>
<td>B.S., M.S., Utah State University, 1950, 1956; Ph.D., Syracuse University, Maxwell Graduate School, 1960</td>
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<td>Associate Professor Emeritus, English</td>
<td>B.A., St. John's University, 1937; M.S., University of Montana, 1947</td>
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<td>Kjerstad, Clara (1943-1957)</td>
<td>Associate Professor Emerita, Music</td>
<td>B.Mus. Educ., M.S., Northwestern University, 1932, 1932</td>
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Associate Professor Emeritus, English  
B.S., M.S., Western Illinois State College, 1946, 1948

NIELSON, Thomas G. (1965-1988)  
Assistant Professor Emeritus, Health and Physical Education  
B.S., M.S., University of North Dakota, 1962, 1964

NYSTROM, Conrad O. (1968-2000)  
Professor Emeritus, Metals Technology  
B.S., Walla Walla College, 1955;  
M.Ed., Northern Montana College, 1980

OPHUS, L. Lynn (1966-1988)  
Instructor Emerita, Health and Physical Education  
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OTT, Margaret E. (1956-1976)  
Associate Professor Emerita, Cosmetology  
Volkman Academy of Beauty Culture, 1943; B.E., M.E.,  
Colorado State University, 1964, 1968

PETERSON, Hans J. (1966-1987)  
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B.A., University of Louisville, 1959; M.A., Ph.D., University of Denver, 1961, 1966

Assistant Professor Emerita, Nursing  
B.S., M.S. Nurs., Montana State University, 1968, 1982; R.N.

PITT, C. Everett (1967-1988)  
Professor Emeritus, Biology and Science Education  

ROUSH, Allan (1966-1990)  
Associate Professor Emeritus, Industrial Arts  
B.S., Northern Montana College, 1959; A.M., University of Northern Colorado, 1966

Associate Professor Emeritus, Agricultural Technology  
B.S., M.S., Montana State University, 1950, 1957

SHELLENBERGER, William Carl (1966-1994)  
Professor Emeritus, Science  
B.S., Bloomsburg Teachers College, 1958; M.S., Syracuse University, 1961

SMITH, Terry James (1965-1994)  
Associate Professor Emeritus, Math  
B.S., Montana State University, 1959; M.A., University of Denver, 1964

TALMAGE, Jean (1968-1984)  
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B.S., Montana State University, 1968; R.N.

Associate Professor Emeritus, Music  
B.M., M.M., University of Montana, 1958, 1959

VARNUM, John P. (1963-2001)  
Professor Emeritus, Languages  
B.A., M.A., Brigham Young University, 1963, 1967

Associate Professor Emeritus, Automotive Technology  
B.S., Northern Montana College, 1967; M.Ed. Oregon State University, 1970

WORSTELL, Cameron R. (1965-2002)  
Associate Professor Emeritus, Metals Technology  

YEAGER, Francis E. (1952-1977)  
Associate Professor Emeritus, Chemistry  
B.A., Intermountain Union College, 1936; M.A., University of Northern Colorado, 1949
DIRECTORY OF THE MONTANA UNIVERSITY SYSTEM

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Dave Gantt, Director of Athletics  265-3761
Sue Swan, Director of Student Health Services  265-6653
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